6th Conference on e-Learning Excellence in the Middle East

Leadership, Design and Technology for 21st Century Learning

Proceedings of Conference

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Preface

Professor Alain Senteni
Conference Chair

The 2014 edition of the e-Learning Excellence (eLEX) in the Middle-East Conference organised for the sixth time by Hamdan Bin Mohammed Smart University (HBMSU) has been once again a catalyst and a source of motivation for all educators, researchers and learners interested in leadership, learning design, and technology for XXIst century learning.

“Leadership, design and technology for XXIst century learning”, was the theme of eLEX2014 divided into seven specific sub-themes that were largely reflected in the diverse range of papers that were submitted for publication. The sub-themes were as follows.

- Educational Leadership,
- Technological Innovation
- Teaching, Design and Quality
- Social Online Learning
- Quality Frameworks for Online Education
- Cultural Integration of Open Educational Resources
- Massively Online Open Courses (MOOC)

Out of the fifty-six papers submitted, thirty-six were selected to be part of these proceedings, covering issues related to the introduction of technologies in education from K12 to higher and vocational education. Authors came from eighteen countries in Europe, North America, Australia, Africa, and of course the Middle-East. An important highlight deserving to be mentioned this year is the active involvement of many learners and university students in the region, not only from HBMSU, but also from federal universities including Zayed University, Higher College of Technology and UAE University.

Each paper in these proceedings was reviewed by two researchers. Refereeing papers for an international conference is a demanding process that relies on the goodwill of those researchers, who are members of the technical committee. It has been an honour and a great pleasure to work once again with them, and I want to thank them for their invaluable support. Let’s not forget Mr Krishnan Sankar, the conference secretary, whose sustained and discrete work over the whole year has been a key success factor for the conference.

eLEX 2014 has been another milestone to set the pace of educational transformation in the region, and paving the way towards a paradigm shift in education. Thanks to all those who contributed to producing such a comprehensive and spearheading conference.
Research Papers
Aligning Multimedia Format with Knowledge Categories in e-Learning

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Abstract

Purpose
Learning effectiveness research increasingly turns to mixed modalities of instruction. We aim to provide guidance to designers of blended learning which combines traditional instructional methods with various multimedia formats.

Design, Methodology
We conducted a meta-analysis. In a categorical model of fixed effects we explored a matrix of three dimensions: 1. e-learning formats versus different non-e-learning comparators (e.g. print material or lectures), 2. deployment of e-learning in blended teaching (supplement) or as substitute for traditional instruction and 3. types of knowledge transferred. Particular attention is paid to potential confounders in trial design.

Findings
Analyses of 54 studies yielded a weighted effect size of 0.2. Ten variables correlate with effectiveness, of which four can be considered as indicators of quality and/or potential confounders and six as modulators. The former, including test methods, robustness of design, instrumentation and statistical power, help to assess original research. The latter, e.g. blended versus pure e-learning, comparator (learning aids of the control group in experimental situations), time on task, degree of interactivity and user control, help to design teaching concepts and media.

Practical implications
Variables providing guidance for rational choice of e-learning formats were assessed.

In pure or blended e-learning, the category of knowledge transferred should guide formats, e.g., procedural knowledge is more effectively transferred by hypermedia or drill & practice than by tutorials.

Originality/value
This paper thus seeks to make a substantial contribution to the use, design and interpretation of e-learning.

Keywords: e-learning, meta-analysis, domains of knowledge, learning effectiveness, evaluation

Article classification: Research paper

Introduction
E-learning tools are ubiquitous in primary, secondary, continued and vocational education. These tools are attractive to teachers and educators in general since they seem to reconcile contradictory demands: as technological instruments, they allow for granular control and almost infinite scaling/replication of the acts of teaching and learning yet harness the complexity of many subjects by use of graphics, animation or hyperlinks. By facilitating virtuous cycles of practice and application of learning points, e-learning can help to meet modern didactic and methodic demands. In order to best exploit the possibilities of multimedia support, the technical format should be chosen and deployed according to the learning objectives. To date, this choice may have often been made intuitively.

We will focus on three easily distinguishable prototypic formats: drill & practice, web-based tutorials and simulations. A fourth category, more difficult to pinpoint, is hypermedia.
Exercise Programs

The common name for this type of program is "Drill & Practice" software (Baumgartner & Payr, 1994, p. 154); Schulmeister (2007, pp. 86-101) elucidates this form under the heading "authoring systems and courseware." Meant is any type of software intended to consolidate already learned content (Euler, 1992). Into this category fall, for example, vocabulary trainers, formula coaching, arithmetic problems (Niegemann, 1995), etc. It exists "online" (web-based) or "offline" (CD-ROM). Based on learning theory, exercise programs can reside in the field of behaviorism, as they meet behaviorist ideas for strengthening of behavior by immediate confirmation (Weidenmann, 2001). Here, forms of "drill" as a reinforcement of the stimulus-response scheme are especially important. They are characterized by sequences of the type "exercise-response-feedback". The exercise, which the learner finds on the screen, consists essentially of a sequence of successively running inputs, questions and a series of predetermined answers, from which the learner can select and check one or more (Schulmeister, 2002). "There is no way to adapt the flow of a program produced by authoring systems to the thinking of the learner" (Schulmeister, 2002). Drill & Practice software is currently the most common learning software on the market.

Tutoring Systems

Tutoring systems or tutorials stand in the tradition of "programmed instruction" but go beyond it in many characteristics (Euler, 1992). The learning material is divided into small learning units (frames). They can be offered either offline (CD-ROM) or online (web-based). With tutorial programs, a tutorial dialogue is imitated in a "man-machine dialogue". For a graphical representation, see Bodendorf (1990). In this way, content should be conveyed, practiced and potentially even checked. The computer essentially takes on the role of "tutor" (Baumgartner & Payr, 1994). Tutorial learning programs thus fulfill the idealized situation of a single student working with a tutor or private teacher. New terms and rules are introduced verbally or by means of examples. The content to be conveyed is divided into small pieces of information that are offered to the learner in a deliberate didactic order, one after another (Wagner, 2001). Using questions or exercises, the extent to which the student has understood the subject matter is examined; in this way, the continuation of the instruction depends on the relative progress of the learning (see Niegemann, 1995; Strittmatter & Niegemann, 2000). The small learning steps and frequent questions should provide many possibilities to confirm desired behaviors (Weidenmann, 2001). When it became apparent that the small learning steps and monotonous empty questions of the behavioral programs bored the learners and left them feeling under-challenged (Weidenmann, 2001), new, more sophisticated forms were developed, which are described below.

Intelligent Tutorial Systems

Intelligent Tutorial Systems (ITS) are teaching programs grounded in knowledge-based systems. For specific features, see Ferguson (1992) as well as the detailed descriptions and analyzes of the individual components and a final assessment of ITS in Schulmeister (2007). For differences between ITS and conventional tutoring systems, see Niegemann (1995). They are characterized by the fact that they generate exercises and select instruction steps that are adapted to the previously analyzed prior knowledge of the learner (see Kerres, 2001; Schaumburg & Issing, 2004). "A system is adaptive if it is able to autonomously adapt to changing conditions" (Leutner, 2002). Some examples of potentially adaptive variables in learning systems are instruction extent and length of learning, instruction sequence, exercise presentation and response time and difficulty of the exercises. ITS differs from traditional
tutorial systems in that the support services provided in the program can be customized depending on learning and user situation. An ITS consists of a) a modeling of a field of knowledge, which includes existing knowledge in the form of terms but also in terms of experience and problem-solving knowledge. The contents of the knowledge base must be suitable to draw conclusions and solve exercises (Schulmeister, 2002).

Further, it should have b) a learner or diagnostic model that defines the current knowledge of the learner as well as c) a tutor or pedagogical model that simulates the decision-making behavior of a teacher. The ITS therefore generates appropriate instructions based on the differences between expert and learner models. The communication components allow a dialogue with the learner that would ideally consist of natural language questions and answers (Niegemann, 1995).

**Simulations and Microworlds**

Simulation programs place the learner in a specific practice and action situation (Schanda, 1995); compare with the detailed elaboration of Schulmeister (2007) and Matalik (2003). They serve mainly as a way for future requirements to be played through virtually, with the help of the computer, allowing errors to be avoided in the real implementation. The task of the learner is to create the desired impact on a situation by changing certain parameters (Baumgartner & Payr, 1994). In this way, the programs make possible the visualization of complex scientific, technical, social, economic or ecological contexts, for example in the fields of physics, electricity, nuclear physics, etc. Simulation programs are characterized mostly by the fact that, as opposed to tutorial systems, they possess no fixed sequence structure and give no explicit feedback as to why a situational decision was right or wrong; for typification, see Bodendorf (1990), Euler (1992) and Wagner (2001). Through the playful or systematic, hypothesis-driven change of parameters, effects can be produced that would only show up in nature or society after a long time or are not representable (Strittmatter & Niegemann, 2000). Such programs usually consist of two parts, the model of a system and the dynamic analysis of the model parameters (Schulmeister, 2002). Microworlds are applications that simulate only a narrow range, such as the "refraction of a beam of light through lenses" (Weidenmann, 2001). "They are closed artificial environments with their own rules" (Schulmeister, 2002). In recent times, the term has often been used metaphorically for graphically coherent environments with their own rules, such as a fictitious theater, a space station or a virtual museum (Schulmeister, 2002).

**Hypertext and Hypermedia systems**

Unlike tutorial systems and simulations, hypertext and hypermedia systems do not function through the application of learning software that has been developed for specific purposes (Wagner, 2001). Hypertext and hypermedia systems represent databases of networked units of information, called hypertext bases (Tergan, 2002). Individual informal units are connected to each other via shortcuts. Words or category groups related to others by content are marked as so-called "anchors" and usually highlighted by underlining. The appropriate shortcuts are referred to as "links", the information units "nodes". Such a node contains, in addition to text, other media as cognitive "anchors" such as images, movies or sounds; therefore, this system is referred to as a hypermedia system (Keil-Slawik et al., 1997). Hypermedia is an extension of hypertext systems (Strittmatter & Niegemann, 2000) to an electronic information network, which offers numerous opportunities for networking information. The network is implemented with the use of telecommunications technology and special software (e.g., hypertext programs). The World Wide Web (WWW) is the most famous example of a hypermedia application. For more on the history of
hypertext, see Schulmeister (2007); for more on the hypertext concept, see Gloor (1990), Kuhlen (1991) and Tergan (2002). Further empirical hypermedia research is found in Dillon & Gabbard (1998) and Tergan (1997) as well as Zahn, Barquero and Schwan (2004) on hyperlink video (a combination of hypertext and digital video). Moreover, e-learning is increasingly used in combination with classroom instruction in what has been termed “blended learning”. With the rapid progress in computer and multimedia technologies, it has become feasible to integrate multimedia technologies into the teaching and learning process. Therefore the type of knowledge seems to be an important issue.

In traditional learning settings and didactic models, the relevance of types of knowledge is of significant importance (e.g., Bloom, 1956; see also further development by Anderson & Krathwohl, 2001; Krathwohl, 2002), whereas in research on the effectiveness of e-learning, it is addressed in a rather rudimentary way. In evaluating the analytical dimensions of meta-analyses published between 1990-2011\(^1\), only Sitzman (2006) has approached the relationship between e-learning and the type of knowledge. Sitzman showed that, for declarative knowledge, supplementary use of web-based instruction yielded an effect size of 0.34 over classroom instruction versus an effect size of 0.15 when web-based instruction replaced classroom instruction entirely. For procedural knowledge, supplementary use of web-based instruction yielded an effect size of 0.52 over classroom instruction versus an effect size of -0.07 when web-based instruction replaced classroom instruction. However, it is not made clear whether supplementary use of web-based media increased total exposure time.

**The following methodological research questions were addressed:**

1) Does categorization of comparators into lectures, printed material, etc., better explain variance in media comparisons?
2) Is blended teaching, i.e. use of multimedia to supplement traditional teaching, comparable with exclusive deployment of multimedia?
3) Is the domain of knowledge transferred (the kind of knowledge queried in the exams as detailed in primary research) a determinant of effectiveness of learning using multimedia?

The study yielded two sets of factors explaining variance in original research, one encompassing quality criteria, the other content-related.

**Research Method**

Review articles and previous meta-analyses were used for branching, as well as the table of contents of major journals in the field of education. The key search terms “computer-assisted; meta-analysis; evaluation; learning; multimed*; effect”, as well as their German translations, were searched on their own, as well as in combination with each other, in various databases, including ERIC (WebSpirs), FIS Bildung, PsyndexMedLine (EBSCO), PsycLIT (EBSCO), PsycINFO (EBSCO), the Cochrane Collaboration Study Register, Dissertation Abstracts International and university websites listing dissertations in German language.

The electronic search was supplemented with manual searches of the reference lists from Bernard et al. (2004); Liao (2004); Sitzmann (2006); Cook et al. (2008); Schmid et al. (2009); Cook et al. (2010); Sosa et al. (2011); Yeşilyurt (2010); Tamim (2011). A Google Internet search was performed for grey literature, including a search for conference proceedings.

Study selection for the meta-analysis was conducted in a sequential approach. First, studies identified through literature searches were screened at the abstract level. Then, full-text documents identified in the first stage were examined regarding availability.
of outcome data that could be used to calculate effect size. For six studies, variance could be reconstructed although not explicitly quoted. Original authors supplied other missing data upon request. Review discerned whether original comparisons included multimedia features, and which.

**Inclusion/Exclusion Criteria**

To be included, a study had to have the following characteristics:

- Be published no earlier than 2000.
- Be publicly available.
- Address the impact of multimedia format on students’ score in learning assessments.
- Feature multimedia functionalities beyond static reproduction of traditional learning material, e.g. mark-up language.
- Juxtapose multimedia teaching with lecture, printed teaching material or “mock controls” (a control group not exposed to the content taught but tested in the same way as the experimental group).
- Employ multimedia either on its own (“pure” deployment, experimental group receives no traditional teaching) or blended (experimental group exposed to both multimedia and traditional teaching).
- Be set in a single location or at a distance, with groups being instructed simultaneously or sequentially.

Contain sufficient statistical information for effect size extraction, e.g. allow for reconstruction of variance from statistical measures if variability variance itself is not stated.

Additional eligibility criteria included research design, sample size, interpretable reporting of data, detail reported about the research approach and a uniform measurement point after intervention (i.e., measurement immediately after the intervention), as it was not considered correct to compare effect sizes of retention tests when the intervals between intervention and test varied. Of 7,700 primary hits (2,000 of which in German language), 54 met these criteria and were included in the evaluation. Studies in which electronic means of content delivery were categorized as “e-learning” in comparisons of distance learning to classroom instruction did not automatically qualify as “multimedia”. Only studies in which multimedia design specification clearly indicated added functionalities beyond delivery of text and images were coded and analyzed in depth.

In a preliminary triage, an eligibility threshold of 20 subjects per treatment group was used (in some studies in which subjects served as their own controls, 20 participants was the threshold for inclusion). It emerged that a large number of trials, although including 30 or more individuals, had treatment groups as few as 14 individuals. The threshold for inclusion was therefore lowered to 15 per group.

Table 1 lists the majority of coded variables. For the definition of variables to control for confounders, gratitude is owed to the thorough and detailed methodology published by Waxman et al. (2002, 2003). Full list of coded variables is available from the author.

**Table 1: Abbreviated list of coded variables.**

It shows coded variables loosely grouped into bibliographical (A), methodological (B), content (C) and quality detail (D). Variables in bold print are discussed in the text. Calendrical and organizational variables, e.g. dates and numbering of studies/comparisons, are not listed here.
A categorical model of fixed effects was employed (Rustenbach, 2003). For analysis, SPSS release 20.0 was used. As dependent variable, quantitative measures for learning success were extracted. As far as indicated in the primary literature, note was taken whether or not the raw data had been tested for distribution and appropriate parametric or non-parametric tests applied in the original analysis (Table 1, variables B.8-B.10). Only cognitive end points measured through objective instruments described in sufficient detail were considered. Cognitive end points were further classified according to the domain of knowledge best characterizing the learning content (Table 1, variables C.6-C.11). The classification differentiated knowledge from the declarative, procedural or metacognitive domains (Table 2 shows a detailed breakdown of variables C.6-C.11).

Table 2: Coding of domains of knowledge. It shows coding of variables C.6-C.11. Variable C.12 categorized studies with any “Yes” for knowledge domain subcategories; studies assessing >1 kinds of knowledge were categorized as “predominately” for the salient knowledge domain.

Our meta-analysis includes 54 primary studies published between 2000 and 2012. Statistical methods employed constitute the current state-of-the-art as reviewed by Cooper & Hedges (2009), Hunter & Schmidt (2004) and Schulze (2007). The general model of integration and the categorical model of fixed effects were used sequentially. Bonferroni’s correction was used to test for significances. 21 studies reported >1 effect size. For the general model, these were consolidated as a single arithmetic mean per study. For all variables except C.6-C.11, \( n = 54 \). Independent effect sizes from 21 studies reporting >1 comparisons were retained if, immediately after the intervention, >1 test was administered. Some but not all of these studies clearly addressed >1 category of knowledge, e.g. where a multiple-choice test was administered to measure declarative knowledge and a practical exercise graded to measure procedural knowledge. Variable C.12 unequivocally categorized a study as “declarative” or “procedural” if clearly no other than declarative (or, as the case may be, procedural) knowledge was transmitted. Equivocal cases were categorized according to the main domain of knowledge addressed. No study addressed metacognitive knowledge on its own. Studies were either declarative (\( n = 18 \)), procedural (\( n = 27 \)) or mixed (\( n = 9 \)).

A major effort was undertaken to thoroughly classify different forms of multimedia learning materials and the traditional learning techniques or materials used in control groups (e.g. printed material, lectures with blackboard, “mock” teaching material irrelevant to the test or no
instruction at all). Moreover, it was carefully differentiated whether primary research investigated multimedia materials as a substitute for traditional means of education (“pure”) or in a supplementary way (“blended”). Taken together, these approaches yield a differentiated assessment of the effectiveness of multimedia-supported teaching methods as compared to traditional teaching methods.

The intercoder reliability coefficient $\kappa$ was 86%. Effect sizes are given as Hedges’ $g$. For effect size and continuous values underlying Variable D.10, Pearson’s coefficient of correlation is indicated as $r$.

**Findings**

The weighted mean effect size of the 54 primary studies was $g = 0.2$. Ten explanatory variables were identified in univariate analysis: one indicator of quality (B.7), six descriptors for Format & Content (C.1, C.2, C.3, C.4, C.5, C.12) and three for possible confounders or other sources for invalidity of studies (D.1, D.5, D.10).

Variable B.7: Measurement of learning success (methods) – Effect size (ES, “g”) averaged 0.41 where assessment was based upon a combination of methods ($n = 14$); this was significantly higher than studies using multiple-choice questions ($n = 24$, $g = 0.12$) or a case study ($n = 6$, $g = 0.06$).

Variable C.1: Format of learning material – Effect sizes according to format of the multimedia-based learning material varied from $g = 0.03$ to $g = 0.58$. Table 3 shows univariate effect sizes for different multimedia formats.

**Table 3: Univariate effect sizes for different multimedia formats**

<table>
<thead>
<tr>
<th>Format</th>
<th>$n$</th>
<th>$g$</th>
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<tbody>
<tr>
<td>Tutorial</td>
<td>11</td>
<td>0.03</td>
</tr>
<tr>
<td>Hypermedia</td>
<td>12</td>
<td>0.46</td>
</tr>
<tr>
<td>Drill &amp; Practice</td>
<td>14</td>
<td>0.2</td>
</tr>
<tr>
<td>Simulation</td>
<td>12</td>
<td>0.6</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Use of linear tutorials resulted in an effect size of $g = 0.03$ ($n = 11$), use of hypermedial, non-linear content $g = 0.46$ ($n = 12$; $p<0.001$ versus linear tutorial). Drill & Practice and simulations had comparable effect sizes of $g = 0.2$ ($n = 14$) for the former and $g = 0.16$ ($n = 12$) for the latter. While top-line results for media format do not differ apart from hypermedia outperforming linear tutorials, results diverge more when taking into account how formats were applied to different learning objectives as will be seen in Table 4.

**Table 4: Univariate effect sizes for different comparators**

<table>
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<tr>
<th>Comparator</th>
<th>$n$</th>
<th>$g$</th>
</tr>
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<tbody>
<tr>
<td>No intervention (“mock control”)</td>
<td>5</td>
<td>0.93</td>
</tr>
<tr>
<td>Lecture</td>
<td>24</td>
<td>0.11</td>
</tr>
<tr>
<td>Print material</td>
<td>20</td>
<td>0.18</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Variable C.2: Data shown in Table 4 are effect sizes for multimedia teaching materials of all formats versus no intervention, lectures, print material and others (web-delivered text only or linear content). It is evident that comparisons to no intervention – i.e. trials in which the control group was not exposed to the content assessed in the test – distort average effect sizes unless segregated.

**Figure 1:** Bivariate analysis of teaching formats – variables C.1/C.2. Data are effect sizes for multimedia teaching materials versus lectures (blue columns) or printed material (red columns). Numbers in parentheses represent original research articles.
Figure 1 shows two-dimensional differentiation of the media format effect sizes by comparator. Whereas effect size for tutorials in direct comparison with lectures was $d = 0.01$, hypermedia performed significantly better against lectures ($d = 0.77$, $p < 0.0001$). No such difference was detected in comparison of tutorials or hypermedia against printed material. When compared with “no intervention”, i.e. groups not exposed to teaching material on the subject, effect sizes of media formats ranged from 0.25-1.4 (data not shown). Other informative variables included Variable C.3, the Degree of Interactivity, $g = 0.28$ for studies with “interactive” multimedia ($n = 35$) versus $g = 0.12$ for studies not explicitly describing multimedia as interactive ($n = 17$); Variable C.4, Navigation, effect size averaged 0.32 for studies in which learners navigated (“learner control”, $n = 37$) versus $g = 0.02$ if the program was reportedly in control ($n = 6$) and $g = 0.18$ when the tutor navigated ($n = 2$); and Variable C.5, Exposure, for blended teaching $g = 0.87$ ($n = 12$), for pure multimedia teaching $g = 0.12$ ($n = 42$). With a large difference of effect sizes for blended versus pure multimedia teaching, this univariate analysis of multimedia teaching material raised the concern that studies of blended learning are susceptible to confounding by time on task since none of these studies specified the additional time students spent in blended learning; e.g., blended learning appeared more effective in different categories of Variable C.12, Domain of knowledge. Not surprisingly in the light of aforementioned, bivariate analysis for variables C.5 and C.12 showed effect sizes larger for both declarative and procedural knowledge when web-based instruction was administered as a supplement to classroom instruction rather than as a substitute (Figure 2).

Figure 2: Bivariate analysis of implementation – variable C.5 – and domain of knowledge – variable C.12. Columns show $g$ for multimedia teaching materials versus lectures (left-hand columns) or printed material (right-hand columns). Studies in which multimedia was deployed as supplement to traditional materials are omitted. Top row shows effect sizes for transfer of declarative knowledge, bottom row shows effect sizes for transfer procedural knowledge. $N =$ single digit per cell for all data shown.

When we checked whether multimedia formats performed differently depending upon the domain of knowledge transferred, studies using media as a supplement were excluded in order to avoid potential distortion due to prolonged exposure of experimental groups to teaching materials. Results for declarative and procedural knowledge are shown in Figure 3, differentiating the comparators “lectures” and “print materials”.

Figure 3: Trivariate analysis of variables C.1, C.2 and domain of knowledge – variable C.12. Columns show $g$ for multimedia teaching materials versus lectures (left-hand columns) or printed material (right-hand columns). Studies in which multimedia was deployed as supplement to traditional materials are omitted. Top row shows effect sizes for transfer of declarative knowledge, bottom row shows effect sizes for transfer procedural knowledge. $N =$ single digit per cell for all data shown.

Significance levels for comparisons of multimedia formats depending upon the domain of knowledge transferred, with
studies using media as a supplement excluded for the same reason as in Figure 3, are listed in Table 5.

**Table 5** shows, in a matrix format, probability of error rates for group comparisons of variables C.1, media format, and C.12, domain of knowledge.

Figure 4 summarizes the explanatory variables emerging from our meta-analyses, with content-related issues listed on the left above and more technical issues listed on the right below.

**Figure 4:** Explanatory variables emerging from our meta-analysis; variables on left-hand side are content related, on the right hand technical issues.

Variable D.1: Robustness of research design – g = 0.09 for post-test group comparisons designed and g = 0.06 for gain (gain treatment group minus gain control group) in studies with longitudinal design (n = 29) compared with average g = 0.6 for studies comparing only post-test assessments (n = 21).

Variable D.5: Instrumentation – Five studies with weaknesses in instrumentation reported significantly higher effect size than the bulk of 49 studies’ g of 0.18.

Variable D.10: Statistical Power – study size and g were negatively correlated with r = -0.16. In 22 studies with 15-30 participants per group, g = 0.49. In 20 studies with 31-60 participants per group, g = 0.19. In 12 studies with >60 participants per group, g = 0.08.

**Research question 1:**
Univariate analysis of comparator categorization as print or lecture did not explain variance in comparison with multimedia materials of any sorts although both were, not unexpectedly, different from comparison of multimedia materials with mock controls. Figure 1, a bivariate matrix of multimedia formats and traditional teaching formats, illustrates that hypermedia but not multimedia tutorials differed from teaching delivered by lecture. Thus,
categorization of comparators into lectures, printed material enhances explanation of variance only when differentiating both experimental and control treatments by format.

**Research question 2:**
The large difference in effect size of blended teaching compared with pure multimedia is not interpretable as long as time on task is not detailed for all groups. Time efficiency would need to be assessed in order to draw valid conclusions. In our sample, not a single primary study reporting on supplementary use of multimedia provided data in enough detail to assess total instruction time of the experimental group (e.g., duration of lectures plus time on task in web-based environment).

**Research question 3:**
Categorizing the domain of knowledge transferred explains variance ineffectiveness of learning using multimedia, e.g. tutorials do not seem to be effective in teaching procedural knowledge.

**Discussion**
The answers provided above to our three research questions are interconnected. Figure 4 shows explanatory variables including three overarching ones, possible confounders or other sources for invalidity of studies (D.1, D.5, D.10), and seven explanatory variables (C.1, C.2, C.3, C.4, C.5, C.12, B.7) relating to the nature of content (domain of knowledge taught), media formats implementation modus chosen to transfer content and the way learning success was measured.

Keywords to this article ought to include “time”, “format” and “practice”. Since they are not self-explanatory, the discussion will dissect them one by one.

Three meta-analyses each reported association of learning effectiveness with “time”. Of note, two authors noted that the association with duration of intervention is, as reported, negative (Kulik & Kulik, 1991; Bayraktar, 2001): the shorter the duration of the course, the greater its effectiveness. Sitzmann et al. (2006), conversely, found a positive moderator effect whereby “the number of days in training was positively and significantly correlated with the declarative knowledge effect sizes (weighted r = 0.33; p<0.5) indicating that Web-based trainees gained more declarative knowledge relative to classroom instruction (CI) as the length of the class increased”.

Some authors, e.g. Sitzmann et al. (2006), subscribe to Clark’s postulate that program type has no intrinsic effect on effectiveness of teaching, as “delivery methods are not decisive for learning”. However, we find that program type is most consistently identified as a moderator variable (Liao 1992, 1998, 1999; Cohen & Dacanay 1994; Bayraktar 2001; Hsu & Sabers 2004).

We believe that simultaneous categorization and analysis of multimedia format, comparator and implementation as well as the type of knowledge transferred is necessary to adequately challenge Clark’s postulate that program type has no intrinsic effect on effectiveness of teaching as delivery methods are not decisive for learning. Presumably, blended teaching allocates content to delivery formats in rational, not random, ways. To our knowledge, only one meta-analysis (Sitzmann et al., 2006) addressed the contribution of web-based instruction to learning effectiveness in blended learning settings. It is not evident in their report, nor was it in primary research included in our meta-analysis, whether in experiments with blended learning, contents of multimedia and conventional were non-overlapping. We assume that adding multimedia to conventional learning materials involves overlap and increases exposure to content, compounding assessment of effectiveness. As suggested by Tamim (2011), further research on blended teaching is warranted to establish a framework for analysis. As regards previous studies of domain of knowledge transferred, Sitzmann et al. (2006) concluded that their “overall results
indicated that WBI was 6% more effective than classroom instruction (CI) for teaching declarative knowledge” while web-based and classroom instruction were equally effective for teaching procedural knowledge. Our results considerably expand on this finding and provide hypotheses for future research.

It has not been possible for us to discern whether added exposure or “time on topic” in blended learning possibly skewed results in the experimental groups’ favor or whether “practice” fully explains higher effect sizes in groups receiving multimedia instruction as an add-on rather than as a replacement of classical instruction. Moreover, Sitzmann’s analysis was hampered by a relative paucity of studies categorized as “procedural”. Recognition of such studies, in our sample, was facilitated when authors of primary literature disclosed that more than one measuring instrument was employed, in which case declarative and procedural learning objectives could in some studies be discerned.

**Limitations**

Abrami et al. (2011) noted that “There is a tendency for researchers to describe the distance education/online learning condition in great detail while characterizing the [control] condition as ‘traditional classroom instruction’, thereby diminishing the opportunity to describe and compare salient study features”. The present study has addressed this limitation by differentiation of non-multimedia comparators. However, a new limitation has emerged since effect sizes comparing multimedia with non-related or “mock” interventions measure a gross learning effect not comparable to differences between modes of delivering the same content.

Our approach did not consistently quantitate levels of interactivity, as primary research included both experimental and semi-experimental settings. In none of the latter (and but part of the former) study settings, interactivity was reported in the dimensions operationalized by Moore (1989) and addressed in research by Abrami et al. (2011).

Another limitation of our own meta-analysis derives from an as such unintended content focus. Two-thirds of the primary studies dealt with medical content, be it in undergraduate courses or continuing medical education. It seems that familiarity with controlled field study designs, the mainstay of medical research, has been a driving force behind the generation of substantial research on media effectiveness in this field. A more technical limitation involves the reconstruction of primary data not included in source publications. In seven studies, mean and variance were calculated from other measures of location or dispersion using standard algorithms. The consequence is that variance may be overestimated, increasing the likelihood of type II errors. In some primary studies, scedasticity (homogeneity) tests pointed to heteroscedasticity at the group level, unexplained residual variation thus contributing to group differences and potential type I errors. This is counteracted by stringent reliance on Bonferroni’s correction tilting the balance to type II errors.
End Notes and References
*  Meta-analyses
**  Primary studies


Holt, R. I., Miklaszewicz, P., Cranston, I. C., Russell-Jones, D., Rees, P. J. & Sonksen, P. H. 2001. 'Computer-assisted learning is an effective way of teaching endocrinology, Clinical Endocrinology, Vol 55 No. 4, pp. 537-542**


Kay, E. J., Silkstone, B. & Worthington, H. V. 2001. ‘Evaluation of computer-aided learning in developing clinical decision-
making skills’, British Dental Journal, Vol 190 No. 10, pp. 554-557**


hypermedia’, Perceptual and Motor Skills, Vol 95 No. 3, pp. 795-805**


Savage, I. & Goodyer, L. 2003. ‘Providing information on metered dose inhaler technique: is multimedia as effective as print?’, Family Practice, Vol 20 No. 5, pp. 552-557**


Shomaker, T. S., Ricks, D. J. & Hale, D. C. 2002. ‘A prospective, randomized controlled study of computer-assisted learning in parasitology’, Academic Medicine, Vol 77 No. 5, pp. 446-449**


Waxman, H. C., Connell, M. L. & Gray, J. 2002(December). ‘A quantitative synthesis of recent research on the effects of teaching and learning with technology on student outcomes’ Retrieved December 12, 2005 from;

http://www.coe.ufl.edu/Courses/eme5054/Foundations/Articles/waxman.pdf*


The Effect of "WhatsApp" Electronic Dialogue Journaling on Improving Writing Vocabulary Word Choice and Voice of EFL Undergraduate Saudi Students

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Abstract
Electronic journaling is a new tool for writing skill improvement. The current study attempts to determine whether WhatsApp electronic journaling as a new application in smart phones has a significant effect on writing vocabulary word choice and voice of undergraduate Saudi students. In this quantitative, quasi-experimental study, data are gathered using a pretest-posttest design using a sample of 30 EFL undergraduate female students in Languages and Translation College at Al Imam Mohammad Ibn Saud Islamic University in Saudi Arabia. A rubric is used to score a writing sample from each student before and after treatment, and significance is measured using Kruskal-Wallis, Friedman, and the Wilcoxon tests. In this action research, Saudi undergraduate English students are required to post their reflective comments on different topics to their group which was created through WhatsApp. The students react well to the discussions through their dialogue journaling. They treat it as if it is play rather than class work; however, at the end of the experiment, the students know more about the writing processes of one another and their use of words is improved. This sense of enjoyment allows for the students to use WhatsApp electronic dialogue journaling as a tool for learning. Results indicate a significant difference between the overall writing scores of the pretest and posttest of the students that journaled. In addition, examination of individual item scores reveals that there are statistically significant improvements in vocabulary word choice and voice as two critically important writing factors. The study can raise a positive social change by helping teachers understand the prospective benefits of WhatsApp electronic dialogue journaling to improve the vocabulary word choice and voice writing skills of their students.

Key Words: WhatsApp, journaling, EFL Saudi students, improving, writing, voice, choice.

Introduction
Writing is a complex activity, and as students enter the workforce, they will be asked to convey ideas and information in a clear manner. This increase in writing importance as well as the eventual writing skill development will allow the students to graduate with a skill that will benefit them for life (Alber-Morgan, et al., 2007).

It is difficult to teach writing without using direct instruction (Walker, et al., 2005). Even with direct instruction, writing requires that students draw on many skills at the same time. The student must write, think and compose, all the while using proper grammar and spelling (Kieft, et al., 2007). Some students are successful writers while others struggle with the written word (Penrod, 2007).

Journaling, using a pencil and paper, has been an approach used by teachers to allow students a place for reflection in order to improve their writing (Dyment &
Many teachers use paper and pencil journaling in their classroom (Dunlap, 2006). This traditional journaling technique includes giving the students a topic and allowing 5 to 10 minutes to write on the topic.

As the Internet has grown, students have access to resources through email and other communications tools like social network sites and apps for smart phones (Fogg, 2010). With the commercial advent of the Internet and new generation of cell phones in the late 2000's, technologies such as BBM BlackBerry Messages and WhatsApp messages have achieved increasing prevalence in societies. These types of messaging technologies are widely used among undergraduate students today (Lenhart, 2007).

From the researcher's teaching experience in one of Saudi Universities this semester, she noticed that many of the female students have abandoned their text messaging plans in favor of WhatsApp since as most of them have smart phones (personal note). WhatsApp is a free messenger application that works across multiple platforms (iPhone, Android, Blackberry, and Windows Phone) (Fogg, 2010). Instead of sending texts via messaging plan, students use WhatsApp to send messages and photos over data plan or WiFi network. In addition, they can also send multimedia messages such as photos, videos, audios…as well through the app.

Between WhatsApp and how many students now have smart phones, the researcher decided to use this app in improving the English Writing skills of Saudi undergraduate students in Languages and Translation College at AlImam University. Through focusing on using WhatsApp application, the researcher believes that this would help the students to become better writers which both parents and students believe is important to their future careers. Magrath (2003) stated that “writing today is not a frill for the few, but an essential skill for the many” .To achieve this goal of increasing writing skills, WhatsApp electronic journaling was examined as a method to help the students develop their writing skills.

The current study was an attempt to discover the effect of WhatsApp electronic dialogue journaling on writing development of Saudi undergraduate students .The findings of this study would help to determine whether this activity should be recommended as an activity that promote improved writing skills as marked in a rubric specifically scoring vocabulary choice, and voice.

**Problem Statement**

Educators have started to notice the new technologies and explore their effects on student behavior and performance. While there is supporting evidence to suggest that these technologies have a large influence on the social development of adolescents, an even more pertinent issue for classroom teachers is what effects these technologies have on the academic development of young people (Fogg, 2010).

As the researcher is a university professor at one of Saudi universities, she noticed that more and more undergraduate students are using smart phones and WhatsApp applications in their writings in Saudi Arabia. The researcher felt that there was a need for a study on the effects of WhatsApp electronic journaling on students’ writing achievement to find out if it would improve the writing skills of undergraduate students in Saudi Arabia. In this research, the researcher examined how EFL undergraduate Saudi students' use of WhatsApp technical applications in English dialogue journals improves their writing vocabulary, word choice and voice.

**Research Question**

The current research attempted to answer the following question:
For students that use WhatsApp electronic journaling, is there a significant difference
between the pretest and posttest scores on the development of two specific writing skills: vocabulary word choice and voice?

**Significance of the Study**

This study brings to light the use of smart mobile phones and applications on these phones such as WhatsApp for tasks like journaling and their effect on writing skills development in an educational setting. The study looks specifically at female Saudi undergraduate English students. It also looks at writing skills as evidenced by a modified rubric including vocabulary word choice and voice. This is significant because it informs teachers about the use of these tools in education. Teachers have long been using journaling as a tool in writing skill development (Dunlap, 2006).

With the addition of the new technical generation of smart mobile phones, teachers need to be informed about the possible uses of these tools in the classroom. If it is found that journaling has a positive effect on the development of particular writing skills, then the addition of this activity will help students to improve their writing abilities.

This study may have an effect on social change by helping university EFL instructors increase the writing skills of their students. Even more, university instructors need to know if certain writing skills can be enhanced by using WhatsApp electronic journals for undergraduate students.

**Literature Review**

This review of literature begins with a short history of writing and journaling, and their impact on the writing process. It will continue with the review of the theoretical framework of Siemens’s (2005) connectivism and research on electronic journaling as a tool that may help students become better writers.

In the beginning of the 20th century, writing became a phenomenon that needed to be measured. The measurement was not on the content of the writing but on the handwriting that produced it (Yancey, 2009). As people become skilled at word processing, handwriting is evolving out of the picture. The use of computers is slowly replacing writing as the main mode of communications (Ardilla, 2004).

With the invention of computers, the options are different than when writing was first taught. Both journaling and sending messages through emails or mobile devices are used to communicate with the written word. Journaling has been used in different formats since the Greek and Roman rhetorical education (Autrey, 1987). Rohman (1965) published and recommended journaling as a tool for the prewriting process. He found that students found the journal the most useful of any tools that were allowed. Rohman gave the students the choice of keeping a journal, practicing mediation, or composing an analogy. Journaling was viewed as successful because the students were pleased that the journal helped them to develop voice.

As people become skilled at word processing, handwriting is devolving out of the picture. The use of computers and mobile phones are slowly replacing handwriting as the main mode of communications (Ardilla, 2004). Online bulletin boards and chat rooms, email, text messages, and chatting apps are all means of composing and communicating written messages while on a computer and smart phone rather than using pencil and paper. This allows people to compose and also to participate as an audience.

Yancey (2009) stated that the 21st century will be known as a new era in writing where people who compose are not necessarily taught through formal instruction, but rather they will use a process called co-apprenticeship in which the students write authentic texts and are evaluated by peers rather than instructors. This is the essence of WhatsApp electronic journaling.

Actually, Lenhart (2007) emphasized the previous idea in his report "the Internet and
Teens”. He claimed that teenagers appreciate the ability to revise and edit more easily on a computer and a smartphone than with paper and pencil, but they see no correlation between using a computer or a smartphone and the quality of their composition writing. This is the concern of the educators who are encouraging the use of technology in their students’ learning. It is essential to care about quality as well as quantity in the written pieces.

To add, Dearstyne (2011) indicated that smartphone applications can spark creativity as they appeal to the next generation. Moreover, WhatsApp can be useful for communicating. It is a community building tool for students who might be physically isolated for some other reason.

In addition, Yancey (2009) suggested that the study of writing needs to be restored in three steps. First, teachers should use newer technologies to increase writing skills. The second step is to design a new model for a writing curriculum. The last step includes creating new models for teaching that allow the students to communicate using all available technologies both inside and outside the traditional classroom. This is the spirit of teaching development either in writing or other language skills.

On the same hand; Penrod (2007), emphasized that smartphone apps allow for a dialogue between reader and writer. They also encourage a community to be built between the readers and the writer. WhatsApp journaling is a way to communicate to an authentic audience. Furthermore, as students are journaling, they learn from writing about issues as well as from the people who respond to their messages. WhatsApp provides a fresh insight that will help to foster knowledge and information sharing. Journaling is a culminating writing activity after reading or making a decision about any topic (Lenhart, 2007). He said that the process reflects lifelong learning and that electronic journaling reflects the way that people who are not in school learn.

Ramaswami (2009) conducted a study to see if electronic journaling could improve writing skills as a result of writing more frequently. Using five teachers, the study looked at technology and its effect on student achievement. The students used the electronic journal while working to elaborate the arguments for the paper. The results showed that the students who used electronic journaling felt better about their writing and 74% of the students believed that journaling helped them to articulate their ideas better.

Working with community college students and faculty, Glass & Spiegelman (2010) created a phone course group that allowed the students to converse via telephone with one another as well as the instructors. The course group that they established allowed the students to become experts in one aspect of the course. The group was used at one point to generate a spontaneous discussion. Using the phone group allowed the students a place to communicate with each other in a place other than the classroom. After observing the students for an entire year it was found that students preferred the phone course group to individual discussions mostly because of the communications aspect of the course group. The researchers found that the phone course group allowed the students to be more actively involved in the learning process.

In a case study, Siemens (2009) found that students who were journaling in English felt more confident using the language in writing. Using a pilot study approach, the 16 students enrolled in intermediate college-level English participated in two different electronic journals, a personal one, and a community one. The community journal was led by the instructor for 3 weeks and then the students took turns leading the discussion. Data from this survey confirmed the writers find communicating through cyberspace more motivating than traditional writing with paper and a pencil. The number of words that the students wrote was higher than what was required of them. The
students commented that the stress was less when writing in an electronic journal than in a traditional writing assignment.

In an English classroom, Kajder & Bull (2004), worked with a teacher who decided to use electronic journaling in her classroom as a personal journal for students. Students wrote more in the electronic journal than they wrote when they used a paper and pencil journal. They enjoyed the speed and ease of typing.

As a final point, after reading and revising the related literature, the researcher concluded that there were a lot of previous studies which explored the utility of using the dialogue journal in the writing teaching process. One of them was on using the electronic dialogue journaling through using the computer. However, the previous studies dealt with teaching writing as a whole skill without focusing on the separate skills of writing such as vocabulary word choice and voice.

In addition, in the previous studies the dialogue journaling was conducted either through electronic mails (e-mails) which need a computer and internet access, or a paper and pencil, while the present study was conducted through an easy access, free application which is used easily in students’ everyday life. WhatsApp is one of the most popular social media’s applications in Saudi Arabia (personal observation). Accordingly, the researcher realized that there was a shortage in studies which investigated the effect of electronic applications, that are widely used nowadays through the new generation of smart phones in the World in general and in the Arab World in particular, especially in teaching English Writing.

Eventually, based on the findings and recommendations of the previous researches, the researcher attempted to find out the effect of WhatsApp electronic journaling on improving the vocabulary word choice and voice writing skills of Saudi undergraduate students at Al Imam University. The results of the current study may serve as an evidence of the effectiveness of new chat applications in smart phones as teaching and learning tools.

**Theoretical Foundation**

Siemens (2006) is the author of a learning theory called connectivism. According to Siemens, when students use digital tools to connect, students are able to “reflect on dialogue about, and internalize content in order to learn.” This connection helped students develop the ability to create new knowledge at any point in time. Technology allowed for students to connect to each other.

On the other hand, journals were not used for connecting in the same pattern although Siemens did highlight the ability to organize knowledge as a characteristic of connectivism. Using a journal to reflect, internalize, and process knowledge allowed the student to progress to the personalization stage in the Knowledge Flow Cycle (Siemens, 2006). Journaling, as a method of writing, allowed different means of connecting which allowed the students to collaborate and learn from each other. Learning and knowledge are related to the connections between people with digital resources (Siemens, 2005).

Connectivism is the theory that acknowledges that learning is no longer an individual activity, but rather a process that allows for students to flourish in the digital era (Siemens, 2005). (Siemens & Tittenberger, 2009) also offers that the capacity to connect to others and form networks will become more important as the influx of information continues to increase.

**Methodology**

This study was conducted in the Translation and Languages College in a female branch of an Islamic University with a population of more than 2000 students in the capital city of Saudi Arabia. English undergraduate students are studying writing skills in the eight levels of their study at university.
They started at a basic writing level and proceeded to writing a research paper. The Faculty uses high quality writing textbooks from Oxford University Press (Oshima; Alice et al., 2006). At the time of the study, there were twenty English Ph.D and MA holders comprising the faculty who taught writing skills in the college. Students were divided into ten different writing sections with each class having approximately 30 students each.

In this quantitative, quasi-experimental study, one English writing class (level five) was chosen randomly to electronically journal daily for a six-week period of time for a total of 30 entries using the WhatsApp application. No feedback was given on the journaling. The study was quantitative because the scores of the students on the rubric that was used to score their writing were compared (See Appendix, A). It was quasi-experimental because a computer assigned the students, but they are all English undergraduate students, so placement was not entirely random. Pretest and posttest measures of scores on writing topics were collected and assessed by two English teachers that do not teach these undergraduate English students, using a rubric developed by Read Write Think and the National Council of Teachers of English.

A writing topic was assigned to the students on the first day of the study. This topic was scored using the rubric. At the end of six weeks, the students wrote again using another writing topic and it was scored using the same rubric by the same two teachers. The rubric contained the categories organization, content vocabulary/word choice, voice, sentence fluency, and conventions. The researcher modified it to measure the vocabulary word choice and voice only. The scores of the two evaluators were used as a benchmark for the final writing assessment. Additionally, each section of the rubric was scored separately so that the researcher could determine if any of the writing skills had improved. The scores and the data from the rubric allowed the researcher to determine whether or not the scores had improved since the students began WhatsApp journaling using a Wilcoxon test and a Friedman’s test comparing mean ranks.

Since the study included groups that were nonequivalent, the use of a pretest and a posttest made the quasi-experimental approach valid. Using both a beginning test and an ending test allowed the researcher to look at the difference in scores based on each individual (Gribbons & Herman, 1997).

**Data Collection and Analysis**

On the first day of the study, the students spent 45 minutes responding to a writing prompt. The researcher coded the papers based on which class they were in. This group of papers was given to two teachers to score using the rubric. During each school day thereafter for six weeks, the students journaled using WhatsApp to respond to a daily prompt. No feedback was provided on the journals until after the study was complete. On the final day of the study, the students spent 45 minutes to respond to a second writing prompt.

The research question was scored using a writing rubric that has six different scale criteria from 1 to 6. These scores were added so that there was a potential total score of 36 on the rubric. The scores were compared by subgroup as well as by specific writing skill. They were analyzed using a Kruskal Wallis test which is most commonly used when there is one nominal variable and one measurement variable, and the measurement variable does not meet the normality assumption of an ANOVA (McDonald, 2009). The two different categories scored on the rubric were compared using a Friedman’s analysis of mean ranks which is an appropriate alternate statistical aid when looking at multiple analyses and possible interaction (MacFarland, 1998), and a Wilcoxon test on vocabulary word choice and voice. Each of
these skills was given a score of 1 to 6 depending on how well the students performed on each one. Each subgroup was analyzed separately by running a Kruskal Wallis test to determine if the treatment had a significant effect on each subgroup. Each skill was examined by treatment group using the Friedman’s analysis of mean ranks and the Wilcoxon test to see if WhatsApp journaling had an effect on the development of specific writing skills.

Results and Discussion

The purpose of this study was to discover the effect of WhatsApp electronic dialogue journaling on writing development as marked in a rubric specifically scoring vocabulary word choice and voice. Improving voice and choice are important skills that teachers need to work to improve. This study showed that these writing skills benefited from WhatsApp electronic dialogue journaling. In regards to the research question, the Friedman test revealed that the mean of the vocabulary choice section reached 2.59 in the journalese group. The Wilcoxon test revealed that voice improved significantly (p = .030).

This improvement could signal teachers to allow those students who are having a problem with vocabulary word choice and/or voice in their writing to use WhatsApp journaling. The results signify that writing in a journal for an extended period of time may foster growth in these writing skills.

When looking at the treatment of WhatsApp electronic journaling, the mean ranks of the posttest scores show journalese to have a higher mean score than the pretest. This indicated that WhatsApp electronic journaling showed significant improvement towards writing, suggesting the task would be a good option to improve writing scores. The results of this study are important to helping university English instructors find new and updated methods that are using the new technology to assist students in improving writing skills which are needed later on in life. This would indicate that teachers need to use any means available to develop this skill. Since journaling is a viable method, teachers should use this method to help improve writing skills that will help the students as they get a job.

Since WhatsApp electronic journaling is an online activity and there is a possibility of a public audience in the group, it was proposed by the connectivism theory that the students may be concerned with the possibility of people being able to view their finished product and consequently might write more productively for an audience. Journaling was a factor in improving writing scores in a research study conducted by Ramaswami (2009). In addition, a class electronic journal in a college classroom was a factor in allowing students to communicate to each other outside of the normal classroom (Glass & Spiegelman, 2008).

Kajder & Bull (2004) researched an undergraduate class and found that students wrote more when they were using a computer for their electronic journaling instead of a paper and pencil journal. The sample group used the WhatsApp electronic journaling to write responses in this study showed a significant improvement in their writing skills.

Journaling has been considered to be a tried and true method for helping students to develop their voice (Rohman, 1965). Hubbs & Brand (2005) found that students moved toward a level of contemplation with journaling. This was reliable with the results of this study since voice was one of the two writing traits that showed significant improvement for journalese.

To conclude; the current study exposes that WhatsApp electronic journaling shows a significant improvement of writing skills, especially concerning the voice and vocabulary word choice. The research from this study allows the university EFL instructors of writing to understand the
implications of using WhatsApp electronic dialogue journaling as a tool to teach writing. Therefore, it can be used to teach writing. In addition, the research revealed that voice and vocabulary choice can be improved with the addition of WhatsApp journaling to the writing activities that are already used in the writing class.

**Implications for Future Research**

In light of the results of this study, university EFL instructors need to be aware that WhatsApp electronic dialogue journaling methodology could be an effective method of helping their students to improve their writing scores. English language instructors in Saudi Arabia need to be made aware of the implications of this study because it will give them options in teaching their students to write.

Moreover, the results of this research have several implications for future studies, as this was a short term study, there is a need for a longitudinal study looking at the development of writing skills over a longer period of time, following students for at least one year. A final recommendation for future study should be conducted on Saudi students' perception of using smart phones' social applications in English Language learning.
References


Fogg, P. 2010. ‘The 24-7 professor—what to do when home is just another word for the office’, Chronicle of Higher Education, vol. 54 (21), B12


Appendix A

Writing Rubric
Word Choice and Author's Voice

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocabulary/Word Choice</td>
<td>Does not meet</td>
<td>Partially Meets</td>
<td>Does Not Fully Meet</td>
<td>Meets</td>
<td>More Than Meets</td>
<td>Exceeds</td>
</tr>
<tr>
<td>Careless or inaccurate word choice, which obscures meaning</td>
<td>Language is trite, vague or flat</td>
<td>Shows some use of varied word choice</td>
<td>Uses a variety of word choice to make writing interesting</td>
<td>Purposeful use of word choice</td>
<td>Effective and engaging use of word choice</td>
<td></td>
</tr>
</tbody>
</table>

| Author's Voice | Writer’s voice/ point of view shows no sense of audience | Writer’s voice/point of view shows little sense of audience | Writer’s voice/point of view shows that sense of audience is vague | Writer uses voice/point of view. Writes with the understanding of a specific audience | Writer has strong voice/point of view. Writing engages the audience. | Writes with a distinct, unique voice/point of view. Writing is skillfully adapted to the audience |

Available at: http://www.readwritethink.org/lesson_images/lesson782/Rubric.pdf
An eLearning System for Numerical Methods

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Abstract

To enrich the teaching and learning of a module called, Numerical Methods for Engineering, an eLearning system has been devised using the computer algebra system, Mathematica. The system enables students to practice and study short exercises, homework tasks and major assignments, and, complete and submit them for assessment electronically within the Mathematica package. Use is also made of the course management system, Moodle.

Keywords: eLearning; Mathematica; computer algebra systems; partial differential equations; numerical methods.

Introduction

In the context of this paper, eLearning, short for electronic learning, which is a broad concept, refers to the enhancement of traditional forms of teaching and learning by use of computer online learning. Arguably, the two most powerful and widely used computer algebra systems are Mathematica and Maple (Blyth and Labovic, 2009), with the former system used in the present work. For the electronic learning, all reviews of traditional seminars/lectures, auxiliary learning materials (e.g. worked examples), short exercises, homework materials and assignment materials are Mathematica files, and, the web management system, Moodle is used as the conduit.

Why use eLearning? Much has been written in the literature concerning the advantages and disadvantages of eLearning (Cantoni, Cellario and Porta, 2004; Singh, O'Donoghue and Worton, 2005). Some of the advantages claimed are: self-pacing learning modules allow students to work at a rate which suits them best; there is the flexibility to join discussions on bulletin boards; more interaction is fostered among students and instructors; computer skills are developed; and, self-knowledge, self-confidence and responsibility for personal learning are encouraged and developed. However, disadvantages must not be forgotten, especially: learners with low motivation or bad study habits may fall behind; without the routine structures of a traditional class, students may become isolated from the instructor and classmates. One of the specific advantages of using eLearning for teaching and learning Numerical Methods for Engineering is its flexibility regarding student study time. Many applications found in the course are reasonably long, in that: the student has to grasp theory, both engineering and numerical in nature; the student is required to convert sometimes quite difficult partial differential equations into a discretized form suitable for solving using a given numerical method; the student has to write computer code which will carry out the calculations; the student has to have the skills to display results in a meaningful and appropriate way; and finally, the student has to critically assess the outcomes of all these endeavours and write a report. Obviously, this can all take a considerable amount of time, possibly over the course of a few days. Therefore, allowing students the freedom to manage time for their own activities, and importantly to reflect and explore, is one of the priorities to a successful outcome.
The module in which eLearning is used here is at the undergraduate third-year level, and it is a mixture of theory, solutions to pseudo-engineering problems obtained using the traditional pen, paper and calculator method, and solutions obtained with the help of a computer algebra system. It is in this latter section of the course where eLearning is incorporated. The students already have had a basic grounding in the use of Mathematica during two previous modules, namely, Engineering Mathematics during their first year of studies and Vector Calculus during their second year of studies. Also, as they are in the penultimate year of their degree course, they have by then taken many engineering modules, some of which are relevant here, such as fluid mechanics, thermodynamics, strength of materials and dynamics of machines.

**Numerical Methods for Engineering**

The course is targeted at advanced students of engineering, with a cohort size of usually around 150 students, and the student majors are either, mechanical engineering, civil engineering, chemical engineering or electrical engineering. The aim is to make participants familiar with general/common numerical methods used (although increasingly hidden in commercial software) in professional engineering practice today, and with problem solving techniques which can then be applied to problems within their engineering modules and, to some extent, to selected ‘real-engineering’ problems often encountered in their fourth-year capstone projects. Many of the solutions involve the use of Mathematica after a strong grounding is given on mathematical solving strategies. The choice of a given numerical method is influenced by what may be found in current professional engineering practice.

On completion of the module, the students are expected to have an understanding of:

- What a numerical method is;
- Understanding the reasons for using numerical methods;
- How numerical methods can be applied correctly to various areas of approximate mathematics;
- How numerical methods can be applied to the solution of ordinary differential equations (ODEs) and partial differential equations (PDEs); and,
- How to use a computer algebra system, in particular, Mathematica, to find solutions to more complicated problems.

The synopsis for the module is given in Table 1.

<table>
<thead>
<tr>
<th>Topics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iterative solutions</td>
<td>(Point) Jacobi, (Point) Gauss-Seidel, (Point) Relaxation</td>
</tr>
<tr>
<td>Interpolation</td>
<td>Linear, Lagrange, Newton-Forward, Chebyshev roots, Hermite</td>
</tr>
<tr>
<td>Non-linear equations</td>
<td>Bi-section, Newton-Raphson</td>
</tr>
<tr>
<td>Numerical differentiation</td>
<td>Forward-difference, Backward-difference, Central-difference</td>
</tr>
<tr>
<td>Initial and Boundary Value</td>
<td>Euler method, Runge-Kutta method, Multi-step method, Dirichlet</td>
</tr>
<tr>
<td>Problems</td>
<td>boundary condition, Neumann boundary condition, Transient diffusion</td>
</tr>
<tr>
<td>Numerical integration</td>
<td>Trapezium rule, Rhomberg integration, Simpson’s 1/3 rule, Newton</td>
</tr>
<tr>
<td>Discretization</td>
<td>Cotes, Gauss quadrature</td>
</tr>
<tr>
<td>PDEs</td>
<td>Closed boundary case, Linear advection equation</td>
</tr>
<tr>
<td>Green’s functions</td>
<td>Wave equation, Heat equation, Fluid Flow equations</td>
</tr>
<tr>
<td></td>
<td>Step functions, Wave equation, Transverse beam vibrations</td>
</tr>
</tbody>
</table>
eLearning System Structure

The eLearning system is centred on Mathematica in that all files (lecture notes, additional learning materials, databases, computer codes, reports, etc.) could be written concisely using Mathematica notebook (.nb) files. The number of pool licences used is 75 although more than 50% of the students felt they should buy their personal student copies.

The eLearning system was designed while keeping in mind the expected audience, page design, and usability (Vai and Soluski, 2011) as well as its interconnection with the traditional existing course. Regarding audience, the learning abilities of the students as well as their knowledge of prerequisite modules was taken into account. Also, thought was given as to where the students would learn and ensuring they had access to computers when required. Many students decided to buy their own copy of Mathematica and load it on their laptops hence increasing flexibility of use. For now, most of the teaching material is limited to written material, although gradually a set of videos is being added to the system in which students can revisit lectures and worked examples on demand. Last, but not least, the instructor keeps a careful record of each student’s progress watching carefully for those students falling behind or even failing.

For page design, Moodle makes it easy to navigate from one learning material to the next. Consistency was used regarding fonts and layouts to help avoid frustration and make the scanning of information easier. The concepts and topics were organized to help the learner find key facts quickly and assist in comprehending critical topics. So called “chunking of information” was used where small sections of information were isolated to help the students retain the information better. It is known that people can retain large amounts of information if the information is presented in a well organized fashion with the topics segmented (Vai and Soluski, 2011).

As eLearning is in the main a self-study medium, interacting with the learner becomes more important than found in other training forums. The learner has to interact with the content of the course as opposed to the instructor. This content engagement is critical as the learning experience is greatly enhanced when exercises and/or activities are incorporated (Vai and Soluski, 2011). This is exactly what the eLearning system is used for here. There is almost continual active learning when using this eLearning system. Animation, simulations, small quizzes and tests, are all written using Mathematica notebooks. Particularly effective to achieving this goal is the Manipulate, Animate and CreatDialog functions found in Mathematica.

The overall technical system design is shown on Figure 1. Any student or instructor registered for the Numerical Methods for Engineering module can access this system with a simple ID number and password from inside or outside the university. The only requirement is that Mathematica has been loaded on the local computer. It is also recommended, as some of the calculations are computationally heavy, to have a high performance laptop or PC.
How a student interacts when within the eLearning system, is shown on Figure 2. When a student enters the module through Moodle, he/she has access to everything needed to complete a given task.

There is a “Root” system to help the student navigate through the many information files, together with a primitive, but developing “Find” option. Students also have a comprehensive “Help” option, where all Mathematica functions are fully described together with very useful examples. Communication currently is usually by email, chat-line or SMS with the participants fully capable of sending messages to individuals or to groups of other participants in addition to the instructor.

**Example of the use of the eLearning System**

The following demonstrates how a typical student might interact with the information provided and how the computer programming capabilities of the eLearning system contribute to achieving a successful outcome to one of the required assignments. Only the basic outline instructions are given below because of space limitations.

**2D-Driven-Lid Cavity Problem**

This assignment introduces the student to a classical computational fluid dynamics (CFD) case, namely the Driven-Lid Cavity Flow (Bozeman and Dalton, 1973). This flow is commonly used to test, for example, a novel method of discretization of the equations or new computer coding, as the resulting flow is well known.

Consider a square box as shown on Figure 3 where the top (lid) is allowed to move in the horizontal plane from left to right. When the lid is not moving, the fluid in the box is stationary whereas when the lid is moving the fluid circulates inside the box.
Student Task No. 1: Starting with the general three-dimensional incompressible, time-dependent, primitive variables formulation of the Navier-Stokes and continuity equations (Anderson, 1995), reduce these to the two-dimensional form for incompressible steady flow, and non-dimensionalize your resulting equations using,

\[ u \rightarrow u/U_0, \quad v \rightarrow v/U_0, \quad p \rightarrow p/\left( \rho U_0^2 \right), \quad x \rightarrow x/L, \quad y \rightarrow y/L \]

Solution: The student should, with the aid of text books and lecture notes eventually obtain the following equations,

\[ \begin{align*}
    u \frac{\partial u}{\partial x} + v \frac{\partial u}{\partial y} &= -\frac{\partial p}{\partial x} + \left( \frac{1}{Re} \right) \left( \frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} \right) \\
    u \frac{\partial v}{\partial x} + v \frac{\partial v}{\partial y} &= -\frac{\partial p}{\partial y} + \left( \frac{1}{Re} \right) \left( \frac{\partial^2 v}{\partial x^2} + \frac{\partial^2 v}{\partial y^2} \right) \\
    \frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} &= 0
\end{align*} \]

where \( Re \) is called the Reynolds number.

Following the usual procedures of CFD the student is now given five more tasks: generate a suitable mesh in the domain; discretize the partial differential equations (Equations 1); specify suitable boundary conditions; solve the resulting system of algebraic equations; and, display the results.

Student Task No. 2: Generate, using Mathematica, a suitable Cartesian mesh within a unit square 2-D domain and plot your result.

Hint: You will require the Mathematica functions: Flatten, ListPlot, N@Range, PlotRange, AspectRatio.

The student should eventually produce something similar to Figure 4, which is drawn here for only a portion of the complete domain.

Student Task No. 3: Discretize the partial differential equations. This task breaks down into several sub-tasks, the first of which is to assign the velocities and pressures which have to be computed to each of the points in the generated mesh.

Hint: You will require the Mathematica functions: Length, Table. It is also good to keep the convention of naming variables, \( \text{varsU, varsV, varsP} \).

The second sub-task is to find an approximation to the derivatives found in Equation 1. There are many ways to approach this, but perhaps the most convenient is to approximate the derivatives in the finite difference form,

\[ \frac{\partial u}{\partial x}(x_i, y_i) \approx \sum a_{ij} u(x_j, y_j) \quad (2) \]

where the coefficients are obtained using the Taylor series.

Hint: You will require the Mathematica functions:
\( \text{NDsolve`FiniteDifferenceDerivative, opt, DifferenceOrder} \), and make the approximation 4\(^{th}\) order.

The third sub-task is to write the three equations (Equation 1) in terms Mathematica can understand and set a value for the Reynolds number.

Hint: For example, the continuity equation could look something like,

\[ \text{eqnsc} = \text{dfdx.varsU} + \text{dfdy.varsV}; \]
**Student Task No. 4:** Assign suitable boundary conditions to the problem. The first step here is to isolate the mesh points that lie on the boundary and the equation numbers associated with them.

*Hint:* You will require the Mathematica functions: `DeleteDuplicates@`, `Flatten`, `Complement`, `Position`.

The boundary conditions to be applied are listed on Figure 3 as,

\[
\begin{align*}
u(0,y) &= u(1,y) = u(x,0) = 0 \\
u(x,1) &= 1 \\
v(0,y) &= v(1,y) = v(x,0) = v(x,1) = 0
\end{align*}
\]  

The next sub-task is to associate these boundary conditions with the discretized governing equations.

*Hint:* For the top boundary this is done for the \(u\) velocity as,

\[
eqnsU[[\text{topboundary}]] = \text{varsU[[\text{topboundary}]]} - 1;
\]

**Student Task No. 5:** Solve the system of resulting linear equations. To do this the equations have to be combined into one large system of equations leading to \(3n\) equations where \(n\) is the number of grid points. The variables also need to be joined.

*Hint:* You will require the Mathematica functions: `Join`, `Length`.

The system can then be solved using the function, `FindRoot`.

**Student Task No. 6:** The velocities in Task No. 5 have been all computed at discrete points. The first job therefore for visualization of the results is to convert them into a continuous function.

*Hint:* You will require the Mathematica functions: `Partition`, `Interpolation`, `Join`, `Transpose`, `List`.

The contour plot of velocities can now be drawn as shown on Figure 5, as can the velocity vector plot.

*Hint:* You will require the Mathematica functions: `LineIntegralConvolutionPlot`, `VectorPlot`, `StreamPlot`, `StreamStyle`, `LineIntegralConvolutionScale`, `ColorFunction`, `PlotLabel`.

Figure 5. Contour plot of steady-state flow at \(Re = 100\)

To finish this work, the student would then experiment by varying the grid size, seeking a grid independent solution (very important in CFD calculations). Results would also be obtained for different aspect ratios of the container. A report of all the activities, including all computer codes would then be prepared for assessment.

**Discussion**

In the sections above, a brief description of how eLearning has been introduced to enhance the module, Numerical Methods for
Engineering, has been given. There was at the beginning of the eLearning development process, an amount of scepticism and inertia which had to be overcome, probably due to the non-awareness of what eLearning may contribute and a certain reluctance to change what was already working reasonably well. However, it was clear that new technologies and approaches could bring new opportunities and it was on this basis that progress was initially made. Also it was recognized that today’s students respond positively when using technology, that is, they seem more interested and engaged in what they were doing. A third reason, and an important one, was that it was felt that the subject, numerical methods, could no longer be divorced from computer programming. When computer programming is involved, the learning process becomes much more personalized after the initial beginner level, and the question arose as to how to efficiently provide the student with an environment to accommodate the need to explore different ways to achieve a given outcome, and to have time to reflect and research around and beyond an outcome.

It should be mentioned that introducing eLearning was never thought of as the goal to be achieved. Rather it is only another method of reaching the educational goals. The instructor still remains the expert when it comes to achieving educational goals and he/she is the one with the overall experience and knowledge about didactics and therefore the extent to which eLearning is incorporated into the curriculum.

From the experience gained so far, it is thought that the most important practical advantage of using eLearning is its flexibility. The student can learn anywhere and anytime he/she wants, with access through the internet. Another practical advantage is that eLearning, in particular electronic learning environments or learning management systems can improve communication within a course. Messages can be sent directly to any participant’s mobile phone either using the group message or personal message facility.

It also seems from the literature, although not tested for this work, that using eLearning has many didactical advantages. For example, it is claimed (Allen, 2007) that people remember about 10% of what they read, 30% of what they see, 50% of what they hear and see, 70% of what they write and 90 % of what they do. Therefore there is a great advantage in doing and solving, which is exactly what students do here during their eLearning sessions. The student is much more actively involved and in control of the learning pace. There is also the possibility that today’s students may benefit in being able to multi-task when using an eLearning system (Veerman and Kirschner, 2007).

It was recognized that students had to be prepared for eLearning. This was in part instructional on how to use the system but also inspirational in that the students were given information concerning the advantages of eLearning and raised their consciousness regarding letting them see that engaging in this activity could be fun, sometimes easier and definitely educationally rewarding. The system was designed to have meaningful events and relationships to engineering professional life. The exercises, homeworks and assignments were designed with the thought that they should be distinctive and memorable and that the pace of learning was neither overwhelming nor underwhelming. Today’s students, like society in general, have a need for instant gratification. Therefore, the first tasks in the learning process were given special consideration. The learner was carefully told of the context of the task, how it fits into engineering in general, they were given the hint of the challenge and also of the resulting feeling of achievement when finished.

Lastly, there was an attempt to alleviate some of the disadvantages of eLearning listed in the introduction above, in
particular, isolation and the development of bad habits. In an effort to counteract these, meetings, in student groups of not more than 30 in number, were called when thought necessary and not less than one per week. During these informal meetings, which were student centered, every student was encouraged to talk about problems, successes, ways of working, etc. If a problem with a student falling behind arose, a teaching assistant was asked to help rectify any problems.

Conclusions and Further Work
Development of the eLearning system was resource intensive, but during the delivery time of the course it was found that more time could be devoted to weaker students as the more able could cope well due to the enhanced learning environment.

From a practical point of view, the two main advantages were flexibility in the learning system and greater (almost instant) communication between participants and instructors.

So far the inclusion of eLearning has been analysed using practical aspects. It is the intention however, to move to the didactical aspects and investigate if they provide improvements in student learning. Certainly there is a lot of evidence in the literature that sheds a positive light on the eLearning experience.

Another aspect of eLearning is the integration of computer aided assessment. Further work will be carried out in an effort to include assessments with semi-automatic or automatic marking hence speeding up the important feedback aspect of teaching and learning.

Acknowledgement
The authors are grateful to Alan Thomson, IT Support Manager, for his valuable contribution to installation and maintenance of the necessary hardware and software.
References


Electronic Project Simulation in Construction Management Education: eLearning as a Means to Improve Simulation

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Abstract
Managing construction projects effectively is one of the most important engineering skills in construction management. Limitations of traditional and PBL approaches can be overcome by developing and applying an electronic project simulator based on an appropriate theoretical learning framework and construction management specific requirements.

This paper shows the development of an electronic project simulator written in the Java programming language and its results regarding student feedback in an undergraduate engineering program.

The electronic project simulator has been found to increase student motivation, initiative and learning effectiveness. However, distorted simulation of real life by students of different project parties joining forces and a more shallow learning process by requesting answers from classmates, have been identified as disadvantages. Embedding the electronic simulator in an eLearning framework may be considered an effective solution.

Keywords: construction project simulation, electronic learning, Java programming language

Introduction and Background
Social skills of construction managers usually have, not a direct, but a subtle indirect influence on project success. For example, they may influence positively project success through a positive impact on project culture which then increases project success by increased motivation of project team members. The importance of social skills such as communication skills has been shown repeatedly (Ankrah, Proverbs and Debrah, 2009; Toor and Ogunlana, 2009; Odusami, 2002), and separated organizations of different sizes as well as strongly decentralized team structures have been identified as reasons for communication challenges (Ahuja, Yang and Shankar, 2009; Dainty, Briscoe, and Millett, 2001). These challenges may be further complicated if participants come from different cultures as it is typical for many construction projects (Ochieng and Price, 2009).

From the above, social skills are of high importance in construction management and, consequently, this needs to be considered adequately for teaching and learning social skills in construction management units. It has been shown before that human factors such as social and management skills need to be incorporated into engineering curricula and ways to teach them need to be developed (Jaeger and Adair, 2010a; Emilsson and Lilje, 2008; Lehmann, Christensen, Du and Thrane, 2008).

However, the traditional way of utilizing traditional or Project-based Learning (PBL) approaches to facilitate learning of social skills has been identified to have limitations (Spinello and Fischbach, 2004). One limitation is the lack of conflicting interests and flexibility as they are typical in real
world situations. Students have no chance to interact with other individuals than their peers, and they can only rely on the information as presented to them. Another limitation is the method used to present a learning scenario. As opposed to real-world situations, where another party with specific interests stimulates a certain action, students are confronted with a simplified project description. A third limitation results from time and space constraints as the constant changes found in real-world situations are not integrated (Spinello and Fischbach, 2004).

Learning Framework

The above described limitations can be overcome by simulating electronically construction management scenarios which develop dynamically and with a high degree of freedom dependent on students’ interactions. This reflects the dynamics of real world situations which require students to develop information within complex situations and under constant changes. Furthermore, it is desirable that the simulated scenarios require a high degree of pro-activity from the students since this contributes to increased learning effectiveness (Jaeger and Adair, 2010b).

An iterative approach to understanding and processing information from varying perspectives is suggested by cognitive flexibility theory as an approach which improves acquiring complex knowledge (Spiro, Coulson, Feltovich, and Anderson, 1988; Spinello and Fischbach, 2004). This means for electronic project simulation, an iterative communication process can be prompted by causing the receivers to be unsatisfied with the received information and encouraging them to communicate their dissatisfaction to the senders (Jaeger and Adair, 2012).

Incorporating the constructivist-sociocultural approach of understanding learning and education (Kolmos and de Graaff, 2007), this approach can be integrated into a 3-level framework for learning social skills in construction management (Figure 1). The cognitive learning approach (first level) is included by describing a professional situation related to construction management (scenario). Based on the scenario, the student is required to communicate formally and informally with other students (content approach, second level). This involves interdisciplinary learning since the students represent different project parties. The communication process is supported by access to various letter templates and checklists to facilitate the completeness of communicated information. The templates and checklists serve as reference points and problem-solving methods. The social approach (third level) is incorporated in that the sender sets off the iterative communication process with an incomplete communication document which resulted from a checklist which is intentionally incomplete. Consequently and based on a complete checklist, the receiver rejects the communication document and both are exposed to a real world stress situation. After $n$ iterations between sender and receiver, a sufficiently improved and consequently accepted communication document finishes the interaction process.

Figure 1: Theoretical Framework of learning social skills in construction management (Jaeger and Adair, 2012)

The remainder of the paper is structured as follows: Description of the simulator design, analyzing student feedback, followed by the discussion and conclusions.
**Simulator Design -- Scenarios**

The simulator reflects typical construction management situations which are occurring in medium to large construction projects. The four project participants request and produce simultaneously different construction management related documents in different scenarios. The electronic simulator provides a framework by depicting scenarios such as:

“You are working as project manager for a large international bank which decides to build a new office tower in the Gulf region. Your job is to manage this project as the client representative. A construction management firm shall coordinate and manage all necessary activities.”

The scenarios are followed by specific tasks, such as:

“Request for proposal (RfP) from a construction management firm (CM). The checklist below (Prepare RfP) shows the minimum of required information. Your goal is to sign a contract similar to the template in your template database. Send the RfP, attached to an email and accompanied by a cover letter, to the CM. Then click *Send to CM* and wait for a response from the CM. After receiving his response, you might be able to prepare a contract.”

**Simulator Design -- Java Specifics**

The simulator was written using the Java programming language which presents an opportunity for high quality simulations as there exists many already written application-specific classes, that are compatible and reusable simulation components. These object-orientated components can be developed using inexpensive, professional-quality Java development environments.

The developed simulator allows communication between the following four project participants: construction manager, client, main contractor, and subcontractor.

A GUI (Graphical User Interface) was designed for each of the participants, with an example shown on Figure 2. The GUI consisted of Frames, Panels, Buttons, Text Fields and Labels and was fully interactive and user friendly. The four GUIs were networked using a central server where data could be deposited, retrieved and stored for further analysis. The simulator operated in real time.

**Figure 2: Example of Simulator Interface**
Indication that a particular participant had received email was implemented using a simple animation. For this animation, three Java classes were written, one a controller, one to confirm that new mail was present and one to indicate no new mail had arrived. Basically a Java panel contained a Java label, which was allowed to move at random within the panel and “bounce” against its walls. The animation was performed by creating a timer which called an ‘Action Listener’ at fixed intervals and this listener told the label to change coordinates and then repaint the panel.

Finally, included in the simulator was the tracking and recording of responses from the students. Tracking the actions of the students in detail through the session and recording their responses is important because, if the simulator is not recording the actions of the users, then it is not possible to tell what choices are being made, or which resources are being used. The tracking here was done by recording feedback through implementing the Java interface ‘Action Listener’ each time the Java class ‘Action Event’ was called. The details of student responses were recorded by either writing to a text or Microsoft Excel file. To record using text files, aspects of the Java class ‘File Writer’ were incorporated into the program and for Excel, the Java Application Programming Interface (API) (Orenstein 2000), ‘JExcel’ was used to provide classes to create and write data to Excel documents.

**Discussion of Observations and Student Feedback**

Since the learning effectiveness of the simulator has been shown before (Jaeger and Adair, 2012), the focus is now on the observations during interaction with the simulator and on feedback which was received from students during their interaction with the simulator. All students were Civil Engineering students in their fourth semester at a university college in the Middle East, and they used the simulator after they finished approximately 75% of the construction management unit which ensured their familiarity with the subjects and documents included in the simulation.

First, it could be observed that the motivation and interest of students who used the simulator was very high. This was reflected by continuing discussions of students related to the simulated scenarios during breaks. Some students even skipped the break in order to continue working on “their project”. It was also observed that almost all the students were present all of the time and they seemed to work very hard. This confirms earlier finding of Emilsson and Lilje (2008) and can be explained by the higher motivation shown by students who use a simulator approach compared with students who are subject to a traditional teaching procedure.

Secondly, similar to previous findings (Spinello and Fischbach, 2004), it could also be observed that the students were somewhat more stressed. Reasons for stress were delays between the various communication activities (i.e. they had to wait for information from another project party) and some students felt overburdened with the dynamic of iterative communication (i.e. they were frustrated when receiving the information that project parties were not satisfied with their documents). Both observations can be summarized as positive observations since they confirm reflection of reality (stress) and identification with the scenarios (motivation).

However, it could also be observed that students tended to meet their counterpart of another project party in order to join forces and create the requested document together. Although this is developing their personal interaction skills, it is distorting the simulation of real world situations. In general, students did not perceive the other project party as a business partner with opposite interests, but more as a team colleague. Since students are supposed to improve their social skills within the
simulation of real world situations, this disadvantage required a solution. Student feedback was collected by documenting their questions during their interaction with the simulator. In order to encourage students to think first themselves before they ask the lecturer, the lecturer was sitting in the front of the class, but pretended to be occupied with other work. Students’ questions reflected better their immediate problems and perceptions, compared to post-simulations surveys which capture more the general perception and the impression left after finishing the interaction with the simulator. Students’ questions could be grouped into the following question groups:

1) Scenario related questions:
- The client is not responding, what shall I do?
- Is 10 days bid bondage enough?
- Shall I send the contract now?
- Can I call the painter?
- The General Contractor has two site managers, to whom shall I write?
- What belongs to the project description?
- Shall I use names or functions for the Organisational Chart?
- What’s the price for paint?
- Can the painter also do plastering work?
- What’s the project time?
- Why offering a discount for payments?

2) Language related questions:
- What exactly do I need to do?
- What is warranty?
- What is legal status?
- What is a CEO?
- What is a responsibility matrix?
- What is a proposal?

3) Simulator interface related questions:
- What do I need to do when I finished the scenario?

The resulting distribution of questions is shown in Table 1.

<table>
<thead>
<tr>
<th></th>
<th>Scenario related</th>
<th>Language related</th>
<th>Interface related</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>61%</td>
<td>33%</td>
<td>6%</td>
</tr>
</tbody>
</table>

The largest number of questions were scenario related questions. These questions reflected missing construction management experience. Coming from a rote learning background (Webb, 2008), students were quick to ask and were expecting specific answers. Students questions were countered with the question: “How can you find out?” Usually they understood that they either need to carry out some research, or they have to communicate with one of the other project parties involved. However, there was a tendency to consult other students in order to aim at immediate and specific answers, which again distorted the simulation of real world scenarios.

The second largest group of questions, language related questions, reflected that they forgot already some of the terminology learnt earlier, and secondly, the fact that English was their second language. In order to find answers, students preferred to ask another student instead of researching for definitions or translations, resulting in a more shallow learning process.

There was only one simulator interface related question which was answered by the lecturer to the whole class.
Conclusions

Triggered by the importance of learning effectively social skills in construction management, an electronic project simulator has been developed written in the Java programming language. In addition to previously shown improved learning effectiveness, observations as well as students’ questions during their interaction with the simulator showed clearly increased motivation and engagement of students and an improved simulation by adding real world stress. Two disadvantages however were identified. First, distortion of simulation of real life by students of different project parties joining forces, and secondly, a more shallow learning process by aiming at quick answers from fellow class students. An effective solution to these disadvantages seems to be the embedding of the project simulator in an eLearning framework. The electronic project simulator is already equipped towards eLearning, and it can be used by students belonging to different courses and different educational institutions. This forces students more to depend on their own (and perhaps other students acting as colleagues of the same project party), and it also allows improving cross cultural communication skills if students representing other project parties are located in different geographic regions. This incorporates suggestions by Ochieng and Price (2009) who proposed a framework of eight key dimensions for managing multicultural teams. Also, when students are working with other students they are less familiar with, there is a strong motivation to do better work. Further testing is anticipated in order to provide further evidence of the benefits of using an electronic project simulator and also to build similar simulators for other areas.
References


Abstract

Web-based training, mobile learning or e-learning are often used as stand-alone tools with little strategic outline or sustainable focus. They are seen as trendy "must-haves" in corporate education. Often enough they are not embedded in the corporate education and learning management system, as most companies have not established well-structured and systematic learning management processes yet. TÜV SÜD Academy developed a quality model of corporate education and learning management defining quality criteria for the 15 most relevant fields of action. The corresponding questionnaire is used in a German award providing detailed information about the status quo of corporate learning management in German companies. The case study describes the set up of the quality model and publishes first data from the award processes in 2013 and 2014.

Keywords: Corporate learning, learning management, education management, e-learning

Introduction

As the work environment is in a constant state of flux and market requirements are changing dynamically (Baethge u.a. 2004:19ff.; Faulstich 2003:38; Töpper 2012:11), employees that have finished initial training will need continuing education on a regular basis to maintain their level of knowledge, bring it up to date with the state of the art in technology and research, and add new findings and skills (Hof 2009; Büning 2012:13f.). Given this, e-learning must not be seen as an isolated application, but must be integrated into a comprehensive overall framework of a corporate learning management system. "Corporate education and learning covers all targeted measures, instruments and procedures that produce a change in employee performance and behaviour be it by expanding their knowledge and/or by changing their knowledge and attitudes." (translation by the author) In other words, corporate education and learning focuses on all skills and knowledge that contribute directly – or, in an extended consideration, also indirectly – to the employee's workplace performance and that "are primarily aimed at making the workforce fit to master workplace requirements" (translation by the author)

The rationale behind more education and learning is always to support employees in their practical work. By providing training and education, companies safeguard their future survival – investments in corporate education and learning mean investing in human resources. This investment and therefore all corporate learning activities have to contribute to the overall corporate strategy. The general strategic goals of a company are the starting point to define the HR strategy. Within the HR strategy corporate learning will be one major field, worth a specific strategy on its own (Bünger, 2009:25). Today's companies consider learning and education to be critical contributions to the value chain that must be harnessed in an economic context.

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2"Betriebliche Bildung umfasst alle zielgerichteten Maßnahmen, Instrumente und Verfahren, die zu Verhaltensänderungen der Mitarbeiter führen, sei es durch Vermehrung des Wissens und/oder durch Veränderung von Wissen und Einstellungen." (Fredrich, 2003)

3„primär auf die Bewältigung betrieblicher Anforderungen gerichtet sind“ (Diesner, 2008)
Education and learning are generally associated with costs, and the debate over learning control systems increasingly calls for stakeholders to quantify and establish the achievements of education and training activities and their contributions to a company's success (Griese/Marburger 2011:7; Büning 2012:85).

As we can see corporate learning requires strategic planning, the thoughtful use of resources, organisation and administration as well as controlling of costs and the achievement of objectives. This indicates that it would be wise to govern corporate education and learning as a management system.

A quality model for corporate education and learning management

Before we can define the content and working process of such a learning management system, we must establish exactly which aspects of learning can actually be managed in a company.

Learning itself is an inner process of intellectual acquisition by the learner and, as such, cannot be managed directly (Müller, 2010). Learning cannot be externally controlled as unilinear progress (Faulstich, 1999). Rather, education and learning management as an in-house service in companies controls and supports learning processes by providing targeted direction and managing scarce resources (Müller, 2010). It regulates the framework conditions of teaching and learning processes that are initiated and/or funded by the company (Bäumer, 1999) and organises the learning contexts as a cycle of planned activities, from needs analysis to preparation, implementation, transfer management and evaluation of achievements (Faulstich, 1999). Education and learning management covers all aspects related to corporate learning processes, taking into account economic factors, connections with other management systems and the significance for success (Gonschorrek, 2003). It forms an integrated sub-set of general management. However, many companies have not yet fully recognised the importance of education and learning management as a strategic task and have still to integrate the subject firmly into their management systems and corporate management. Corporate learning should be perceived as an independent activity that is closely intertwined with the company.

In Germany a widely accepted and practically tested quality model for corporate education and learning management has not yet been established. By personal experience there is little orientation in the market of how to efficiently manage learning processes. HR departments follow various approaches and find it hard to connect trend topics like competence management, talent management, e-learning and IT infrastructure with the rather classical further education activities.

TÜV SÜD Academy and EuPD Research developed a quality model for corporate education and learning management. We took the process of learning management – from strategy and needs analysis to planning, performance of training courses until controlling and evaluation - as starting point.

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4 for further information see Gessler 2013
Figure 1: Operational structure in education and learning management (Dreyer, 2013)

Education and learning management is essentially based on the PDCA (Plan – Do – Check – Act) cycle. The company defines learning goals that form the basis for planning and organisation of specific education and learning activities. All activities are evaluated and monitored and the findings and results from them fed back into the next round of planning.

This basic structure is complemented by further process steps in the education and learning context. For example, a detailed learning needs analysis is performed in the run-up to planning. Counselling of employees and internal and external organisation of the education and learning activities play an important role in implementation. Evaluation refers not only to conventional controlling, but also includes the transfer of knowledge and skills to the workplace. Apart from the above, internal communication throughout the entire process is important to ensure that all information is communicated to all parties involved and to generate a positive impact on the importance of learning and learning motivation. There is an extensive interface with recruiting here, as demand for talent that cannot be met in-house must be fulfilled by recruiting from the labour market, and education and learning activities ensure that new employees can be inducted into the company in the best possible manner.

Development of the model considered widespread existing models and schemes from the fields of quality management and education, including the ISO 9000 series of standards, ISO 29990, the DVWO Quality Model and CLIP. All of them describe various focus areas of corporate learning management and define various areas of content at different levels. In two interview rounds these first results were discussed with seven German scientists and 20 corporate executives. The input led to a quality model of three pillars and 15 fields which strive to summarise the key fields of all the different approaches and quality criteria of further education (for more detailed information see Dreyer/Nowak, 2012). Each field is characterized by at least 4 items/quality criteria.
Quality means that a product or process is free from defects and in compliance with the requirements (Hermann/Fritz, 2011). Translated into education and learning management, this means that all education and learning, organisation and support processes run smoothly and without flaws and that the result, i.e. workforce qualification, is in compliance with the requirements established by strategic planning and workplace reality.

In this context, the term 'quality' involves various aspects (Münch 1996). 'Input quality' refers to the conditions that must be fulfilled prior to education and learning activities in order to ensure the high quality of continuing education. 'Process quality' refers to the individual activity, and 'output quality' concerns the final outcome, result or change effected by the education and learning activity. Education and learning management must strive to establish framework conditions in all three areas that enable the company to reach high quality.

TÜV SÜD Academy used the set of quality criteria to establish a competition - the Deutscher Bildungspreis (German Corporate Education Award). The initiative generates a yearly database on the status of corporate education and learning management in Germany. The competition rating is based on the quality model and its set of criteria. This questionnaire forms the basis of the self-assessment undertaken by the companies that apply for the award. The companies give details of the extent to which they fulfil the requirements of the model and rate the individual questions according to their relevance for the success of the company's education and learning management system.

The 2013 revision of the quality model introduced core processes that are particularly relevant for the three pillars. In addition, aspects that the applicants considered "irrelevant" were assessed qualitatively and further differentiated or deleted from the model. New criteria of a higher level of learning management were introduced. This revision and adaptation of the model and questionnaire do not allow a direct comparison between the two sets of data of 2013 and 2014 but still show interesting differences.

Current situation in German companies

The entries submitted by the 133 applicants in the first round of the German Corporate Education Award 2013 have provided a good database that gives an idea of the present situation in German companies. Applicants included small and medium-sized enterprises (67 per cent) and large corporations (33 per cent), among them 7 DAX companies. Enterprises came from a host of different industries, with 72 per cent of applicants operating in the service sector.

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5 for detailed results see annual "Bildungs- und Talentmanagement 2013" report, TÜV SÜD Akademie/EuPD Research Sustainable Management
127 German companies applied for the award, small and medium-sized enterprises (49 per cent) and large corporations (51 per cent). The industry mix was comparable to the past year with 73 per cent operating in the service sector.

All factual statements are admittedly based on this relatively small sample, but evaluation opportunities will expand as the number of participants grows in the years to come. The questionnaire will remain unmodified in 2015 which will allow a direct comparison of two consecutive years. The data demonstrate the extent to which the companies that participated in the German Corporate Education Award competition had already implemented the individual components of the quality model.

Table 1: Implementation rate within the areas of the quality model

<table>
<thead>
<tr>
<th></th>
<th>Degree of implementation in per cent, difference in percentage points</th>
<th>2013</th>
<th>2014</th>
<th>difference</th>
<th>2013</th>
<th>2014</th>
<th>difference</th>
<th>2013</th>
<th>2014</th>
<th>difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategy</td>
<td></td>
<td>65,65</td>
<td>66,37</td>
<td>0,72</td>
<td>63,53</td>
<td>55,23</td>
<td>-8,30</td>
<td>69,74</td>
<td>63,78</td>
<td>-5,99</td>
</tr>
<tr>
<td>Learning needs analysis</td>
<td></td>
<td>69,19</td>
<td>68,77</td>
<td>-0,42</td>
<td>66,63</td>
<td>50,14</td>
<td>-16,49</td>
<td>69,13</td>
<td>58,76</td>
<td>-10,37</td>
</tr>
<tr>
<td>Method planning</td>
<td></td>
<td>61,58</td>
<td>68,80</td>
<td>7,22</td>
<td>74,33</td>
<td>70,83</td>
<td>-3,50</td>
<td>70,51</td>
<td>67,53</td>
<td>-2,98</td>
</tr>
<tr>
<td>Appraisal interview</td>
<td></td>
<td>78,42</td>
<td>58,61</td>
<td>-19,81</td>
<td>75,89</td>
<td>54,25</td>
<td>-21,64</td>
<td>70,91</td>
<td>60,73</td>
<td>-10,81</td>
</tr>
<tr>
<td>Transfer management</td>
<td></td>
<td>50,81</td>
<td>51,95</td>
<td>1,14</td>
<td>37,30</td>
<td>45,69</td>
<td>8,39</td>
<td>68,42</td>
<td>68,1</td>
<td>-0,32</td>
</tr>
<tr>
<td>Controlling</td>
<td></td>
<td>67,07</td>
<td>78,98</td>
<td>11,91</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internal communications</td>
<td></td>
<td>68,99</td>
<td>69,42</td>
<td>0,43</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recruiting</td>
<td></td>
<td>63,30</td>
<td>68,05</td>
<td>4,55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In 2013 in the fields of leadership, employee involvement and appraisal interview, the applicant companies had already implemented the quality standard to a high degree, fulfilling 75 per cent of criteria. This is not surprising, as these fields are often regulated by company agreements that define mandatory requirements. Due to that reason, the two fields of appraisal interview and employee involvement had been redesigned in 2014, setting higher standards and deleting mandatory aspects. That is why we observe high drops of implementation rates in these fields. The leadership field had been implemented to a comparable extend.

In most areas of implementation of the quality model, 2013 companies rank in the middle. This also applies for 2014 but on a slightly lower level due to higher standards. In these areas the companies have generally established a good basis for activities in education and learning management. However, in many instances elements that further improve the system towards excellence are still lacking, such as learning and education strategies that include the results of demographic analyses, career models for skilled personnel and executives, potential analysis for all personnel or an established steering committee for education and learning management. Overall, the companies applying for the German Corporate Education Award have applied MBO (management by objective) systems to a very minor extent.
Problem areas of 2013 are the fields of transfer management (degree of implementation 50.81 per cent) and infrastructure (37.30 per cent). Interestingly transfer management notes a slight rise in 2014 although the requirements were even higher. In transfer management, many companies still lack awareness of the relevance of this issue and of possible approaches to support the transfer of lessons learnt into practice. But in German specialist publications and press the topic has been discussed openly which might have lead to stronger efforts in the HR departments.

Infrastructure primarily relates to the IT equipment of corporate education and learning management. Few applicants have already implemented special software products for organising seminars, creating job profiles, skills and competencies or knowledge management. Some companies demonstrate a good level of integration of their education and learning management into their general HR IT. Of course, installation and development of complete and complex software solutions is not necessary in all cases. Systematic recording in MS Excel may also do the job. However, a systematic approach is imperative. In 2014 we observe a significant shift to 45 per cent which gives hope that the technical side of learning management undergoes further professionalism. This extends to the field of controlling which records very good 79 per cent in 2014 even though we set higher requirements.

The differences between the two sets of data of 2013 and 2014 need further investigation. The revision of the model is a valid explanation but the participants themselves are mostly different companies than in 2013. Personal experience leads to the assumption that in 2014 a significantly larger number of companies completed the questionnaire that rather wanted to optimize their processes and gain new impulses from the quality criteria than to actually win the award. The initiators explicitly welcome this development because the model can function as orientation and guidance towards excellence in learning management as well. But this change of view among the applicants has to be taken into consideration when interpreting the results.

When comparing SMEs and large corporations that applied for the German Corporate Education Award, we notice the following: large corporations, while in a slightly better position overall, by no means lead throughout all areas. Large corporations engage more in conceptual activities, plan and monitor their budgets very thoroughly and offer their executives and employees numerous guidelines and tools. They define education and learning as corporate responsibilities in their corporate policy more often than SMEs do. By contrast, medium-sized companies find it easier to establish clear education and learning objectives and plan the related activities. They have a better overview of the skills and competencies of their workforce and are more committed to the continuing training of their executives. At SMEs employees can become actively involved in education and learning management.

The questionnaire also covers the usage of training methods. An overview of selected methods shows their implementation in 2013 and 2014. Since this section of the questionnaire was left unchanged by the revision, the data is comparable. Although e-learning had been a huge trend in Germany for the past years we still observe a significant rise in the implementation rate from 58.5 per cent to 67.8 per cent. Overall the implementation of virtual or digital learning methods is still on a lower level than classic seminars and workshops. But the topic of “new learning” becomes increasingly popular.
Table 2: Implementation rate of selected training methods

<table>
<thead>
<tr>
<th>Learning methods - on the job</th>
<th>2013</th>
<th>2014</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge databases</td>
<td>69.9</td>
<td>75.9</td>
<td>6</td>
</tr>
<tr>
<td>e-learning</td>
<td>58.5</td>
<td>67.8</td>
<td>9.3</td>
</tr>
<tr>
<td>Virtual classrooms</td>
<td>25.4</td>
<td>28.7</td>
<td>3.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning methods - off the job</th>
<th>2013</th>
<th>2014</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seminars</td>
<td>89.6</td>
<td>92.0</td>
<td>2.4</td>
</tr>
<tr>
<td>Workshops</td>
<td>86.9</td>
<td>86.2</td>
<td>-0.7</td>
</tr>
<tr>
<td>Coaching</td>
<td>72.7</td>
<td>70.7</td>
<td>-2</td>
</tr>
</tbody>
</table>

How to manage learning activities

Overall the data of both years show that learning management is a dynamic field of HR management in Germany. Many positive aspects have already been implemented while other topics still strive for optimization. The spread between the companies is relatively large. There are experts with well established learning management systems while others are still lacking the basic structures.

The quality criteria of the model give a good impression of how learning activities should be managed in a company. These steps that are required in the corporate education and learning management system apply to companies of all sizes and industries and similarly apply to all learning methods and tools. It shall now be briefly demonstrated on the example of e-learning.

- Learning needs analysis: Before the company can plan an education and learning activity, it must first examine the learning needs of its workforce by conducting a company-wide learning needs analysis. It is important in this context to determine whether different workforce groups have different needs. This goal can be reached with the help of interviews and questionnaires. Once the analysis has been completed, clear learning and education goals are defined for these target groups which, together with the corporate objectives of the learning and education strategy, provide the framework for the content of seminars and e-learning offers.

- Conceptual design: In this phase, the education experts consider didactic issues and clarify the technical framework conditions. They lay down the exact steps and methods by which the content to be taught will be presented. In addition, roles and responsibilities for implementation within the scope of the education and learning management system must be defined. It is important to involve all significant stakeholders in the company, e.g. HR development, technical departments, trainers, works council and the IT department, in this phase. Consideration of other learning and education activities in the company, such as face-to-face seminars or coaching sessions, can make good sense to help the conceptual design to avoid redundancies and exploit synergies.

- Project planning: Implementation of an e-learning activity can be regarded as a project and controlled using project management methods. The project plan, for example, includes the timetable, financial perspectives and human resources in IT, trainers, authors etc. Milestones are helpful tools for step-by-step implementation of the overall project within the defined requirements.

- Pilot project: A pilot project offers the opportunity to carry out comprehensive testing of later implementation. In addition, a pilot project offers fast results and experiences that can be used positively in internal communications. Initial content can already be tested and aligned to actual needs at this stage before the final design is completed.

- Implementation: In the implementation or realisation phase, content is technologically implemented and all systems involved in the process, such as the learning management system, content
management system, internet or communication software, are integrated into the e-learning. Critical for this step is the IT structure of education and learning management. In addition, employees or external service providers that act as trainers for the respective content receive education and training on e-learning.

- **Communication**: The workforce must be informed openly and at regular intervals of the opportunities offered by e-learning. Communication must aim at raising the workforce’s interest in the education offer and overcoming learning obstacles.

- **Learning**: Employees use e-learning for their learning processes. Initial evaluations can now be launched at this early stage to correct didactic or technological weaknesses and ensure remedies for difficulties.

- **Controlling**: Controlling should firstly evaluate the project in itself, i.e. duration, costs, efforts etc., to generate lessons learned for future activities. However, the e-learning activity itself must also be thoroughly reviewed. The number of participants, dropout and pass rates, interaction with the trainer and workforce feedback should be comprehensively evaluated and discussed. The results will then be fed back into education and learning management and integrated into future activities.

Provided the development of e-learning measures is embedded into a system, a variety of structures and processes can be used. By taking this approach, valuable synergies can be realised, the total quality of education and learning activities can be improved and e-learning activities can ultimately be implemented in a more target-focused manner.

**Conclusion**

Education and learning management is a complex field of entrepreneurial activities that deserves to be designated a management system and should be treated as such. A systematic and strategic approach and regular critical reviews of all steps and measures are imperative. German companies fulfil these requirements to a different extend regarding the management fields and in terms of differences between individual companies.

The integration of e-learning as interesting learning method into such a sustainable system offers major potential for effective and efficient implementation of e-learning and could contribute to making full use of the excellent controlling features offered by most e-learning tools. E-learning must be understood as one method within a holistic learning approach. Companies have to develop processes and structures of the highest quality and effectiveness in order to create a learning company that is well prepared for future challenges and perfectly meets its employees' needs.

Education and learning management can only fulfil the requirement to make an active contribution to corporate success if the above framework conditions are fulfilled. Guidance provided by international standards, frameworks and models can help companies to structure and build this area of activities.
References


Dreyer, A.; Nowak, M. 2012. Studienband Bildung- und Talentmanagement zum Deutschen Bildungspreis, TÜV SÜD Akademie und EuPD Research, Munich, Bonn


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TÜV SÜD Akademie/EuPD Research Sustainable Management 2013. Jahrbuch Bildungs- und Talentmanagement, Eigenverlag, Munich and Bonn

The Future of EduServ

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Abstract

This Paper is an extension of the paper “EduServ – The Education Service of EuroSDR: Sharing Experience for Capacity Building” authored by D. Fritsch, K. Mooney & A. Oestman, which was presented at the ISPRS Congress in Melbourne, August 2012. It describes EduServ, the Education Service of EuroSDR - a European spatial data research organisation whose aim is to address the research needs of spatial data provision in Europe. With a current membership coming from seventeen European countries and a strong working relationship with related European organisations, EuroSDR has amassed considerable experience in addressing the extent and nature of these needs. In order to facilitate the transfer of outcomes of EuroSDR research activities to the user domain, e.g. to key personnel in geographic information (GI) production organisations and industry, EuroSDR commenced this annual series of e-learning courses in 2002. The Internet courses are preceded by a seminar at which participants meet tutors and receive guidelines for following the courses from their own locations. Delivery of the two-week courses requires an acceptable level of Internet connectivity, which exists in most member countries. EuroSDR is aware, however, that should such courses be shared internationally, other forms of communication will need to be addressed, such as satellite broadcasting. This would require effective collaboration with related organisations with experience with this means of communication. EduServ courses are offered in two successive years. During the courses, participants enjoy access to course tutors with a 24-hour response to queries guaranteed. Thereafter, course material for these courses is made available online. EuroSDR continues to work with past course tutors to ensure that this valuable resource is maintained as an effective and sustainable archive. This paper is aimed at sharing EuroSDR’s experience in distance education with the wider scientific community with a view to its applicability to a global audience, whereby, instead of sharing expertise within the GI community in Europe, European mapping agencies can share their knowledge and experience with the international GI community.

After 11 years of EduServ experience we will hopefully manage the second decade of EduServ courses with the same pace and dedication needed to prepare our professional personnel for the challenges in the fields of geoinformatics, photogrammetry, remote sensing and spatial data infrastructures, which lie ahead.

Keywords: EuroSDR, EduServ, eLearning, Moodle, Videocasts

Introduction

General Developments in ICT

Internet technologies fascinate people of all age groups. The three buzzwords of everyday life are “always on, anywhere and anyplace”. Mobile devices have become more and more powerful – they allow for learning-with-fun, creativity at any time and at any place, and public understanding of complex issues.

Most probably within the next five years we will use mobile devices with built-in Inertial Navigation sensors and general GNSS receivers which are compatible with all systems in use: GPS, Galileo, Glonass, and Baidou, to name just a few. Moreover, such devices could offer 1TB storage capacity on-board, HD photography and HD video recording, allow for communication speeds of up to 1 GBit/sec using
LTE/LAN/WLAN/WiFi, and incorporate additional sensors, such as temperature, air pressure and pedometers. Such devices will communicate easily (wirelessly) with large HD displays and, as such, represent excellent tools for students of all education systems.

Learning has become, and will continue to be, more pleasant than it was before. One may argue about the consequences of this unlimited use of mobile devices. However, this discussion will not lead to any useful outcome. As a matter of fact, most people will use mobile devices instead of desktop and notebook computers, especially the younger generations. There are various public opinions about the extent of content currently taught in primary, secondary and higher education – it seems that content offered during the last 20-30 years is much too inadequate nowadays and for the future. We must double or, maybe, even triple the content! How will we perform this mammoth task? The answer seems to be simple: use the most recent technology with all its pleasant gadgets and apps.

When Apple introduced the first iPod generation (2002) nobody could foresee the success story of this mobile device. Today, close to 300 Million devices have been sold – the iTunes (Music) Store offers digital media content of all kind: music (MP3 and other formats), audio podcasts, video podcasts, TV series, movies, and e-learning content (through the iTunes U extension). Last year, the iPhone 4S (4th generation iPhone) was released, allowing for faster Internet access, HD photography, HD video capability, and other services. The iPad is a great success and is the leading device of tablet computing. The most recent iPad impresses with its high resolution display and quad core computing. Apple’s app store offers more than 500,000 gadgets for download to make the iPad, iPhone or iPod Touch even more pleasant and powerful. Apple TV allows for an easy link with the home theater TV, thus the iTunes Store comes to the couch when relaxing from a hard working day. Today, we find thousands of videos in Apple podcast format (also in HD). Lesson learned: A computer manufacturer has become a world-wide leading institution for hardware, software and content!

Using the hype around iPod, iPhone and other mobile devices, learning content has to be offered in the same style and format as TV series, movies, YouTube videos, and others. Therefore, video podcasts (in short: vodcasts or videocasts) seem to be a de facto standard already. Many Higher Education (High Ed) institutions today offer vodcasts for their students (Fritsch, 2007). Starting in the USA (2006), the Apple iTunes U extension in swapped to Europe in 2008. This environment is Apple’s answer to extend business and services to the 3L community. Unlike radio or streaming content via the Web, vodcasts are not real-time. Vodcast material is pre-recorded and the users can access the material on-line and off-line. Certain vodcasts can even be live and interactive – dozens of podcast enthusiasts can be on at once, with the host able to control the audience in the same manner as a radio host.

The vision for the future is as follows: Vodcasts of all kind, especially for High Ed, are offered on the Web. The worldwide student (and 3L) community browses the Web and finds out the most brilliant vodcasts, according to their scientific content and pedagogical style. They rank these vodcasts to give an indication of the quality and usability. Thus, it may easily happen that preparations in GIS are made using database vodcasts of the Computer Science Dept. at MIT, visualization vodcasts of the University of Stuttgart, analysis vodcasts of Tongji University Shanghai, and data structure vodcasts of DIT. Student learning in High Ed becomes really international! Highly ranked vodcasts have the potential for future business models in Life Long Learning (3L), which will be developed parallel to the more and more increasing vodcast offer.

Besides vodcasts there are many other initiatives, which complement traditional learning practices. Webinars seem to be another efficient method to offer e-learning contents via the Web. Obviously this
technology is used quite often by the geospatial industry to introduce new hardware, software and workflows to potential clients. Above all, it allows the end user to be far away from the original location of the seminar, and on the other hand the industry to present something good without renting rooms in hotels for presentations and accommodation, resulting in savings for both parties.

E-Learning platforms such as “Moodle” are also popular, especially for training purposes. The use of Moodle is simple and efficient - it allows for interactive teaching without any costs (Open Source) and already has a broad community. A comprehensive evaluation of several e-learning platforms based on Open Source developments is given by Drewitz (2009).

EuroSDR, a Pan European Body of Spatial R&D

EuroSDR is a European spatial data research organisation whose aim is to address the research needs of spatial data provision in Europe. With a current membership coming from seventeen European countries and a strong working relationship with related European organisations, EuroSDR has amassed considerable experience in addressing the extent and nature of such needs.

Member organisations are diverse in nature with several only now tackling the provision of their national spatial data infrastructure (SDI), while others are at an advanced stage of implementation. EuroSDR is therefore anxious to facilitate the transfer of key knowledge and experience from those countries that have dealt successfully with the issues to those that are at a much earlier stage. This is one of the principal aims of the EduServ series of distance e-learning courses, which has recently included topics related to SDI implementation such as ‘Schema matching, mapping and transformation for INSPIRE’, ‘The INSPIRE Directive and its Implementing Rules’ and ‘Open Standards & Open Source WebMapping’. Other courses have covered the complete spatial data provision cycle from data acquisition to maintenance and delivery of services. They are based on the results of collaborative applied research across Europe and represent the outcomes of shared activities, data, methods and experience. EuroSDR published its sixtieth official publication in 2012.

E-Learning within EuroSDR - EduServ

In order to facilitate the transfer of outcomes of EuroSDR research activities to the user domain, e.g. to key personnel in geographic information (GI) production organisations and industry, EuroSDR launched an annual series of e-learning courses in 2002 and called it EduServ. The Internet courses are preceded by a seminar at which participants meet tutors and receive guidelines for following the courses from their own locations. Delivery of the two-week courses requires an acceptable level of Internet connectivity, which exists in most member countries. EuroSDR is aware, however, that, should such courses be shared internationally, other forms of communication will need to be addressed, such as satellite broadcasting. This would require effective collaboration with related organisations with experience with this means of communication.

EDUSERV@EUROSDR – A Brief History

Why EduServ?

Publication of research and workshop reports is, in itself, not sufficient to attain the necessary goal of transferring the outcomes of EuroSDR research activities from the research to the user domain, in other words to key personnel in the GI production organisations and the user community. The impact of EuroSDR research is lessened if the results and outcomes are not translated into the GI production process (Heipke & Mooney, 2009).

To address these concerns EuroSDR commenced its education service (EduServ) in October 2002, an annual series of short distance e-learning courses based on specific research projects or on the recommendations of workshops (Mooney & Stein, 2007).
The results of these research projects are learnt in depth with the goal that new technologies and methods are ultimately used by the national mapping agencies, private firms and universities of the member states. A EuroSDR task force organizes the educational service for each year. It selects the topics and the teachers of the courses. The teachers are recruited from the group of EuroSDR project leaders or from universities who have experience of the selected topic and e-learning.

EduServ-11, the most recent module consisted of four two-week courses that ran consecutively from March 18 to May 31, 2013. Hosted by the International Centre for Mechanical Sciences (CISM), Udine, Italy, the courses attracted about 40 participants from twenty-seven organisations in 20 countries.

Annual EduServ programmes consist of short (usually two-week) consecutive Internet-delivered e-learning courses, which are linked to the research activities of EuroSDR. They require approximately thirty hours of work (both online and offline) from the participants per course. Participants follow the courses remotely via the Internet either from their place of work or from home. On successful completion of all assignments and the submission of a detailed course evaluation feedback questionnaire, participants receive a signed ‘Certificate of Completion’ from EuroSDR.

Participants frequently have very different technical backgrounds. In most cases, they are professionals of European national mapping agencies, but some come from private firms as well as university students. E-Learning is unknown to many of the participants and cultural differences in the relationship between teacher and participant may exist. Therefore, the courses are preceded by a two-day seminar at which the participants meet with the course teachers and receive all necessary instruction and guidance to allow them follow the courses from their own organisations. Table 1 demonstrates the move of EduServ courses across Europe.

<table>
<thead>
<tr>
<th>Year</th>
<th>Host Organisation</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Aalborg University, Aalborg</td>
<td>Denmark</td>
</tr>
<tr>
<td>2004</td>
<td>Budapest University for Technology and Economics, Budapest</td>
<td>Hungary</td>
</tr>
<tr>
<td>2005</td>
<td>Dublin Institute of Technology, Dublin</td>
<td>Ireland</td>
</tr>
<tr>
<td>2006</td>
<td>ITC, Enschede</td>
<td>The Netherlands</td>
</tr>
<tr>
<td>2007</td>
<td>Charles University, Prague</td>
<td>Czech Republic</td>
</tr>
<tr>
<td>2008</td>
<td>University of Applied Sciences, Stuttgart</td>
<td>Germany</td>
</tr>
<tr>
<td>2009</td>
<td>Norwegian University of Life Sciences, Ås</td>
<td>Norway</td>
</tr>
<tr>
<td>2010</td>
<td>KU-Leuven, Leuven</td>
<td>Belgium</td>
</tr>
<tr>
<td>2011</td>
<td>ENSG, Paris</td>
<td>France</td>
</tr>
<tr>
<td>2012</td>
<td>Dublin Institute of Technology, Dublin</td>
<td>Ireland</td>
</tr>
<tr>
<td>2013</td>
<td>CISM, Udine</td>
<td>Italy</td>
</tr>
</tbody>
</table>

Details of the designers and teachers of these courses, together with the years in which they were included in EduServ programmes and the number of participants, are given in Table 2.
### Table 2: EduServ Courses, Centres, Years Delivered and Student Numbers

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Centre</th>
<th>Years</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated Sensor Orientation</td>
<td>University of Hannover</td>
<td>2002, 2004</td>
<td>14,  16</td>
</tr>
<tr>
<td>Automatic Orientation of Aerial Images on Databases</td>
<td>Aalborg University</td>
<td>2002, 2004</td>
<td>14,  18</td>
</tr>
<tr>
<td>Laserscanning &amp; Airborne Interferometric SAR</td>
<td>ITC, Enschede</td>
<td>2002, 2004</td>
<td>14,  14</td>
</tr>
<tr>
<td>Digital Cameras/Sensors</td>
<td>Ohio State University</td>
<td>2004, 2005</td>
<td>16,  15</td>
</tr>
<tr>
<td>Positional Accuracy Improvement in GI Databases</td>
<td>Ordnance Survey GB; TU-Berlin; DIT</td>
<td>2005, 2006</td>
<td>13,  12</td>
</tr>
<tr>
<td>Quality Control of DTMs</td>
<td>Aalborg University</td>
<td>2006, 2007</td>
<td>10,  21</td>
</tr>
<tr>
<td>Mapping with SAR</td>
<td>TU-Berlin</td>
<td>2007, 2008</td>
<td>14,  18</td>
</tr>
<tr>
<td>Laserscanning for 3D city models</td>
<td>Finnish Geodetic Institute</td>
<td>2007, 2008</td>
<td>18,  24</td>
</tr>
<tr>
<td>CityGML</td>
<td>TU-Berlin and University of Gävle</td>
<td>2008, 2009</td>
<td>20,  11</td>
</tr>
<tr>
<td>Geometric performance of digital airborne cameras</td>
<td>Institute for Photogrammetry (ifp), Stuttgart University</td>
<td>2008, 2009</td>
<td>25,  15</td>
</tr>
<tr>
<td>Schema matching, mapping and transformation for INSPIRE</td>
<td>University of Gävle</td>
<td>2009, 2010</td>
<td>9,   34</td>
</tr>
<tr>
<td>Laserscanning for Tree Extraction</td>
<td>Finnish Geodetic Institute</td>
<td>2009, 2010</td>
<td>9,   9</td>
</tr>
<tr>
<td>Assessment of the quality of Digital Terrain Models</td>
<td>Aalborg University and Charles University</td>
<td>2010, 2011</td>
<td>12,  10</td>
</tr>
<tr>
<td>Geodetic Reference Systems</td>
<td>IGN France / LAREG</td>
<td>2011, 2012</td>
<td>6,   10</td>
</tr>
<tr>
<td>3D Urban Modelling</td>
<td>IGN France / MATIS</td>
<td>2011, 2012</td>
<td>10,  20</td>
</tr>
<tr>
<td>Radiometric performance of Digital Photogrammetric Cameras and Laser Scanners</td>
<td>Finnish Geodetic Institute and Vienna University of Technology</td>
<td>2012, 2013</td>
<td>9,</td>
</tr>
<tr>
<td>Open Standards &amp; Open Source WebMapping</td>
<td>ITC – University of Twente</td>
<td>2012, 2013</td>
<td>22,  22</td>
</tr>
<tr>
<td>Dense Image Matching</td>
<td>Ifp – University of Stuttgart</td>
<td>2013, 2014</td>
<td>32,</td>
</tr>
</tbody>
</table>

An evaluation of the effectiveness of EduServ courses is possible due to the requirement that participants must submit completed quality-assurance (QA) questionnaires prior to receiving their certificates. In general terms, participants have felt that the courses are useful, and most respondents indicate that the goals of the courses are achieved. Course material is appreciated and additional hardcopy material is found to be useful. The combination of the introductory seminar and e-learning was regarded as positive by about 70% of respondents and a similar percentage indicated that they would participate in further courses. Some participants have difficulties in keeping the time schedule and felt the work load was somewhat too heavy.
and a small number considered the courses as difficult.

**Lessons Learned from EduServ**

The experience of hosting 11 EduServ modules so far suggests that such educational resources are of particular interest to the smaller states, both within and beyond Europe. This may be due in some part to the existence of adequate CPD resources in the larger states, which are not generally available in smaller ones. On the other hand, key staff members of GI organisations in several countries do not have high levels of proficiency in the English language and feel that such courses are beyond them.

**EduServ and Capacity Building**

This of course raises the issue of capacity building in general and in skills updating in particular in those European states where a comprehensive GI education resource does not exist but where the implications of European directives such as INSPIRE will require considerable training.

The EuroSDR EduServ model of distance e-learning for CPD is an example of the use of appropriate technologies to assist states to build capacity but it must address the challenges of language and better marketing. There is also a need to be flexible and adaptive to new ways of learning, utilising state-of-the-art solutions for communication and networking.

The pre-course seminar needs to be carefully designed and managed in order that participants benefit from attending in a way that justifies the considerable expense and disruption in taking time out of busy work situations and travelling to the seminar venue. It is all too easy to offer a series of stale presentations containing material that is, in fact, made available as part of the e-learning course. Future seminars should incorporate a significant degree of interactive discussion and identification of individual requirements.

**EduServ and Teach-the-Teacher Issues**

Since several instructors are scientists, some of them are new to e-learning from a tutoring perspective. The EduServ templates for organising e-learning courses are found to be very efficient in getting these instructors acquainted with this new way of learning. The templates consists of standardised procedures for course design, methods of delivering lectures, design of self-assessment tools etc. There is however no requirement that the instructor must follow these templates in detail. The course material and the didactic approach has to be designed with respect to the course content.

**EduServ and Moodle**

The use of Moodle as e-learning platform has helped considerably to make the EduServ courses a success. This platform is widely used in non-profit organizations as well as in the private sector to implement all kinds of 3L programmes. This impacts directly on the improvement and further development of Moodle, which is gratefully acknowledged. As confirmed by the EduServ tutors it offers many options to organize an e-learning course, which makes it even more attractive.

But this complexity can be a drawback for those tutors who just use Moodle in a limited time period (as EduServ courses only offered for two years). Here, EuroSDR should offer guidelines on “How to organize an EduServ course using Moodle”. Such guidelines would also help to optimize the time commitments of the individual tutors.

A further drawback is the time-consuming administration of the system, ie, to regulate the permissions for tutors and students, in particular if data must be uploaded and to overcome some regulations in discussion forums. This can only be overcome if the Administrator rights are available.

**Future Implementations in Eduserv**

**Podcasts or Videocasts Production**

From experiences gained in having served for a six year term as Rector of the
University of Stuttgart (UniS), in which e-learning and blended learning were key issues of the university development programmes, podcast production of photogrammetric modules was launched in October 2006, at the Institute for Photogrammetry (ifp). The lessons learned from the overall outcome of the management and implementation of the very successful UniS e-learning programs 100online, selfstudy online and campus online have been: Keep it simple and use standards! Therefore the key issues in recording and archiving lectures in photogrammetry and geoinformatics can be summarized as follows:

1) Improve the quality of the lectures and the lecture notes and keep the students interested
2) Keep the efforts reasonable and use standards
3) Replace blackboard writing (notes) by rendering the lecture notes with handwritten explanations (text and formula derivations)
4) Offer the rendered lecture notes directly after the lecture, as a pdf file on the web
5) Provide podcasts/videocasts at two different resolutions: 320x240 (Half SD) and 640x480 pixel (SD)

A pilot project was started to process the four winter lectures of the author in the fields of digital signal processing (German and English language), statistical inference I and geoinformatics I. First of all, an easy-to-use recording environment had to be selected with the capability of producing handwritten notes. For some years, notepad computers have been offered by several vendors, such as Fujitsu, Hewlett Packard, Lenovo, and Toshiba, to name just a few. Those computers run under MS Windows and have become very powerful. Thus, a Fujitsu LIFEBOOK T Series was chosen for the lecture recordings. Camtasia Studio 5 (TechSmith) seemed to be an ideal screen recording and presentation software, having the features we were looking for. Thus, the recording hardware and software came off-the-shelf, was cheap and solved the tasks we had in mind. Most recently MS Surface Pro 2 hardware/software is used for the raw recordings of the lectures, to be in line with ICT developments in tablet computing.

Being equipped with the necessary tools for a “Poor Man Podcast Production Environment (PoMaPPEn)” the following workflow could be maintained all the time:

1) Select the portion of the lecture notes (txt, doc, ppt, pdf, etc.) to be presented and convert it to a journal file (jnt).
2) Start the Camtasia Studio 5 recording software according to the video podcast creation model (1) and set the sampling rate of the screen recording to not less than 7 fps.
3) Present the lecture in front of the students, who look at the screen and see all the spontaneous rendering of the lecture notes.
4) After the lecture is finished store the jnt file, print it in pdf format, and put it on the web. Store the raw video file for editing, post-processing and podcast production (see figure 1).

Note that these four steps are really simple and also help to improve the convenience of the instructor, who may sit in front of the students and render the lecture notes on the notepad computer.

The pilot project was extended in Summer 2007 to offer all lectures and exercises of the Institute for Photogrammetry, UniS, for several curricula in this manner, with great success. An evaluation every semester made by the students comes out with very positive results – most of them wished that all lectures and exercises in their curricula should be offered in this excellent way of teaching. Another important experience made is that the grades of examinations have been improved with the availability of podcasts/videocasts.
Within the EduServ 12 Course “Dense Image Matching” the tutor Prof. Dr. Norbert Haala recorded his presentation at the pre-course seminar according to the guidelines above, which enabled it to be offered on the EduServ Web pages. This not only maintains the original spirit of the tutor but also caters for those participants who could not participate in this opening lecture and interactive session. With the coming new web design for EuroSDR, space should be reserved for easy access to the original lecture notes, the rendered lecture notes (mark-outs) and the podcasts/videocasts, allowing them to be downloaded to all mobile devices, anywhere and anytime!

![Web access of Lecture Notes, Mark-outs and Podcasts/Videocasts at the Institute for Photogrammetry, Univ. of Stuttgart](image)

**Fig. 1: Web access of Lecture Notes, Mark-outs and Podcasts/Videocasts at the Institute for Photogrammetry, Univ. of Stuttgart**

**EduServ Management Team of Three (1 Academia, 1 NMCA, 1 Private Sector)**

Nowadays, requests for organizing EduServ courses are manifold. They come from academia, NMCAs, and the private sector. In the past, courses have directly evolved from EuroSDR projects and EuroSDR could not implement further requests. In order to be more flexible in future and to share voluntary workloads (making participation in EuroSDR even more attractive) it is proposed to have three principals in the management of EduServ from three different sectors: academia, NMCAs, and the private sector. With these shared responsibilities it should be easier to find willing and interested people with management skills and with visions and ideas for future courses.

**EduServ Advisory Board**

From the beginning a task force advised the EduServ Working Group Chairman about course planning work and gave him/her support in organizing the annual programme. This task force has not been active for some time and therefore must be re-vitalized. It is proposed to rename the task force “EduServ Advisory Board”. Membership of this board should comprise two from academia, two from NMCAs, and two coming from the private sector. The three WG principals are automatically members of this board, together with the Secretary-General. The board should meet virtually once per month (e.g. by Skype calls) to maintain and continue efforts to offer attractive EduServ courses.
Conclusions
Experience of more than 10 years of EduServ suggests that e-learning courses are of particular interest to the smaller states within Europe. This may be due to the existence of adequate CPD (continuing professional development) resources in the larger states. However, key staff members of GI organisations in several countries may not have high levels of proficiency in the English language and, consequently, may feel that such courses are beyond them. Addressing the issue of capacity building and skills updating in those European states where a comprehensive GI education resource does not exist (but where considerable training in GI fields is still required) is seen by EuroSDR as a major challenge.

EuroSDR is also aware of the need to ‘future proof’ research capacity in all European states so that emerging GI research and education issues (in an increasingly ‘joined-up’ Europe) may be addressed effectively and economically. It is the firm intention of EuroSDR that its education service, EduServ, continues to address the issue of transferring the outcomes of its research activities to the GI production and user domain, and to respond to special requests coming from academia, NMCAs and the private sector.

Acknowledgements
The author would like to gratefully acknowledge the efforts of Prof. Joachim Hoehle, Aalborg University in starting the EduServ program. Moreover, the contributions of the lecturers of all EduServ programmes in the past are very much appreciated. Only with their spirit, efforts and enthusiasm has EduServ become successful and visible in Europe and beyond.
References


Educational Technology: Potentials, Expectations and Challenges

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Abstract
Great advances in technology have opened new horizons in the field of education for teachers and learners. Many updated themes have evolved in relation to independent self-learning, far learning and implementation of technology in classrooms through smart boards and usage of online resources in addition to learners indulgence in social media networking, iPad learning and many other forms of acquiring knowledge through different channels that minimize the role of teachers or even substitute it completely especially in interactive programs.

Many people therefore became advocates of the idea claiming that technology is the language of this age so undoubtedly it should be used primarily in addressing the young generation who understand it well enough without the need for an instructor whose authority in the classroom has worn away.

However, many other people deeply believe that technology can never impart the values of disciplines, punctuality and many other life essentials that a teacher can communicate to learners. They claim that learning doesn’t only involve receiving information but rather adapting the skills of critical thinking that allow learners to assimilate knowledge and relate it to their own experiences. It is the art of life through perceiving knowledge and it is a job that only teachers can do.

In such a struggle for dominance who will survive? The human, the master who invented the machine or his invention? Will the invention surpass its inventor? Will teachers survive the competition with technology? Or is there no conflict at all?

In my research I will try to put aside all my favoritism of teachers over machines to try to answer the above questions as transparently as possible through all the means known to me of collecting information, revising the literature related then doing the analysis and evaluation needed to deliver my research results, citing the references I used as objectively as possible.

Introduction
The process of education has passed through many stages of change. As a teacher I have witnessed such changes. Previously as a learner, my teachers were basically confined to the use of the board and the textbooks as their main aids, illustrations and drawings were used as well but technology had no interference in the process. When I became a teacher I tried to modify my resources and aids in coherence to what was available in the fields. Thus in 2000, we as teachers, were first introduced to the use of computers through the usage of some interactive programs like Tense Buster which aimed at teaching Grammar for grade 12 students in an interactive way.

Then more programs were introduced but still it was applied on a very limited scale and only for few schools and by few teachers. We received training on the basic skills of using computers. In a period of 10 years technology has invaded schools on a wider range and the process was so rapid that I can hardly remember now its steps.
Schools were provided with computer labs, more programs were introduced and teachers undergone more training on computer skills.

**Problem Statement**

Technology in education is not an end in itself but rather a means to an end. Yet in many cases and on a wide range in the field of education, the use of technology in the classroom has not been backed up by a change in the teaching strategies. In addition, teachers’ attitudes towards technology veered from rejection to adoption and in between many teachers struggle to face the change.

Therefore I find extremely important to expose to light the potentials that technology can provide for teachers, the challenges it creates, and the expectations that awaits all those who are concerned in the process.

**Research Questions**

The main focus of the study would be on the great advantages of the implementation of technology in education including the enhancement it provides for teachers yet it would be greatly beneficial to mention the disadvantages of such modern aids with all the challenges they create for teachers and the attitudes of teachers towards educational technology.

Therefore the main questions of the research would be:

To what extent can technology enrich the classroom learning environment? What challenges does it create?

Can technology replace teachers in the future?

What are the attitudes of teachers towards the use of educational technology? Can they cope with the fast progress of modern IT?

**Hypothesis**

The research aims at exploring the great potentials that modern technology can provide for teachers to enhance their learning environment. Yet educational technology is not an end in itself but rather a means to an end. Thus implementation of technology in education involves planning activities in which technology plays a role along with the learner and the teacher as a moderator. Application of the activity is usually followed by practice evaluation and modification. Teachers however should have the positive attitudes towards the use of modern technology along with the needed training to use such facilities.

**Research Method**

A sample of teachers, students and teachers’ trainers would be chosen randomly to be interviewed to answer a set of different questions categorized according to the criteria needed. Interviews with educators and students would be then analyzed backed up by the literature related and the researchers ‘own experience and backgrounds. Thus a qualitative method would be applied.

**Literature Review**

**Historical Background**

Educational Technology is defined as “the practice of facilitating learning and improving performance by using appropriate technological means and resources“ Strauss (March 21, 2013).

Thus we can trace the early use of technology in education to the 16th and 17th centuries when visual instruction depended upon visual aids, then sound was added and the term audio visual was highlighted as the primary educational device. Till then, silent films and the radio were considered as educational tools till the 1940s when the computer was invented and adapted by many educators on limited scale. In 1980s the development of the microcomputers attracted more attention to this tool in education and finally the Internet created more sophisticated uses that were not limited to learning but rather to all aspects of life.
Therefore, it would be better to refer to educational technology as instructional technology since it includes machines, a system, a method of organization and techniques, all of which were the product of the scientific approach to learning that stressed the importance of putting hands on thing and experimenting all theoretical ideas so as to apply science into practice, creating highly technical devices that have changed the world.

Hence educators designed activities that depended on problem solving strategies and in such aspect the computer was used as a micro world for learners to explore to build their own experiences. Later, the digital communication and networking created the concepts of on-line learning, email and forums which were considered Computer Based Learning CBL or Computer Based Training CBT that provided the chance of self study whereas CMC Computer Mediated Communication enabled students and the instructor to have interaction through distant learning or e tutoring.

In a way the 2000s is considered the Digital Age as referred to in London Review of Education, (2000) “Children and young people are growing up in a vastly changing context. No aspect of their lives is untouched by the digital era which is transforming how they live, relate and learn“.

**Schools of Thought in Education**

Progress of using technology in education was throughout the way backed by development of many philosophies of education such as the Behaviorism, Cognitivism and Constructivism. B.F Skinner started the functional analysis of verbal behavior which led to great favoritism of the technology of education as a way of increasing the outcome of conventional educational learning by implementing self – teaching programs whereby the studying materials were presented in small increments so as to introduce incorporate programmed learning into the classroom.

The cognitivism which was considered as brain - based learning investigated how memory worked .Noam Chomsky studied information processing and language acquisition. Development of computer science and I.T influenced the Cognitive Science theory which advocated problem – based learning, project and inquiry based research.

The Constructivism thought that learners construct their own meanings from interacting with realities so the job of a teacher was considered as a facilitator whose job was to plan a rich learning environment that allow learners to use their prior knowledge to interact with the new learning situations .

Thus the main purpose of all methodologies was to provide effective schooling for learners, but what is effective schooling?

**Effective Schooling**

According to Sarah Kessler, effective schooling includes eight factors that involve the availability of professional leadership of teachers, administrators and decision makers. Such leadership should share a common vision and goals that aim at providing purposeful teaching for learners in an attractive learning environment in which the learner is the main focus of the teaching process. Such environment should be secure and stimulating for the learners.
Technology in Education; Concepts and Benefits: (Advantages)

The early use of computers in classes proved to be very successful as it increased learners’ motivations who were able to receive feedback from a patient, non-judgmental machine, thus improving as Whyte mentioned the locus of control and changing it from external to internal. Students’ writings were improved as well by using the word processing which provided spelling and grammar checking tool along with meanings.

“Studies done in "computer intensive" settings found increases in student centre, cooperative and higher order learning, students writing skills, problem solving, and using technology” Regolith, C. (2011).

The great variety of the Internet course materials and tasks facilitated teaching and allowed the chance for differentiated instruction so as to cater for students individual learning styles which in turn elevated the learners’ sense of achievement and consequently their self-esteem.

Nowadays, advancement in technology is creating new possibilities for teachers and students as Carolyn April, director of industry analysis Journal explained:

“Technology’s impact on schools has been significant; advancing how students learn, how teachers teach and how efficiently and effectively educational services can be delivered.”

He added that the invention of tablets, I Pads and smart boards made a real revolution in the world of education. Therefore we can say that all these electronic devices that provide wireless access to the internet can help teachers remodel their learning environment in which learners may experience real involvement in authentic educational situations, allowing them the chance of independent learning, and catering for their individual learning styles that make technical aids (such as social networking, blogs, wikis, online collaborative tools, media manipulation and distribution tools) a must rather than an option for those flexible teachers who are able to adapt themselves to a fast moving world, that continues to excel over the limits of potentials to those of high expectations. Such concepts are really concerned with two factors, the teachers’ attitudes, and availability of technical devices.

Traditional teachers who refuse the change and cling to the traditional ways of lecturing as a means of imparting knowledge to their students may use the simplest forms of technology such as the OHP or the data show for presentation while at the same
time they insist on individuality in studying and adherence to textbook content delivery. In such a case the learning environment they create will undoubtedly deprive the learners from tremendous benefits that other means of interactive learning may provide. At the contrary, technology has achieved great success in providing better stimulation for learners and better modeling for teachers. Students can experiment through technology different fields while teachers can demonstrate their lessons more easily and efficiently. Young learners can enjoy watching movies or even reading e-books as part of the many facilities that multimedia can provide. On the other hand such passive attitudes of teachers towards technology will by no means encourage them to develop their IT skills. Whereas creative teachers implement technology in their classes through careful designing of activities that use technology in a constructive way so as to create an engaging environment that provides learners with the chances of collaborative learning through team and group work in an intentional purposeful atmosphere in which the teachers and learners are well aware of the intended products. Such designing is followed by evaluation that would enable the teachers to adapt and modify further activities. Therefore my point here is to highlight the fact that technology in education is not an end but rather a means that is supposed to serve an educational purpose aimed at by the teachers within the framework of the vision of their educational affiliations. However, implementing technology in the classroom demands careful planning of the activity so that technology would be a means rather than an end. Such planning includes designing an activity in which technology would serves as an aid, developing the activity would follow taking into consideration the different learning styles of the learners like their age range, purpose of learning, background experience and whether they are visual, auditory, tactile etc.

Applying the activity would follow, then the teacher would act as a facilitator while the learner would be at the center, acting and reacting to a rich learning environment in which technology plays an important role. Collecting feedback through interactive programs would allow the teacher analyze the results, evaluate his success and modify his plans for future activities as explained in figure

![Learning Environment Design](image)

**Patrick Ledesma, (2012)** Personalized Learning Requires Effective Teaching First, Technology Second
The other factor that matters regarding using technology in education is the availability of the hardware and software such as computer, language labs, internet access and smart boards. In addition providing training and technical support for teachers is considered an important issue when taking the decision to use such technical devices.

Technical tools such as Web 2.0 that includes blogs, wikis, twitter and Google Doc are few examples of programs that allow learners the chance of editing their reports in groups and communicating with their instructors even outside the class room space as the figure below shows.

Another advantage of technology as figure shows would be the open resources that are available on the Internet. Some are free and can provide all the parties involved in the teaching learning process (administration, teachers, and learners) the chance to find resources, store files and records and share knowledge with other educators in the field. Thus at schools, librarians can have access to more resources online, principals can store files and records on certain secure programs and sites, teachers can get materials for their lesson plans and learners can use all the resources available to practice self independent study, or even distant learning.

Parents as well can get in touch with their children schools and follow up their progress on line.

Technology in Education; Challenges and Possibilities (Disadvantages)

Technology is gaining more and more ground in the field of education, yet some drawbacks bloom at the horizon in reference to many issues that may endanger children growth. According to an article about Childhood in a Digital Age; London Review of Education, (2012) children can be negatively influenced by computer based interactive programs as Anna Craft wrote "Their brains are rewarded not for staying on task, but for jumping to the next thing, and the side effects could linger: the worry is we’re raising a generation of kids in front of screens whose brains are going to be wired differently."

Such effect can reach teenagers and adults as many researches proved that spending long hours on screens of mobile phones, computers or I Pads can affect attention span and the ability to focus.

Digital Divide is another drawback of technology since it represents the gap between those countries and people who have access to computers and the internet and those who don’t. Many schools in different parts of the world can’t afford to provide technical devices to each and every school especially in the third world countries where obtaining a chair in a small classroom is a blessing for students and a white chalk is probably the only means a teacher has got to write on the wall and explain his lessons!

The Following graph shows the gap in internet access availability for different sectors of people in the EU. The percentage goes down sharply when we speak about the unemployed, low income and the retired. Thus, the financial situation of people affects greatly their access to the internet and consequently affects their children ability to enjoy the advantages of technology mentioned earlier.

The previous statistics collected in the developed world but about the developing or even the third world countries where the basic needs are hardly met with. A quick look at the following graph shows that Africa represents the least percentage in Internet use while North America constitutes the highest percentage.
Another gap is the generational digital divide that exists between the young generation who have the abilities and skills to use the new social networking media so easily thus finding no difficulty in dealing with CBL, and the adults who thrive to acquire and up-date such skills which are completely new to them.

Hence the real change for traditional teachers, residents of the third world and the low income people would be circulating around three important domains, values, tools and skills. So embracing technology as a useful technique for improving the quality not only of teaching but also the quality of living would be the first step necessary for educators, businessmen and decision makers who would help in establishing awareness of the importance of such issue. Receiving training and acquiring the skills needed to use modern technology would be the second step in addition to the importance of availability of hardware and software that would connect users to the world of technology.
Then the three interwoven circles would result in eradicating peoples’ illiteracy of technology. Once this step is done, changing peoples’ attitudes towards using technology in their work and daily life would be much easier.

Therefore we can infer as the below figure illustrates that the five factors affecting the process of implementing technology in education as related to the problem of digital divide can be linked to the political, economical, sociological, academic and cultural factors whereby political decisions may hinder schools from having the necessary equipments which might lead in the long run to a lack of abilities and a higher rate of unemployment, students as a result might lack the skills needed for the modern age so they would lag behind other nations and lose contact with the modern civilization with all its rich resources.

Apart from the digital divide another problem on the personal and individual level might represent another drawback of educational technology which is related to dealing with resources and references that many sites provide for students to complete their research papers. Many students lack the skills of paraphrasing so they drop in the trap of plagiarism. Moreover, skills of critical thinking and the ability to evaluate what you read on the internet in order to choose, criticize and judge the authenticity and validity of information, seem to be one of the essential issues and priorities when deciding on integrating technology in education especially when we talk about distant learning and on-line learning for children and teenagers.

Losing real social communication abilities and developing some physical symptoms like headache, backache are some of the accusations that technology faces though moderate use of technology has reported no such effects.
**Data Analysis & Discussion of Findings**

This research has adapted both qualitative and quantitative methods so as to collect the necessary feedback to answer the important questions the researchers exposed to discussion.

A sample of 100 Public High school teachers was chosen from the different Emirates of the UAE. The questionnaire comprised of 20 questions divided into the five domains the main questions cover. In addition, many interviews were carried out by the researchers with 25 students at Ruqaya High School in Sharjah and with 30 students at the CUD in Dubai. The main question for the students was: Do you think there will be teachers in the future?

All participants in the research were given a complete explanation of the objectives of the study and they signed consent to participate in the survey.

**Students' Opinions**

“The classroom might differ in size, shape or organization but there will be always an instructor to guide our steps” they remarked. Such concept reminds me of Bill Gates famous saying “Technology is just a tool, in terms of getting the kids working together and motivating them, the teacher is the most important “

**Survey Finding and Result Analysis**

![Pie chart](chart.png)

To start with, 72% of teachers believed that technology can enrich the learning environment to a great extent taking whereas 21% agreed to the idea to a reasonable extent. Only 7% thought that technology is not useful and can’t enrich the learning environment. Such findings reveal the current trend among educators in the field of education that technology with all the options it provides such as smart boards, iPads, wikis and other interactive programs that can add to the classroom environment a lot. Such results remind me of the Barbara Means (Means et al., 1993) identified seven classroom variables that, when present, indicate an engaging learning environment.

The following characteristics of meaningful learning provide guidelines for designing constructivist learning environments learning environments should emphasize the qualities illustrated in the Figure below.

That is, technologies should be used to keep students active, constructive, collaborative, intentional, complex, contextual, conversational, and reflective Learners integrate new ideas with prior knowledge in order to make sense or make meaning or
reconcile a discrepancy, curiosity, or puzzlement.

When teachers were asked about the challenges that technology may create in the field of education, 62% thought that the digital divide would be the greatest problem since it constitute a global problem that would deepen the gap between people in the developed countries and the third world, namely between those who have the financial abilities to provide facilities for each individual and those who strive for the basics. 32% of the sample was worried mostly about the generation digital divide between the digital generation and the traditional teachers who own the knowledge but lag behind their students in the field of education. Only 4% were afraid that technology would replace teachers in the future which show a great sense of their own worth in the field of education.
Can technology replace teachers in the future?

To another question about whether technology can replace teachers in the future, this option seemed impossible for 46% of the sample, probable for 15%, possible for 29% whereas 10% neutral.

What are the attitudes of teachers towards the use of educational technology

Therefore when teachers were asked about their attitudes towards the implementation of technology in their classes, 64% were quite positive about it while 22% express negative attitudes and 14% were neutral.
Can teachers cope with the fast progress of modern IT?

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Response</th>
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<tbody>
<tr>
<td>39</td>
<td>certainly</td>
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<tr>
<td>36</td>
<td>To a certain extent</td>
</tr>
<tr>
<td>15</td>
<td>certainly not</td>
</tr>
<tr>
<td>10</td>
<td>not sure</td>
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</tbody>
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So it was important to ask teachers whether they would be able to cope with the change towards using technical aids in education. 395 were certain that by training teachers would be able to combine knowledge with the technical skills to cope with the modern age concept of teaching and learning, 36% were certain to a certain extent taking into consideration all the challenges that teachers might face which were discussed in earlier chapters. 15% of teachers thought that such change would not occur whereas 10% were not sure about such process.

**Reflections and Recommendations**

**Where Do Teachers Stand?**

Many researchers in the field of education express their fear of the fact that the great dependence of education on technology may minimize or even diminish the role of teachers in the educational process in the future. Yet, effective schooling is said to include the professional leadership, represented by the teacher who attends to the needs of his students to design his objectives and chooses the right tools to achieve them and evaluates his success in terms of the attractive learning environment he is able to create.

Thus, it is a matter of choice for the teachers either to use their old ways of teaching or rather choose the digital language of the modern age to address a new generation who is still in need of the wisdom, values and life experience that teachers can impart to them, only if teachers create the right channels of communication and choose the appropriate means to deliver it.

**What is the future image of education? With or without a teacher? Groundless fears or realities?**

Undoubtedly, technology will continue to pave the way for more facilitated ways of studying for students and more effective means of teaching for teachers. Nevertheless it would be very important to point out that technology consists mainly of machines that cannot operate without man. Hence the human factor will remain the master of the machine and teachers will remain the masons who build the world, providing inspiration, motivation and instructions for a generation who are in great need for their guidance in a chaos of opinions, cultures, violence and illusions.
**Recommendations**

The researchers deeply believe that for the process of implementation of technology in education to be a smooth change that all teachers can carry out so smoothly, a kind of alignment should be done between the four parties involved in the teaching learning process.

The researchers’ idea is explained in the following chart designed by them in which each party has expectations expressed in the attitudes of teachers, potentials of students, dreams of parents and a certain vision of the educational institutions that usually mould educational objectives into a policy that provides a framework for all the other three parties to work within.

Thus a meeting ground is required for all the four parties to meet and create a kind of compromise of potentials and expectations so that the educational policy would have priorities that might provide teachers with better opportunities to express their opinions and share in the process of educational decision making.

Such decisions should meet the students’ potentials with the challenges they are supposed to meet creating options for parents to be active parts in the process.

Thus the feedback received from teachers would reflect the accomplishments of students, supported by parents so as to provide the educational institutions with the input needed to make the necessary adjustment in a reciprocal way that undoubtedly would achieve more success on all levels.
Conclusion

The industrial revolution has changed not only the economic aspect of human life but rather the social and educational ones. Since then, machines have played a great role in changing life to the better. When the internet was first introduced, many people were suspicious of its benefits and now they can’t do without it. According to John Dewey: “If we teach today as we taught yesterday we rob our children of tomorrow “so teachers can’t just stick to their traditional ways of teaching as they are now as always the makers of the nation’s future history for which technology is the main backbone. All our life activities nowadays depend on technology and teaching is part of it.

Technology can enrich the learning environment with tools that extend the possibilities of communication between teachers and learners, learners and the world. Teachers ‘positive attitudes towards educational technology can ensure the success of its implementation in classrooms. Henry Hullway said: “One’s destiny is never a place but rather a new way of looking at things“

Nevertheless many scholars wonder about the future of teachers, will there be teachers in the future? In fact most of the students I met showed their preference of having a teacher and a normal school day in which they could meet their friends and learn using computers and networking facilities.” The classroom might differ in size, shape or organization but there will be always an instructor to guide our steps” they remarked. Such concept reminds me of Bill Gates famous saying “Technology is just a tool, in terms of getting the kids working together and motivating them, the teacher is the most important“

Furthermore, Gandhi left the world a very precious words "You must be the change you want to see in the world" so teachers should be aware of their vital role not only in class but in life as well and they should act accordingly, keeping in mind that “The technology itself is not transformative. It’s the school, the pedagogy that is transformative.” - Tanya Byron

Hence educational technology as the term implies combines the two elements of machines and the human factor that keeps to education its valuable core of morals, discipline and the art of living.
References


Global Resolution Team Model
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Abstract
Problem-based learning is ideal for those seeking solutions to real-world issues in a collaborative meaningful fashion. Until now, this learning technique has not been taken to the advanced level applying its concepts using a coordinated strategy to resolve timely real-worldwide issues in an online e-Learning environment. Dr. Scripture has taken his research and expertise on distributed problem-based learning to develop a vision for resolving worldwide issues; the “Global Resolution Team” model. This Global Resolution Team model can have serious implications on how leaders throughout the world in their specific areas of expertise can make a tremendous influence world-wide through collaboration, discourse of discussions while taking on challenging current real-world issues and seeking resolution. This concept is not being applied anywhere in the world. The Global Resolution Team model can begin solving world-wide issues with experts dispersed anywhere throughout the world and make it a better place for present and future generations.

Keywords: Problem-based learning, Conflict Resolution Online, Solving World Issues

Introduction
Problem-based learning is ideal for those seeking solutions to real-world problems in a cooperative fashion. It is a collaborative process where five to seven individuals define the particular issue, research, share ideas and concepts and eventually reach a conclusion to the dilemma. How can these concepts be applied worldwide to solve present real-world issues?

Throughout the world there are great influential leaders and renowned experts in their own specific realm of proficiency. These individuals are using their knowledge and expertise daily in their own domain and environment, wherever that may be on the planet. Do these leaders and knowledge experts ever collectively get together, collaborate and use their talents to resolve worldwide issues that are negatively impacting humanity? They do not collaborate collectively for a variety of reasons such as daily obligations, time, distance, lack of opportunity and motivational factors.

‘What if...’ there were an atmosphere and format where these leaders could communicate online anytime and anywhere in the world collectively to focus on a particular problematic issue within their area of expertise? What would energize this collective group of talented individuals to resolve a challenging issue that nobody in the world has yet been able to accomplish? How would the environment look? How would the progress be monitored? What powerful communication dynamics and strategies would be required to lead the team to a successful conclusion and resolution to a worldwide issue? The Global Resolution Team model can be the spark to providing a better world for future generations.

Literature Review
Problem-based learning is a collaborative learning process that follows a structured method in which a group of 5 to 7 learners discuss a problem based on a case scenario and either identify what the causes of the problem are, or recognize potential solutions (Clark, 2003). After defining what the
learning issues are, the group members individually research the issues, and reconvene for problem resolution (Clark, 2003). One of PBL's greatest attributes is that it motivates and engages the learner by presenting challenging and relevant problems (Barrows, 2002). Presenting a problem with a scenario, forming of teams, collaborating on the problem and reflecting on the overall results are just parts of the general PBL method (Reigeluth, 1999). The four phases of the PBL method are problem development, inquiry and investigation, solution, and debriefing performance (Stepien, Senn, & Stepien, 2000).

According to Wheeler (2006), one of the most important skills that students can acquire is problem solving because it is generalizable to everyday life experiences. Wheeler suggests that an opportunity presents itself in the realm of research to explore the effectiveness of dPBL. “It would be valuable to create effective distributed PBL (dPBL), as it would enhance the value of PBL. Learners could work together from around the world” (Barrows, 2002, p. 120). Problem solving is not an exact science, and worldwide audiences with diverse perspectives can augment the participant’s collaborative dPBL and problem-solving learning experiences. “The main characteristics that distinguishes PBL from other instructional approaches is that in PBL an open-ended problem must precede the theory, motivate learning and promote the integration of the concepts and skills needed for its solution” (Ribeiro & Mizukami, 2005, p. 139). The four phases that are characteristic of the PBL method are problem development, inquiry and investigation, solution, and debriefing performance (Stepien et al., 2000).

**Problem Development Phase**

In the problem development phase, learners are presented with a problem by the instructor, and must identify the issues and formulate hypothesis (Stepien et al., 2000). Questions are then selected to guide their inquiry, which leads into the inquiry and investigation phase. Learners are placed in groups ranging from five to seven participants. The problem scenarios become the central component for the learning process and need to be based on what the learner is expected to know upon course completion (Savin-Baden, 2003). Centering on the goal of solving problems promotes an in-depth understanding of the content (Hung, Bailey, & Jonassen, 2003).

Problems that are interesting and relevant to the learners can create an exciting and motivating learning environment. The goal is to present problems that are applicable to the learners that will engage them in the learning process. The PBL approach engages the learners in the activity in a manner that they are responsible for their solution to the real-world problem instead of learning how someone else resolved the issue (Barab & Duffy, 2000). This approach encourages self-directed learning, which can enhance the learners’ ability to analyze and explore problem situations more effectively. As learners discuss and analyze the issues of the problem scenario, they refine their decision-making and problem-solving skills in the process.

Barab and Duffy (2000) note that critical thinking skills result when learners are presented with authentic problems and learning activities that are anchored in real-world use. Knowledge transfer is the result of learning that is contextual (Dolmans, De Grave, Wolfhagen, & van der Vleuten, 2005). Meaningful learning and motivation results when the learner perceives the problem to be relevant (Fyrenius, Bergdahl, & Silen, 2005). As suggested in the literature, relevant, authentic challenges and collaborative discussions enhance problem-solving skill development.

Authentic problems include anything that is interesting or personally relevant to the learner (Jonassen, 2000). The learners must take ownership of the problem and view it as an authentic dilemma worth investing their efforts (Barab & Duffy, 2000). The
problem presentation must be appealing to the learner and can be presented in video, audio, or text formats that engage the audience (Jonassen, 2000). Higher thinking activity levels transpire when the problem presented is ill-structured, appropriate for the learners, collaborative, authentic, and as a result promotes lifelong and self-directed learning (Weiss, 2003).

Due to their complexity, ill-structured problems are recommended with problem-based learning because they are authentic and challenge the learners’ thinking processes. Ill-structured problems are not easily solved because not all the elements are known (Weiss, 2003). “The problem context and problem representation become a story about a set of events that leads up to the problem that needs to be resolved” (Jonassen, 2000, p. 221). Well-designed ill-structured problems can be used to bridge gaps between general and specific knowledge (Clark, 2003). Higher-order activity is stimulated in learners when there could be several possible solutions to the problem or possibly no answer as is the case with ill-structured problems (Weiss, 2003). With ill-structured problems, learners are challenged to make hypotheses and define what the problem is. Once the problem is analyzed and learners have developed questions for inquiry, the inquiry and investigation phase begins.

**Inquiry and Investigation Phase**

The second phase of PBL learning consists of building on hypotheses and beginning the investigation process (Edens, 2000). Ground rules and structure of the group interactions are established early in this process. Through group discussion, potential resources and investigation strategies are discussed and shared, and the core problem is identified.

Problem-solving logic and information searching strategies in this phase are important learning concepts for the participants resulting from the group collaborative discussions (Edens, 2000). One of the primary features of problem-based learning is collaborative problem-solving groups (Hmelo-Silver, 2004). Research studies demonstrate that when learners participate in cooperative groups, achievement improves as a result (Burch, 2000). Clark (2003) confirms that far-transfer learning outcomes yield better results with cooperative groups than individuals working alone.

As a group, the learners develop a knowledge board where they record what they know, need to know, and need to do in order to solve the problem (Edens, 2000). “The student is in a problem-solving situation that requires establishing connections and associations (i.e., cultural aspects) among the facts, concepts, rules, and principles of specific domains of information” (Tennyson & Elmore, 1997, p. 70). Hmelo-Silver (2004) recommends the whiteboard be divided into four columns to facilitate problem solving. The four areas suggested are facts, ideas, learning issues, and action plan. The whiteboard allows learners to externalize problem identification and visualize their problem-solving processes (Hmelo-Silver, 2004). Writing on the whiteboard assists the group in evaluating areas that may need additional inquiry and investigation.

Learning is a collaborative process and involves a mutually agreed upon understanding of the problem (Dolmans et al., 2005). The process of the group discussion and identification of the problem including potential solutions sharpens learners’ thinking and refines their decision-making skills (Mierson & Parikh, 2000). Knowledge is not learned in isolation and when information is retrieved from a variety of shared resources, it highlights the value of problem solving and sharing of resources (Hmelo-Silver, 2004). Collaboration and sharing of resources are relevant valuable skills for learners to experience and applicable to the real-world work environment.
Once learners identify areas of further research, tasks are then divided and responsibilities are delegated for investigation. Actively searching for information and sharing resources leads to meaningful learning for the learners (Fyrenius et al., 2005). Distributed expertise results when learners divide the learning issue responsibilities, become knowledgeable in certain topics, and share this knowledge with other group members (Hmelo-Silver, 2004). Sharing knowledge with each other in a collaborative group effort refines decision-making and problem-solving skills for the learners and provides a transition to the solution phase.

Solution Phase

This phase involves group members deciding how to resolve the problem they were presented. Each person in the group research information, and reports back to the group their findings. One of the challenges the group faces in this phase is deciding the best approach to resolve the problem based on the new information.

It is valuable in a collaborative problem-solving environment that learners share with other group members what they have learned from their investigation (Barab & Duffy, 2000). Savin-Baden (2003) points out that the processes team members use in their decision-making has a tremendous impact on learning. “Cooperative learning group techniques provide additional means to improve contextual knowledge acquisition by allowing students to develop solutions and see alternative solutions to contextual problem-oriented situations” (Tennyson & Breuer, 1997, p. 123). While the group goes through the process of solving authentic problems, learners improve their problem-solving strategies by applying metacognitive skills and receiving feedback from others (Clark, 2003). Application of appropriate metacognitive and reasoning strategies is valuable in refining decision-making skills (Hmelo-Silver, 2004). Collaborative discussions and feedback from other group members refines learner decision-making as suggested by the literature.

Group members are expected to share their research information, knowledge, experiences, and debate issues until a solution is decided upon (Savin-Baden, 2003). The group discussions assist learners in processing and analyzing the data while providing them an opportunity to defend the feasibility of their solutions, which adds to their problem-solving capabilities. Hacker and Dunlosky (2003) emphasize that verbalizing motives and reasoning while problem solving is a valuable technique that provides the learner the opportunity to self-discover deficits or assets of their decision-making process. By establishing a group environment where verbalizing thoughts is permissible, a learner can hear their own thought processes, catch any errors in their thinking and ones that make sense, which does sharpen their thinking skills (Mierson & Parikh, 2000). Knowledge evolves when group members must interact and negotiate new situations (Wilson & Myers, 2000). Viewing problem situations from multiple perspectives stimulates transfer of knowledge and problem-solving skills (Dolmans et al., 2005). Developing a collaborative process that has a positive impact on learning is an important characteristic in PBL environments (Dolmans et al.). The solution phase concludes when the group identifies potential solutions and makes their decision.

Debriefing Performance Phase

The final phase of problem-based learning is reflection and evaluation of the group learning process. By reflecting on their experience, it allows the learners to make the connection between their learning and problem-solving goals (Hmelo-Silver, 2004). The debriefing phase allows learners to identify any misconceptions they may have had and add to their understanding of the problem-solving process. The debriefing process is important for development of metacognitive insights, which can be utilized to improve performance in the next
problem-solving dilemma the learner experiences (Stepien et al., 2000).

Facilitator Role
In PBL, the instructor becomes a facilitator of thinking and learning instead of a transmitter of knowledge (Hung, Bailey, & Jonassen, 2003). The instructor needs to nurture interpersonal skills, model inquiry skills, support self-directed learning and intellectual risk taking, and keep learners engaged (Stepien et al., 2000). The framework and boundaries designed by the instructor for communication and dealing with conflict needs to be clearly explained and understood by the learners. “The role of the facilitator is extremely important in modeling thinking skills and providing metacognitive scaffolding” (Hmelo-Silver, 2004, p. 246). The instructor acts as a guide and encourages learners to be responsible for their learning. The instructor role is to guide the learners through the phases of problem-based learning and to monitor the group process (Hmelo-Silver, 2004).

Research Relevance
In 2007 Dr. Scripture completed a qualitative research study on what models and processes professionals follow in developing online (distributed) problem-based learning groups. Ten participants from 7 countries participated in the study (Australia, Belgium, Canada, Sweden, The Netherlands, United Kingdom and the United States). What were developed were best practices for this approach and how to engage participants to their capacity.

The results of the study conclude best practices for online problem-based learning, but the larger implication has been how to take the study results to another dimension and apply them to a Global Resolution Teams model. What if this process was applied for use with participants throughout the world focusing on specific real-world issues to which they are experts? How can this technique be used in an online environment where experts are distributed throughout the world? What if the Global Resolution Team model changed how we communicate and resolve world issues? The research study produced excellent results in comprehension of how to best apply problem resolution in an online environment with participants throughout the world. The larger implication is taking the learned elements from the study and devising a global strategy to incorporate them in the Global Resolution Team model and begin producing world-wide results.

Global Resolution Team Model
The Global Resolution Team model is a comprehensive strategy that combines applying distributed problem-based learning concepts and collaborative resolution techniques with experts dispersed throughout the world in an effort to solve specific world related issues to produce dynamic global results.

Collaboration Tools
Collaboration utilizing internet resources is an important component for global resolution team members dispersed throughout the world in order to communicate in real-time, share documents, files, information and expertise. Internet collaboration software such as Cisco WebEx, Blackboard Collaboration, Adobe Connect, Saba and others are widely available. The most vital elements in selecting a collaborative tool for the Global Resolution Team model concept include the ability to share documents in a real-time collaborative workspace, synchronous meetings on demand, asynchronous sharing elements, and efficient sharing of presentations and information that are accessible for mobile communication devices so that team members can contribute anywhere in the world and anytime. It is expected that the leaders and experts selected for the global resolution team communicate in their preferred method of sharing information and expertise.
Each individual team member will receive training on collaboration tools and how to use them efficiently. A team of knowledgeable information technology staff will be available to answer any questions from team members and resolve any technical issues that may surface. The collaboration tools and workspace for sharing is extremely important, but one must realize that tools and workspace are only a means to an end goal; problem resolution.

**Worldwide Problem to be Resolved Identification - Council of Worldwide Leaders**

Although there are challenges throughout the world, the resolution team problem identification process should be selective. A ‘Council of Worldwide Leaders’ will be responsible for reviewing the global issues that are submitted to them and assess according to selection standards. The council members will be selected based on their leadership and understanding of the potential needs and problematic issues within their culture, where if resolved through utilization of specific experts throughout the world will not only impact their local area but potentially nationally and worldwide. The council members must be motivated and have a strong desire to make a positive impact to improve the world for present and future generations.

The problem identified can be a global or local issue with worldwide implications. The problem seeking resolution needs to be challenging enough that it will take a team of leaders and experts to analyze, research, collaborate and pursue a successful conclusion to the challenge. It is expected that the issue to be resolved is specific with a set timeline for resolution if possible. Worldwide problems are never easy to resolve, but with a highly qualified and motivated selective team with experienced leadership to guide them through this process, problem resolution can be a reality.

**Team Member Selection Process**

The quality team of leaders and experts selected to address a specific problem needing resolution is extremely important. It is advisable that team members be selected for their specific knowledge and expertise in the challenging area being examined for resolution. The team should have different areas of expertise and diverseness in their knowledge and ability. An important factor in team member selection is each person’s intrinsic and extrinsic motivation to contribute and collaborate with other experts throughout the world. The problem identified must be interesting and challenging enough that each member understands how their knowledge and expertise can effectively contribute to the team goal and encourage a strong desire to participate. Each team member selected is expected to research, collaborate and contribute throughout the global resolution team process until a final resolution is concluded; therefore the selection process is an important phase in this model.

**Project Resolution Leader Responsibilities**

Each global resolution team that is selected will need to have a project resolution leader to guide and direct the process. The leader must be experienced in the science of distributed problem-based learning and collaborative processes, with expertise in project management including leadership and team motivational strategies. The selected leader does not necessarily have to be an expert in the issue to be resolved, but be knowledgeable enough to understand the problem that must be addressed and foster the project progress from beginning to conclusion. The project leader must have experience with online collaboration tools and the capability to help synthesize the information the experts present in the collaboration area; otherwise known as the intelligence gathering and sharing room.
Global Resolution Team Model Phases

I. Identification and Selection of the Council of Worldwide Leaders

A ‘Council of Worldwide Leaders’ will be responsible for selecting the specific problems that best fit within the Global Resolution Team model and philosophy. The council members will be comprised of leaders and knowledge experts from throughout the world.

The problem identification phase is the most important phase of this model because it determines the problem to be examined, the scope, complexity and potential duration of the project, and defines what type of leadership and expertise will be selected in phase III in this model. The problem to be resolved must be one that upon resolution will have a significant impact locally, nationally and potentially worldwide. The identified challenge should be one that requires a maximum team of seven experts, with a preferred number of five, each with their own specific knowledge and expertise that can contribute to the discourse and resolution of the problem. The specific problem selected must be motivating for the carefully chosen team members to have a strong desire to contribute and collaboratively work toward problem resolution.

II. Project Resolution Leader Selection

The identification and selection of the ‘project resolution leader’ is the responsibility of the Council of Worldwide Leaders. The individual selected to be the ‘project resolution leader’ must have a strong diverse set of talents and expertise in project management, superb leadership and motivational talent, distributed problem-based collaboration wisdom and proficiency, and the ability to synthesize information expediently and communicate effectively with team members. The person selected to the be team leader needs to be goal oriented, possess excellent time management skills and have a strong desire to have a positive influence on current issues locally, nationally and throughout the world.

III. Global Resolution Team Leadership and Expertise Identification, Assessment and Selection

The global resolution team members will be selected based on their leadership and knowledge specific expertise. Each identified problem that is selected by the Council of Worldwide Leaders will necessitate an identification of specific individuals to participate on the team. The overall team that is selected will be an elite set of personalities with diverse talents and skill sets that match extremely well with the selected problem seeking resolution. It is expected that each member will be motivated to participate actively and share their expertise with other team members through resolution of the problem they are working on collectively.

IV. Team Gathering and Problem Identification/Processes

The team gathering and problem identification phase is extremely vital in determining how the team works together throughout the project. The project leader is responsible for scheduling the team meetings and must understand that synchronous communication at the beginning of team formation is extremely vital for overall effective communication. It is important that the team members become acquainted with each other’s specific skill sets and expertise understand the problem that has been selected and comprehend how their combined talents will contribute to resolution of the issue presented by the council.

Understanding the communication processes and the online tools available for their use is significant element in project success. A demonstration of the intelligence sharing room layout and various communication dynamics in an online environment will be presented to the elite team members by the project leader and technical assistance team. The team will decide when and how they plan on
communicating their knowledge and expertise as it relates to the issue being addressed. Various ways the team can and will be contributing their knowledge will be through the distribution of information in the intelligence sharing room, asynchronous discussions, blogs, video presentations, podcasts, text messages, synchronous sharing and other forms of communication. Each elite team member is unique and it is important in this phase to recognize each member’s specific abilities, inspiration to actively participate and how they will contribute to the process.

V. Inquiry and Investigation / Intelligence Sharing

The inquiry and investigation phase is where the intelligence sharing begins. The processes in this phase are similar to the inquiry and investigation phase of problem-based learning. By this phase the team is acquainted with each other’s talents and the focus centers on an in-depth understanding of the problem and its various complicated elements. The team identifies what they know about the problem elements, as well as what they need to research further to comprehend additional important features. With assistance from the project leader, the team members share and contribute their expertise with other team members and research additional information they can provide. This is the phase where all the elite members collaborate and through their collective expertise, advance to a greater understanding of the problem and potential solutions.

VI. Re-visit the Problem/Set Goal for Resolution

At some point in the process, all of the information available is shared among team members. During this phase they re-visit the problem to ensure they have accurately identified the issues to be resolved. This is the phase where additional team members may be invited to participate based on their specific expertise and how they can contribute towards the resolution of the problem. The team reevaluates the challenges and issues yet to be addressed and decide on a plan of action that will lead towards the problem resolution.

VII. Solution

The solution phase is where the team members creatively and collectively synthesize their efforts and focus on specific solutions to the problem that was identified. This phase can be the most challenging and difficult for participants because there is not always one specific answer to a problem and different perceptions to the solution are expected. The project leader plays an important role in gaining cooperation and collaboration among the team members working together to come up with a resolution to the presenting problem. It is possible that more than one potential solution is identified, which is certainly reasonable. Once a solution or solutions are identified, the global resolution team presents their findings to the Council of Worldwide Leaders. If the solution is approved by the council, a plan of action is identified and the problem resolution recommendations are implemented. It is expected that the resolution to the challenging problem will have a substantial positive impact locally, nationally and potentially worldwide.

A celebration at the conclusion of the project is vital. A significant amount of effort and time will be devoted to the project by each team member, and it is exceptionally important that each team member’s contributions and efforts in the project be recognized by the Council of Worldwide Leaders.

VIII. Lessons Learned Assessment and Debriefing

Upon conclusion of each global resolution team project, the project leader will lead the discussion regarding what was learned that can benefit future projects and teams. It is wise upon project conclusion to comprehend what went well and what can be added to improve the processes for future global resolution teams.
Conclusion

The Global Resolution Team model is extremely relevant to present day world issues and problems. There are amazing and intelligent experts throughout the world, so why not use their knowledge collectively and collaboratively to resolve worldwide issues? This model provides the structure and creative concepts and elements that can have a significant positive influence throughout the world. Humankind needs to find a way to work together and use their talents, knowledge and expertise collectively to solve local, national and worldwide issues. If we do not take the time to begin resolving global issues, there will be a serious and adverse impact on future lives globally. With the support of identified leaders throughout the world, the “Global Resolution Team” model can bring hope of a better world for current and future generations a present-day reality.
References

Books


Chapter in Edited Book


Journal Articles
Barrows, H. S. (2002). Is it Truly Possible to Have Such a Thing as dPBL? Distance Education, 23(1), pp.119-122.


Hacker, D. J., & Dunlosky, J. (2003). Not All Metacognition is Created Equal. New Directions for Teaching and Learning, 95, pp. 73-79.


Hung, W., Bailey, J. D., & Jonassen, D. H. (2003). Exploring the Tensions of Problem-


M-learning in Higher Education in Bahrain: The Educators’ view

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Abstract

Universities in the oil-rich Gulf Cooperation Countries (GCC) have shown particular interest in m-learning which currently is treated as fashion, but at the same time is considered by corporations and educational institutions to be very promising. This paper investigates the adoption of m-learning at universities in the Kingdom of Bahrain, and explores the educators’ views and perceptions of mobile learning (m-Learning), as well as its future potential in higher education (HE). A survey questionnaire was distributed to instructors in four universities in the Kingdom of Bahrain, both private and public. This paper presents the pilot study, which includes the results of 45 responses. The findings suggest that although most of the educators understand the concept and they use m-Learning tools to some limited extent, there is a long way until we reach full integration with curriculum and the blended learning approach. In addition, despite the fact that most educators understand the necessity and role of m-Learning in content delivery, they do not seem to embrace at its full potential, as it is mainly used for communication purposes and navigation. The paper proposes that m-learning provides opportunities for more creativity in designing and delivering the course with further enhancement of the student experience, but it will be utilized in its full potential in the area within the next 5 years. This study provides guidance to instructors on the potential of m-learning and the need to change the teaching and learning culture to student-oriented for more effective and appropriate use of m-learning. This paper highlights the need for institutions to invest in faculty and staff training, and in technology as well as provides suggestions to other stakeholders on the need to incorporate m-learning in decision-making for further development in the region.

Keywords: mobile learning, technology, education, innovation, teaching and learning

Introduction

The emergence of the World Wide Web supported the development and the popularity of e-learning (Peng et al., 2009). In addition, mobile devices such as mobile phones, laptops have increased drastically and are widely used in e-learning (Iqbal and Qureshi, 2012; Koszalka and Ntloedibe-Kuswani, 2010). Most studies in m-learning focus on its acceptance by students in developing countries (i.e. Rheema and Sztendur, 2013; Wang et al., 2009) but very few focus on its acceptance by instructors or on their perceptions of m-learning and its future potential.

Literature Review

M-learning or mobile learning is an evolving phase of e-learning (Peng et al., 2009), as e-learning is dependent on desktop computers, whereas m-learning is dependent on mobile devices (Orr, 2010). There is a variety of definitions of m-learning. For example Hoppe et al. (2003 in Iqbal and Qureshi, 2012, p. 148) define m-learning as “using mobile devices and wireless transmission”. Kukulska-Hulme and Traxler (2007) suggest...
that m-learning emphasizes the ability to facilitate the learning process without being tied to a physical location.

M-learning has attracted attention due to the increasing number of available mobile devices, which are affordable and their costs are increasingly decreasing making them more accessible to people. At the same time these devices have multiple features and capabilities, such as making phone calls, taking pictures and making videos, storing data and of course accessing the internet (Sarrab et al., 2013). Maccallum and Jeffery (2009) propose that all these capabilities may be used in teaching and learning, for example for classroom activities (Dawabi et al., 2003). These mobile devices can be used for learning purposes via interactive games, for brainstorming, quizzing and are widely used to support and develop students’ own learning and collaborative learning (Iqbal and Qureshi, 2012). Moreover, they are available to users at any time and all time (Giousmpasoglou and Marinakou, 2013). Kukulska-Hulme and Traxler (2007) present several case studies that report and support the experience of educators with mobile technologies in universities. Zawacki-Richter et al. (2009) claim that e-learning and m-learning provide a wide range of opportunities for learners and teachers. However, Herrington et al., (2009, p.1) claim that it is not still clear whether “m-learning is used in pedagogically appropriate ways”.

M-learning is widely used in distance learning as it supports the access to the teaching material for a large number of students, independent of time and space, at low costs. Moura and Carvalho (2009, p. 90) suggest that “the development of m-learning as a new strategy for education has implications on the way students learn, on the role of the teachers as well as in the educational institution”. Hence, for the purpose of this paper m-learning is studied as an element of e-learning and blended learning in general not necessarily as a tool for distance learning, as it also helps in constructing problem-based learning as well as any related assignments and projects that meets the students’ interest (Kukulska-Hulme and Traxler, 2007). M-learning allows student-centered learning in which students are able to modify the access and transfer of information to strengthen the knowledge and skills of students to meet their educational goals (Giousmpasoglou and Marinakou, 2013; Sharples et al., 2007). In addition, it can support ubiquitous learning and can make the educational process more comfortable and flexible (Sarrab et al., 2013, p. 828).

The challenges of the use of m-learning are many for all stakeholders as it may have many technological restrictions. For instructors m-learning is a challenge as they should be familiar with technology, not only to use it for teaching and learning but also to support developers who are challenged by the limited memory, the lack of keyboard, the small displays especially when compared to computers and laptops (Iqbal and Qureshi, 2012; Wang et al., 2009). Instructors should adapt the design of the courses to integrate ICT; this design should be dynamic, easily scalable and should be applied at all times and places (Marwan et al., 2013). Moreover, Marwan et al. (2013) suggest that instructors face the lack of time to prepare for class.

There is concern on the educators’ ability to understand and respond to digital learning opportunities, as in many cases they are challenged by the need “to collaborate with a wide range of people such as web developers and programmers to deliver successful web-based education” (Peters, 2007). It is a fact that m-learning enables learning to occur at a less formal setting that is teacher-mediated, hence technical skills are required (Kearney et al., 2012). In addition, m-learning experiences can be customized for the learner to meet different learning styles and approaches, they may provide a high degree of collaboration and making connections to other people, creating further challenges to educators whose roles are changing (Mohammad and Job, 2013; Kearney et al.,
Thus, educators should be able to understand and analyze the unique challenges in emerging m-learning environments and facilitate insights to support their design and use of m-learning resources.

Students usually have access to the internet and other applications via their mobile devices such as Facebook, YouTube, MySpace and other. They are also familiar with its use, hence being well introduced to m-learning may lead to its wide use in their own learning. Nowadays students are active and innovative in terms of their learning, they expect a quick response from the tutor and want an interactive learning, student-centered, authentic, collaborative and effective learning with the use of Information and Communication Technology (ICT) (Marwan et al., 2013).

According to Mirza and Al-Abdulkareem (2011, p. 88) “the learner’s attitude and lack of prior knowledge of IT use are major factors that affect the acceptance of e-learning by students”.

Previous research suggests that there are various factors that contribute to the adoption of m-learning. Ju et al. (2007) claim that the perceived usefulness influences the intention to adopt m-learning. On top of usefulness, Wang et al. (2009) and Sarrab et al. (2013) identified other factors such as the self-managed pace of learning, the social influence, the performance and the effort expectancy.

Venkatesh et al. (2003) added the available infrastructure to support the use of any m-learning system, and Liu and Li (2010) add the playfulness. The interface makes the use of mobile devices more interesting for students, as the learning is personalized, more fun, spontaneous, and engaging users to contribute and share (Sarrab et al., 2013). Marwan et al. (2013) add the interactive learning process, the integrated learning information and the high learning needs. Thornton and Houser (2002 in Moura and Carvalho, 2009) propose that recordings, communication and access to information in the local set, sending reminders or relevant information for students are good options of the use of m-learning. Attewell (2011) propose that m-learning assists in the development of the learners’ literacy and numerical skills. In addition, m-learning students are able to experience a dynamic class via interaction. To understand the factors that contribute to the adoption of m-learning will help stakeholders (educators, software developers and technicians) to incorporate these factors into the design of the m-learning systems.

Challenges and restrictions of the use of m-learning include the lack of standardization, the low bandwidth, the limited processor speed and small screen size, low storage, short battery life, lack of data input capability (Sarrab et al., 2013; Maniar and Bennett, 2002), low display resolution, limited memory and less computational power (Shiau et al., 2001). Marwan et al. (2013) claim that classes are difficult to be rescheduled with m-learning. Weber (2011) supports that in the MENA region instructors are concerned about the security of the educational data, and parents are concerned about the use of chats and the safety of the online environment. Mirza and Al-Abdulkareem (2011, p.84) add that exposure to material from the internet “could be considered dangerous to youths and to the religious moral values of those nations”.

Mobile learning has been considered as an alternative learning style in the Gulf Cooperation Council (GCC) countries as well. In these countries, according to Hadji Hamou et al. (2012) several initiatives have been introduced such as proliferation of e-books and e-learning devices, as well as flexible access to distance learning. However, these initiatives do not show a clear shift towards e-learning and m-learning in the region. Nevertheless, there are some good examples of educational institutions that have contributed to the development of e-learning and m-learning. For example, Hamdan Bin Mohammed e-University
(HBMeU) in the UAE has introduced an effective architecture for e-learning, and has contributed to the development of standards for e-learning programme accreditation (Hadji Hamou et al., 2012).

A study in the Middle East reveals that only 49% of society members are aware of e-learning (CITC, 2007) and the main reason for the limited use of e-learning and m-learning in the region is the low public and teachers’ esteem for online learning (Mirza and Al-Abdulkareem, 2011).

In Saudi Arabia, the rapid advancement in mobile technologies, wireless networks and the acceptance of new smart devices have increased the interest in m-learning. In fact, The Ministry of Higher Education (MOHE) has launched a national project “AAFQ” to develop a long term plan for HE in order to address future challenges including m-learning.

Nevertheless, universities in the oil-rich GCC have shown particular interest in m-learning which is currently treated as fashion (Mohammad and Job, 2013), but at the same time is considered by corporations and educational institutions to be very promising (Sharrab et al., 2013; UNESCO, 2012). Although, there is increased interest in m-learning adoption in teaching and learning in the region, there is limited research conducted (Iqbal and Qureshi, 2012; Mirza and Al-Abdulkareem, 2011). Most studies focus on the learners’ perceptions and use of m-learning with very little research conducted in the instructors’ views (Mirza and Al-Abdulkareem, 2011). Hence, the authors decided to investigate the adoption of m-learning at universities in the Kingdom of Bahrain, and explore the educators’ views and perception of m-learning, their intention to use it, as well as its future potential in higher education. This paper aims to provide an overview of the challenges that instructors face with the use of m-learning and of insights and recommendations on strategies for the use of mobile learning to change and enhance the pedagogies in HE.

Research Methodology

This paper presents the findings of the pilot study of the questionnaire conducted in four out of eight universities in Bahrain; both private and public universities were included in the survey. In order to address the aim and the research questions of the study, Zawachi-Richter et al.’s (2009) questionnaire titled ‘Mobile Learning: From single project status into the mainstream?’ was used after having acquired the authors’ permission for its use. Instructors were asked to rate the mobile learning and teaching experience of distance educators, the development and growth of mobile learning, the impact of mobile technologies on teaching and learning, mobile learning applications and mobile learning activities, mobile learning and access to (higher) education, and the future development of mobile learning with a 5 Likert scale from (1) strongly disagree to (5) strongly agree.

For the pilot study, a total of 45 questionnaires were collected between April and June 2013, in which educators were asked to provide their attitudes regarding m-learning as a tool in their teaching. The participants in the study were from different faculties such as Business, ICT, Humanities, Art and Design, and from different academic rankings, with the majority being PhD holders (53.3%). 35.6% were female and 64.4% were male.

In order to identify the instructors’ perceptions of m-learning frequencies, means and standard deviations were calculated. Moreover to identify the main ideas about the future of m-learning the frequencies of responses were calculated.

Results

The current status of the use of m-learning at the institutional level was identified and the results are shown in Table 1. For the purpose of this paper the authors present the most frequent answers or the majority of answers.
Table 1: M-learning status at institution level

<table>
<thead>
<tr>
<th>Response (N=45)</th>
<th>Frequency (%)</th>
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<tbody>
<tr>
<td>C1 A traditional face-to-face or contact-based teaching institution</td>
<td>34 (75.6)</td>
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<tr>
<td>C2 Non-existent</td>
<td>27 (60)</td>
</tr>
<tr>
<td>C3 No, there are no institutional plans for developing course materials for use on mobile devices</td>
<td>27 (60)</td>
</tr>
<tr>
<td>C4 No, there is no institutional support. Yes, a new unit at the organization/institution has been created for this purpose.</td>
<td>14 (31.1)</td>
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</table>

It is evident from the above that the majority of the institutions in the study were face-to-face with limited use of e-learning. M-learning was non-existent and most did not have any plans in developing m-learning. In addition, there was no technical support or in the cases that there was, it was limited.

Table 2: Current personal status

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<th>Response (N=45)</th>
<th>Frequency (%)</th>
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<tr>
<td>B1 Yes, I am personally doing research on mobile learning</td>
<td>7 (15.60)</td>
</tr>
<tr>
<td>Yes, but I am not personally doing research on mobile learning.</td>
<td>11 (24.40)</td>
</tr>
<tr>
<td>Yes, I am involved in mobile learning projects.</td>
<td>2 (4.40)</td>
</tr>
<tr>
<td>I have read a number of articles and papers on mobile learning</td>
<td>4 (8.90)</td>
</tr>
<tr>
<td>No, but other persons in my institution are knowledgeable.</td>
<td>14 (31.10)</td>
</tr>
<tr>
<td>No, I have not heard about mobile learning.</td>
<td>7 (15.60)</td>
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In reference to the current status on m-learning the participants expressed their opinions on their knowledge on m-learning and on the use of mobile devices. The results are shown in Table 2.

Interestingly, most respondents are aware of m-learning, but only 15.6% are currently doing research. Similarly, 15.6% of the respondents have not heard about mobile learning. The use of mobile devices is shown in the following graph.

Most of the respondents (43.52%) used a laptop for connecting to the internet, and then their smartphone (22.27%). Moreover the participants were asked to evaluate their experience in m-learning. The results are shown in the following graph.

The majority of the responses to this question were towards the strongly disagree (1) area, which shows that the participants are not involved in m-learning projects, and they have not been exposed to any projects relevant to m-learning.

Further, respondents were asked to rate the importance of learning tools for students, the learning activities that are appropriate for mobile devices and the importance of applications. The findings are shown in the following table.
Table 3: Importance rating of importance for tools (B4), learning activities (B5), applications (B6) and learning tools (B7)

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<td>(4.4)</td>
<td>(4.4)</td>
<td>(15.6)</td>
<td>(75.6)</td>
<td></td>
</tr>
<tr>
<td>B7.1</td>
<td>1</td>
<td>12</td>
<td>11</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.2)</td>
<td>(26.7)</td>
<td>(24.4)</td>
<td>(31.1)</td>
<td></td>
</tr>
<tr>
<td>B7.2</td>
<td>2</td>
<td>11</td>
<td>15</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(4.4)</td>
<td>(24.4)</td>
<td>(33.3)</td>
<td>(31.3)</td>
<td></td>
</tr>
<tr>
<td>B7.3</td>
<td>1</td>
<td>10</td>
<td>12</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.2)</td>
<td>(22.2)</td>
<td>(26.7)</td>
<td>(28.9)</td>
<td></td>
</tr>
<tr>
<td>B7.4</td>
<td>1</td>
<td>8</td>
<td>15</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.2)</td>
<td>(17.8)</td>
<td>(33.3)</td>
<td>(28.9)</td>
<td></td>
</tr>
<tr>
<td>B7.5</td>
<td>1</td>
<td>5</td>
<td>10</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(2.2)</td>
<td>(11.1)</td>
<td>(22.2)</td>
<td>(62.2)</td>
<td></td>
</tr>
</tbody>
</table>

The findings suggest that the respondents found very important ‘being connected anywhere, anytime’ (B4.5), and ‘sharing texts, notes and documents’ (B4.4), hence they did not find the text messaging or voice calls and e-mails as highly important tools for students. Moreover, they identified as appropriate learning activities for mobile devices ‘coursework’ (B5.1), ‘collaborative learning’ (B5.3) and ‘information retrieval’ (B5.5). The applications found to be more important were all those included in the questionnaire such as mobile office (B6.1), diary and scheduling (B6.2), audio and video applications (B6.3), imaging (B6.4), other accessories (B6.5) and online data services (B6.6). Finally, the most useful tools were accessing information such as notes, documents etc (B7.2) and again ‘being connected anywhere, anytime’ (B7.5).

The respondents were asked to rate the new strategies and methodologies that are facilitated by m-learning. The results are shown in the following table.

Table 4: Strategies and methodologies

<table>
<thead>
<tr>
<th>Category</th>
<th>Typical examples</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning activities</td>
<td>(Inter)active learning, authentic learning, explorative learning, project orientated learning, situated and informal learning, Qs &amp; As.</td>
<td>3.60</td>
<td>1.286</td>
</tr>
<tr>
<td>Assessment</td>
<td>Security for testing and evaluation procedures, assessment to determine students’ knowledge a day or two before a lecture/discussion to determine which topics need more attention.</td>
<td>2.69</td>
<td>1.411</td>
</tr>
<tr>
<td>Resources</td>
<td>Generation of information, sharing resources, data sourcing, access to information, navigation, m-library.</td>
<td>3.84</td>
<td>1.127</td>
</tr>
<tr>
<td>Interaction</td>
<td>More support for collaboration, more support for bottom-up content creation, enhanced social support, consulting peers &amp; experts. Distance Educators will teach again instead of providing teaching material only.</td>
<td>4.02</td>
<td>1.033</td>
</tr>
<tr>
<td>Personalisation &amp; Individualisation</td>
<td>New strategies might emerge from better knowledge of learner behaviours and study patterns with technology, which were never examined that closely before, just-in-time learning, addressing learner styles or needs, keeping it simple, focus on small 'chunks' of learning, just-in-time support/job aids.</td>
<td>3.76</td>
<td>.957</td>
</tr>
</tbody>
</table>
Except the ‘assessment’ (B8.2), the rest of the variables were rated close to agree and strongly agree responses. Interaction (B8.4) (Mean=4.02) was the most important of all the strategies that are facilitated by m-learning. The least important was ‘assessment’ (B8.2) (Mean=2.69).

The major weaknesses of mobile devices that might hinder m-learning were also rated by the respondents as shown in graph 3.

Graph 3: Major weaknesses

Most of the respondents agreed or strongly agreed with all the variables except the screen size (B9.2). This showed that the size of the screen of mobile devices was not considered to be a hindering factor for m-learning. On the contrary, the small size of the displays was found to be a challenge for m-learning activities. Similarly, the costs of network, the memory size, the device capabilities and the limited battery time were among the most important challenges for applying m-learning.

When respondents were asked their views on the latest trends and developments in teaching and learning as well as on when m-learning will be an integral part of mainstream in HE they responded as follows.

Most of the respondents (51.1%) supported the view that although the technology should impact on the teaching and learning, currently this was not the case. In addition, most of the respondents (75.6%) believed that m-learning will become an integral part of mainstream HE within 5 years.

| Table 5: Respondents’ views on trends and developments in m-learning (and in years) |
|-----------------|--------|------|
| **Responses**                             | **Freq.** | (% ) |
| Technology changes should not have an impact on our teaching and learning strategies and methodologies. | 2 | 4.4 |
| Technology changes should have an impact on our teaching and learning strategies and methodologies, but this is currently not the case at present. | 23 | 51.1 |
| Teaching and learning strategies & methodologies adapt continuously due to new affordances that technology provides. | 12 | 26.7 |
| Technology changes bring about radical changes to our teaching and learning strategies & methodologies. | 8 | 17.8 |

Finally the participants were asked to present their views on the future trends of m-learning. For the purpose of this paper only the majority of responses are illustrated in the following table.

| Table 6: Future trends of m-learning |
|--------------------------------------|--------|------|
| **Statement**                                      | **Freq.** | (�%)  |
| **Teaching and learning theories in 20 years…**     |        |      |
| In essence remain the same, but new learning paradigms and learning strategies will emerge because of technological developments. | 25 | 55.6 |
| Change completely with new learning theories replacing behaviourism and constructivism due to the radical impact of future technologies. | 15 | 33.3 |
| **The attributes and opportunities that mobile technologies afford will…** | | |
| Be very helpful in enhancing teaching and learning independent of time and space. | 33 | 73.3 |
| **Mobile devices and applications will in future be…** | | |
| Only one of many types of computing devices used. | 22 | 48.9 |
| The preferred access and learning device for any type of learning. | 15 | 33.3 |
| **The development of m-learning will have an impact on HE** | | |
| It will widen access to (higher) education, because of the proliferation of mobile phones and wireless infrastructure – especially in developing countries. | 29 | 64.4 |
| **The ideal mobile devices in the future will be…** | | |
| Small but still laptop sized devices because of its all-in-one device nature. | 12 | 26.7 |
The majority of the respondents (55.6%) supported the view that new teaching and learning strategies will emerge due to IT developments. In addition, they proposed that they will enhance the teaching and learning, nevertheless, they proposed that the mobile devices will be the preferred device for learning. They also supported that m-learning will widen access to HE, because of the proliferation of mobile phones and wireless infrastructure and the devices are expected to be small in size. Most of the respondents (84.4%) agreed that m-learning will facilitate new strategies and methodologies for learner support.

Implications for Future Research

Such The purpose of this paper was to investigate the instructors’ views on m-learning and its use in teaching and learning in higher education in Bahrain. It is evident from the above that m-learning plays an important role in teaching and learning strategies. Although, most of the participants work in institutions that do not offer m-learning strategies and they use face-to-face teaching, the instructors are considering its use, and some already conduct research in m-learning. Nevertheless, it was interesting that the majority of the respondents have not heard of m-learning.

The findings proposed that m-learning could be considered a continuation of traditional learning methods as well as an alternative to the methods of effective learning. It is mainly used for coursework, information retrieval and collaborative learning. The most important elements of m-learning included the fact that instructors are connected anywhere anytime, and those they can share texts with their students, supporting the view of Giousmpasoglou and Marinakou (2013). Hence, instructors should be cautious when including e-learning as part of their assessment as the infrastructure and the support is not available at the institutions in the study. This study agrees with Venkatesh et al. (2003) that the available support and infrastructure are important for the use of e-learning and m-learning. Similarly to Sarrab et al. (2013), the main weaknesses identified include the small size of displays, the cost of network, the memory size and the mobile devices capabilities. However, the participants proposed that the new technologies should have an impact on teaching and learning in HE, and they believed that new may emerge, as they may enhance the learning and the teaching strategies. Macallum and Jeffery (2009) also propose that mobile devices may enhance m-learning, and the teaching and learning pedagogies.

Understanding the factors that contribute to the effective use of m-learning may help stakeholders to incorporate those in the design and implementation of m-learning. It is necessary to identify the practices in terms of instructional design and adapt them to reflect the number of changes that have taken place in education from the use of e-learning and m-learning. A transformation towards m-learning requires not only the use of the devices but also awareness and familiarity with new technologies (Wang et al., 2009), hence mobile tools should be aligned with the course objectives, and instructors should be aligned with m-learning requirements. M-learning should be used appropriately in order to be effective (Herrington et al., 2009), thus instructors should have the technical know-how as they are an essential part of m-learning.

This study proposes that informative meetings and instructors’ training on m-learning can enhance the perception and the use of m-learning in higher education in Bahrain. Nevertheless, more empirical research is required to test the effectiveness of e-learning.

Future studies can focus on identifying the factors, challenges and weaknesses in specific disciplines as the use of technology varies depending on the field of study for example it can be limited in liberal arts. It would also be interesting to explore the above findings in terms of gender differences.
References


Using Mobile Phone Forums to Enhance Interactivity in Teaching: A Case of Makerere University

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Abstract
The teaching and learning process is becoming a big challenge especially in Sub-Saharan Africa. This is mainly due to the challenges created by the liberalization of University Education and the implied surge in student numbers. The situation in Makerere University is not different, the challenge of large student numbers has left lecturers with no option but to use teacher-centered methods of teaching (lecture) which limit teacher-student interaction. This study employed a case study design purposively limited to four preservice teachers from the History Education unit, Makerere University. Mobile phone forum technologies were used as a platform to enhance increased teacher-student interaction and also perceived as an appropriate and sustainable technology for the educational context. Critical Discourse Analysis (CDA) was used to analyze the qualitative data (texts/artifacts) obtained. The study findings revealed that mobile forums increase interactivity between teachers and students in a supportive and collaborative way.

Keywords: Mobile phone technologies, Interactivity, Sustainability, pedagogy.

Introduction
Teaching and learning (T&L) activities in the classroom are important activities in the context of quality of education. Different studies reveal that it is beneficial to incorporate fruitful technologies in the T&L process inside and outside of the classroom. This enables the different stakeholders to obtain feedback, interactivity and assessing the learning process (Chow, etal, 2005). The Makerere University Information and Communication Technology (ICT) policy emphasizes the need to leverage faculty/unit effectiveness and enable easier access to and coverage of University education by using ICT through the use of education technology in instruction, learning and university wide research (Makerere University Education technology strategy, 2010). Since 1992 Makerere University has undergone tremendous changes both in the student numbers and performance. In order to enhance this performance there has been a drive to embrace ICT and other innovations in pedagogy (Muwagga, 2006). There are different allegations that the university pedagogy needs a lot of changes as a result of the constrained student – lecturer ratios.

This study focused on the History Education Unit (HEU), School of Education, (SOE) and Makerere University (MU). In this unit, ICT integration in teaching and learning has received minimal success mainly due to limited number of computers; very few staff and students own personal computers and laptops. As a result, most of them are forced to utilize the computer lab which houses only 70 functional computers. The HEU is also faced by a problem of unreliable electric power supply and low internet connectivity. Further still, most lecturers and students lack adequate computer literacy skills to enable them embrace and integrate e-learning in the pedagogical process. This situation is worsened by the large number of students offering history education (over 500 students’ ratio of...
The large class sizes have left lecturers with no option but to use didactic teaching methods like the lecture method which initiates a one way communication procedure. This in most cases breeds into limited teacher-student interaction which limits assessment of students learning leading to low quality education. Research has shown that class size affects academic performance (Frode & Talberg, 2004).

These challenges require an intervention of a new, modern, innovative and sustainable approach that can work effectively in the African Higher Educational context. Satellite, (2005) & Ng’ambi (2006) claim that the challenge in Africa is finding a technology that is affordable, easily adoptable by novice computer users and functional environments where electricity, internet connectivity and landline and cellular telephony might be limited or unavailable. It is envisaged that mobile phone technologies can be sustained and rightly suit the African Educational context. The purpose of this project is therefore to explore the possibilities of using forums on the mobile phone application wink site as an intervention to teacher-student interaction. The study also perceives mobile phone technologies as an appropriate and sustainable technology in the African Educational context.

**Utilization of mobile phone technologies and their sustainability in the African educational context**

Mobile phones’ diffusion, capability and portability are making them the number one companion for the human race. The education sector is using them to extend learning support to students in what is now called Mobile learning (Sandnes& Talberg, 2004). Mobile learning or M-learning is any form of learning that happens when mediated through a mobile device (Alexander, 2004; Herrington et al, 2009). Others have defined mobile learning as taking place when the learner is not in a fixed, predetermined location (O’Malley et al, 2005; Herrington et al, 2009). Mobile phone technologies are best viewed as mediating tools in the learning process (Sharples, 2006). The idea of incorporating mobile technology into the learning process is already an established thought. Universities world wide are implementing various educational applications for mobile phone technologies that allow lecturers and students to work freely any where at any time (Muyinda, 2007; Sandnes&Talberg, 2004). This seems to concur with Molina (2006) cited by Ngambi (2006), who argues that mobile phone technology convey just about every communication and will influence higher education in the classroom, in student affairs both on and off campus. According to Ng’ambi, (2005; 2006), most 21st century students own mobile phones, are connected most of the time and are communicatively competent with SMS. The obvious advantage of mobile phones is their low prices, wide availability, portable size, reliability, battery power, internet accessibility, ubiquitous networks these have made mobile devices the technology of choice for people who need quick and easy anywhere, anytime communication (Frode & Talberg, 2004).

Higher Education in Africa may have to consider and exploit the success of mobile phone technologies for teaching and learning/pedagogy because they are easily sustained. In this study sustainability was adopted to reflect technologies that are cheap, easily maintained with the potential of helping teachers and students meet their future needs for ever (life long learning). Hellstrom, (nd); Jones and Marden (2006) & Ngambi (2006) state some reasons why mobile phone technologies are appropriate and sustainable in the African Educational context:

- Physical access to the technology;
- Penetration rate is ever increasing and even more have access through shared usage and ownership. Related to access is that mobile phones add the dimension 'anywhere and any time' due to their
mobility and that mobile phones are switched on most of the time. Most lecturers and students in the HEU own a mobile, are connected most of the time and are conversant sms.

- Appropriateness of the technology; unlike desktop-based systems that need constant electricity and need to be stored in a cool, secure location. Mobile phone technologies can go for several days without being plugged in. This implies that they can be recharged from solar cells or clockwork generations. Mobile technologies can reach areas where there is no other ICT infrastructure (like internet, fixed lines) and are environmentally friendly.

- Affordability of the technology; the relatively lower cost of mobile phone technology versus internet technology has lowered the entry barriers for students in the HEU. For example, in Uganda, the Handset of a mobile phone is sold at around $ 19-20 which quite affordable for an average student at the University.

- Human capacity training; Mobile handset interfaces are familiar to most users in a way that Windows and Linux is not. Students often learn to use a mobile phone by pressing relevant buttons unlike Computer and internet infrastructure that requires training to acquire computer literacy skills.

- Interaction; Mobile phones make it possible for real-time, two-way teacher-student interaction. This is because students can call or send a sms to the teacher to clarify on some issues that may not have been easily understood in class.

However, although mobile phone technologies seem most appropriate and are sustainable in the African Educational context as presented above. Simply jumping on the bandwagon of technological innovations is not a panacea to improve student support. Therefore it may be more productive to consider how educators can take steps to meet the challenge of these new technologies with in the educational context (Ferry, 2009). Different features of technology must be understood by all stakeholders before deploying the technology for learning or student support (Keegan, 2005). Pedagogical issues must be born in mind (Muyinda, 2007). This implies that, effective ways of using education technologies should be considered in conjunction with specific teaching strategies that support particular learning experiences (Czerniewicz and Brown, 2005; Nga’mbi, 2006).

The purpose of this study is to establish how forums on the mobile application wink site can be used to engage students and enhance interactivity between the teacher and the students. A forum is an online discussion site where people hold conversations in the form of posted messages. According to Wendy & Woodland, (2011), an online discussion forum is a learning platform that allows students to post messages to the discussion threads, interact and receive feedback from students and instructor and foster deeper understanding towards the subject under study. A forum may contain a number of sub-forums, each of which may have several topics. In this study, the term mobile forum was used to illustrate forums on the mobile application wink site. The forums on the mobile application were used as platforms for students to post their comments in terms of texts/artifacts that illustrate interactivity between the lecturer and students. Interactivity among learners can be immediate by sending an instant sms text message or a delayed personal encounter in a discussion forum. Interactivity involves communication, participation and feedback. Online interactivity has a potential to create a climate that supports cooperative learning, critical thinking activities, and meaningful tutor /student academic collaboration (Milheim, 1995; Muirhead, 2000).
Research Methodology

The study employed a purposively selected case study design. A case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context (Yin, 2009). In this study the case study design was appropriate to explore contemporary issues on interactivity among second year preservice teachers offering history as one of their teaching subjects. It mainly employed qualitative investigation into students’ engagement with the forums on the mobile application wink site. A qualitative investigation was employed because, it provides a description of stakeholders’ views and experiences and because the investigation looks at the contemporary set of events, over which the researcher has no control (Yin, 1994). This facilitated the examination of the interaction between the teachers and students in the history education class. The study population and sample case study students were drawn from students who are offering history at Makerere University College of Education and External Studies. Gender representation was taken into consideration (two male and two female students were sampled). The sampled case study students were invited to join the history education community accessible on http://winksite.com/sebbowa/sbbbdor001. The respondents were purposively selected basing on; ownership of a mobile phone, blue tooth enabled, a big screen resolution with a good sound capability and sustainability of the phone in terms of air time and internet subscription were greatly considered.

The study data was obtained in terms of responses/texts obtained after students’ engagement with the forum on the mobile Application wink site. The data from the different questions and response was thematically presented under sub –themes which were drawn from the salient issues raised from the different questions and case study students’ responses. The responses were drawn from the e-research and e-discussions with the sampled students. These were accessible on http://winksite.com/sebbowa/sbbbdor001.

Figure 1, illustrates a screenshot of the history education mobile application site illustrating the interactive tools available for use on the site; forums, links, community members and community messages.

The sampled case study students not real names, (Peter, Godfrey Lillian and Rebecca) were invited and introduced to the history education mobile application (wink site) as displayed above. They were further oriented to the different interactive tools on the application and guided on how to use and interact with them. The respondents were then dispersed but asked to use their mobile phones access the history education mobile site, engage with the tasks put forward and post comments, reflections on the forum at ‘anytime’ from ‘anywhere.’ All their postings and comments were to be made public; this was done to make it possible for the respondents to comment on each others’ postings so as to initiate discussions among the participants.

Study Findings

Introduction

This section presents the qualitative responses (texts and artifacts) drawn from students actual engagement with the forum on the wink site mobile application accessible on http://winksite.com/sebbowa/sbbbdor001.
The findings are in response to the observations and the questions made in lieu to the instructions given below namely:

**Instruction**

Make a reflection on the importance of using forum on the mobile application as a way of enhancing the teaching and learning process.

**Question:**

i) What is the importance of using the forum on the mobile application as a way of enhancing the teaching and learning process?

ii) hat challenges did you encounter while using the forum on the mobile application?

The qualitative responses to question (i) were divided in to sub themes; Interactivity, Collaborative learning and Social interaction and presented in table 1 below

<table>
<thead>
<tr>
<th>Responses presented in Sub-themes</th>
<th>Number of comments</th>
<th>Representative comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interactivity</td>
<td>4</td>
<td>‘I am always shy at expressing my self in front of large classes; Mobile phone forums have done it for me. I can now comment and respond to any question casually! Forums bridge the gap between the teacher and the students which really enhances the learning process.’ (Lillian).</td>
</tr>
<tr>
<td>Collaborative learning</td>
<td>3</td>
<td>‘You can gain a better understanding of everyone’s opinion after reading their comments. Different experiences, views and opinions are shared on the forums.’ (Peter)</td>
</tr>
<tr>
<td>Social Interaction</td>
<td>3</td>
<td>‘After sharing our experiences on the forums we obtained a sense of belonging and togetherness which forced us to form discussions groups outside class that have been really helpful.’ (Godfrey)</td>
</tr>
</tbody>
</table>

Similarly, qualitative responses to question (ii) above have been subdivided in to sub themes; Net work failure/slow internet, need for training and no sense of direction and presented in table 2 below;

<table>
<thead>
<tr>
<th>Responses presented in Sub-themes</th>
<th>Number of comments</th>
<th>Representative comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network failure/slow internet</td>
<td>4</td>
<td>‘Although this mobile forum is a very good one, I constantly lost connection while attempting the task I kept on refreshing and reconnecting.’(Lillian)</td>
</tr>
<tr>
<td>Need for training</td>
<td>2</td>
<td>I was abit stuck with accessing the forums on the mobile application; I kept on calling another student (Godfrey) to help me get there. I think training on access and use of the mobile forums is very essential if they are to be a success in the pedagogical process.’(Peter)</td>
</tr>
<tr>
<td>No sense of direction</td>
<td>2</td>
<td>‘I was at home and got hold of my phone to access the forums on the mobile application but in the process I got confused and lost a sense of direction because there was no one to ask.’ (Rebecca)</td>
</tr>
</tbody>
</table>
Discussion of Findings

The study revealed responses to question one which required respondents to make a reflection on the importance of using forums on the mobile application. All the sampled case study students revealed that mobile phone forums increase interactivity between the teachers and students. This is in collaboration with Dawston et al (2003) who asserted that forums increase interaction between students and students/academic in a supportive and encouraging way, thereby actively contributing to the student-content interaction. On the other hand, question two required the sampled case study students to state the challenges encountered while using the forum on the mobile application. All the four respondents reported a challenge of network failure and slow internet while accessing the posted material on the forum. The researcher suggests that educators should stick to technologies that work effectively in their contexts. For example students can use their mobile phones to sms their comments and questions to the teacher through a given code/phone number which is cheap and does not require any kind of internet connectivity. For the case of Uganda (East Africa) an sms is reliable and a secure system and there is certainty of availability of network at all times. This implies that mobile phone technologies are appropriate and can be sustained in any African context just like Uganda.

Implications of the Study for Future Research

The pedagogical challenge presented by the study was limited interactivity between teachers and students caused by the large number students and ICT infrastructural challenges in the HEU. The study examined the possibilities of using forums on the mobile application wink site as an intervention to limited interactivity and the ICT infrastructural challenges. It was revealed that, mobile phone forums enhance interactivity between teachers and students in a collaborative way that supports deep reflection and knowledge sharing.

The researcher suggests that, African Educational institutions should adopt the use mobile phone technologies because they are affordable, available, and environmentally friendly and can enhance an easy ‘any time’, ‘any where’ learning process (M-Learning). Mobile phone technologies are appropriate and are sustainable in the African Educational context. However, there is a need to re-orient, and encourage lecturers and students to embrace m-learning in the teaching and learning process. Similarly, African governments, policy makers in collaboration with Institutions of learning should organize short courses, seminars, workshops to sensitize pre-service, in-service teachers and students on how to integrate the use of mobile phones in the teaching and learning process. These training programmes should help lecturers and students see past technology to pedagogical and educational gains that use of technology will bring to the classroom; the training must go beyond basic cutting and pasting (Nga’mbi, 2002). The shifting social and technological landscape in the 21st century suggests that policy makers, faculty, administrators should develop systematic plans to harness the potential of technology –mediated instruction to support and improve how teachers are prepared to teach the different school curricula (Ajayi,2009). Future research should investigate the relationship of using a mobile phone technologies and class performance among 21st century students at higher institutions of learning.
References


Chow, et al. (2005). Enhancing teacher-student interactions with multiple hand held devices. LADIS International Conference Department of Computer Science, University of Hong Kong


Hellstrom, J. (nd) Mobile Phone for good governance –challenges and way forward.


Muirhead, B (2000). Enhancing social interaction in computer-mediated Distance Education. Faculty, University of Phoenix, online.


Sandnes, E. & Talberg, O. (2004). Mobile phones in the lecture theatre –using wireless technology as a pedagogical aid. Faculty of Engineering, Oslo University College, St.Olavs Plass, N-0130 OSLO.


Abstract
Since the launch of a national initiative to equip all UAE federal tertiary students with iPads in 2012, there has been considerable discussion among UAE academics on the adoption of touch-screen portable devices. In contrast, there has been almost no discussion on the impact of massive open online courses (MOOCs) to higher education. Internationally this emphasis is reversing. MOOCs have the potential to upend the currently established model of higher education through the emergence of global university brands, while touchscreen mobile devices will have only marginal impact. The aim of this paper is to demonstrate that the potential for dramatic change in higher education is being overlooked, while academia focuses on the marginal but necessary advancements that can be made through the adoption of new devices.

Keywords: MOOC; Global university; disruptive innovation; tablets; mobiles

Introduction
In 2012, the United Arab Emirates (UAE) implemented a national initiative to equip all students at federal universities and colleges with iPads (Gitsaki et al., 2013). Since then, academic fora in the country have been dominated by discussions of how to implement this specific brand of tablet and its associated software. In contrast, there has been little discussion in the UAE on the international emergence of massive open online courses (MOOCs). International interest in MOOCs among tertiary academics is overtaking interest in tablet technologies, if measured by articles in The Chronicle of Higher Education (Table 1). Also internationally, Google searches for the term 'iPad education' appear to have peaked during 2012, whereas the term 'MOOC' has grown steadily since late 2012 (“Google Trends,” 2014). In contrast, the UAE based journal 'Learning and Teaching in Higher Education – Gulf Perspectives' published a special edition on mobile learning in 2013, but is yet to publish an article about MOOCs.

Whether you favor mobiles or MOOCs, the potential impact of disruptive technologies is not just an academic question of pedagogy. The world market for higher education is enormous and growing. In 2010 there were 4.1 million students who had traveled internationally to study, an increase from 2.1 million in 2000 (OECD, 2013). The annual global expenditure on tertiary education sector is estimated at $1.5 trillion (GSV EDU, 2012). Higher education is a business for both public good and private enterprise, split between social development and commercial gain. Several countries have produced public policy documents to understand the potential impact of technological change on their education sector, and in particular, their fee-paying students. A UK White Paper concluded that MOOCs fit the description of a disruptive technology, and recommended the creation of an autonomous business unit to position the country for change (Yuan and Powell, 2013). In Australia, a government commissioned domestic study (Ernst & Young, 2012) was followed by a government...
study of US based institutions and service providers (Australian Trade Commission, 2013). Both reports warned that MOOCs would likely transform the world's higher education sector within ten to fifteen years, and also that mobile technologies would become commonplace in education, but have little impact on pedagogy.

These reports are as relevant to the UAE as they are to Australia. Both countries have a commercial interest as well as a public one; the UAE through its private universities that cater to 65% of the 118,560 student body (National Bureau of Statistics, 2013), and Australia through its 516,000 full-fee paying international students (Australian Education International, 2012). Both countries are small players on the world stage and must therefore adapt to market conditions that are set outside their control. Both use English as their primary language of instruction, and both have a high broadband penetration. If the predictions of fundamental change prove true, then academic institutions of the UAE need to start preparing for this change as soon as possible. The aim of this paper is to suggest that we should be focusing more on disruptive technologies such as MOOCs, rather than sustaining marginal technologies such as touchscreen portable devices.

MOOCs Will Transform Higher Education

MOOCs are often viewed as a cost effective method of instruction, making higher education more affordable and accessible from throughout the world. From this viewpoint, it is tempting to criticize MOOCs as dehumanizing the educational experience and lowering the quality of higher-order skills being learnt. However, the impact of MOOCs will go much farther than cost savings, just as digitization of world media did much more than put newspapers online. Their more important impact will be to unbundle the services provided by universities, and to rebundle them in as-yet undetermined ways (Gallacher, 2014). Currently, a university provides curriculum, tuition, student socialization, a physical environment for academic and extracurricular activities, and also awards qualifications. Most universities also produce research, and may provide other community services. An example of an unbundled higher education model is outlined in Table 2. As MOOC models continue to be refined and adopted, there will become the potential for global university brands to emerge, just as international secondary school systems are dominated by brands such as IGCSE and the International Baccalaureate.

Table 1: Number of results returned by searching for terms on The Chronicle of Higher Education website (chronicle.com), 14 Jan 2014.

<table>
<thead>
<tr>
<th>Search term</th>
<th>&gt; 3 years old</th>
<th>1-3 years old</th>
<th>&lt; 1 year old</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet</td>
<td>193</td>
<td>193</td>
<td>60</td>
</tr>
<tr>
<td>iPad</td>
<td>148</td>
<td>329</td>
<td>81</td>
</tr>
<tr>
<td>MOOC</td>
<td>1</td>
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<td>334</td>
</tr>
<tr>
<td>Distance education</td>
<td>3638</td>
<td>315</td>
<td>113</td>
</tr>
</tbody>
</table>

Table 2: A possible world structure of unbundled higher education

<table>
<thead>
<tr>
<th>Unbundled component</th>
<th>MOOC host</th>
<th>Globally branded university</th>
<th>Curriculum manager</th>
<th>Campus</th>
<th>Miscellaneous services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number Role</td>
<td>10 – 20</td>
<td>15 – 20</td>
<td>Thousands</td>
<td>Thousands</td>
<td></td>
</tr>
<tr>
<td>Provides the platform for MOOCs and centralized technical services</td>
<td>Awards qualifications</td>
<td>Sets curriculum for a course and maintains its resources</td>
<td>Physical location for socialization, peer support, and supervised academic activities</td>
<td>N/a</td>
<td>e.g., multi-campus clubs, professional groups, research clusters</td>
</tr>
</tbody>
</table>
Global university brands would have several benefits over existing universities. Students would have the freedom to move during their studies without losing credits, and their qualification will be more globally recognized. Global universities would be able to tailor their educational qualifications to suit large employers, such as multinational corporations and governments. They would be able to provide a more employer-centric assessment of a student's skills, through metrics of teamwork, social influence, language proficiency, and critical thinking. Then, as their data farms become filled with completed student assessments, they would be in a prime position to assess the effectiveness of individual institutions that offer the MOOC for credit. In other words, they would replace current accreditation bodies (Gallacher, 2014).

The role of educator is also being disaggregated. The emergence of TED Talks, for example, has shown the demand for presentations that prioritize inspiration over content. There are now many free online video services providing content within an academic framework. As MOOCs become more sophisticated, educators will be able to use them for content delivery, curriculum design, assessment, and course evaluation. The role of the educator will then be to tutor and mentor, and to interpret generic information into a local context. If they no longer determine the standard of the assessments, then their relationship to the student becomes less adversarial and more collegial.

A disruptive innovation is one that changes the business model within an industry by introducing a new service, either at a much lower price or to a new set of customers (Christensen and Raynor, 2010). A palatable example would be the emergence of high quality educational resources wherever there is an internet connection. It is appealing to imagine MOOC campuses spreading throughout the developing world, but such campuses may also emerge in the developed world, offering a reasonable service to students at perhaps half the current tuition cost. There are already three MOOC platforms in Arabic; the Lebanese based Menavery (Fleming-Farrell, 2013), the Saudi based Rwaq (Curley, 2013), and the Jordanian based Edraak (O’Connell, 2013). Edraak, which is operated by the Queen Rania Foundation, is expected to launch in late 2014 offering existing EdX courses in Arabic, along with courses designed in the region (Carapezza, 2013).

**Touchscreen Portable Devices Will Not Transform Higher Education**

In this section, I will argue that smartphones and tablets make, at best, only marginal change to course outcomes, but that their inclusion in courses is an essential part of preparing students for the future workplace.

There is not yet a collective term to describe the use of smartphones and computer tablets in education. Instead, two terms that are commonly used are m-learning and blended learning. The former takes place on any mobile device, and hence includes laptops, while the latter refers to a blend of internet-based activities with face-to-face activities, hence could involve a desktop computer or a gaming console, among many other possibilities. Smartphones and tablets are different to previous technologies in that they are more portable, and also because they contain a toolkit of sensors (camera, microphone, GPS, accelerometer, gyroscope, and others). These sensors enable activities that previously may have been too time consuming or expensive to arrange, but were nevertheless technically feasible. However, these activities do not mean that pedagogy is improved, just that students and student groups can do a greater variety of things with them. If student engagement in the class is improved because of the technology, it does not necessarily follow that students have absorbed more of the class objective.

**Anywhere, Anytime, Any Way**

Mobile technology enables students to access course material whenever they are
ready, wherever they are. Content can be prepared in different formats suitable to a student’s preferred learning method, so they could listen to a lecture while driving, read text while queuing for a coffee, or watch a video in the dentist’s waiting room. However, it’s much easier to imagine a student listening to music while driving, talking to friends while queuing for coffee, and saving videos until the night before a looming deadline. In fact, lectures in audio and text format have been provided for many years as podcasts and, well, textbooks. Tablets are lighter to carry than books, and have search functions, but this increased mobility is a marginal change, not a fundamental one. There is a potential advantage of interactive e-books, which combine text-based learning with visual and interactive learning activities. However, interactive materials have also been delivered via a paper textbook with an associated website, without much excitement. Textbook publishers have maintained a business model that is based on the sale of physical books, and so have not attempted to provide a balanced multimedia approach. They stand to lose much of their profit margin in the move to digital media, which is difficult to protect from illegal sharing.

New technologies may therefore bring significant change to higher education by upending the textbook industry. Students would benefit from a course package that contained the same content in multiple formats, so they could choose to learn in the format that most suits their learning style and personal situation. However such packages, if done well, are expensive to produce and maintain. They would generally fall beyond the scope of a single university, as is currently the case with textbooks. Unless prices rise there will not be sufficient money to warrant the investment under a current publishing model. Publishers have the disadvantages that free versions of their commodity; information is already available in multiple formats in ever-improving quality. You can already learn almost anything on YouTube, as long as you are willing to endure a lot of not-very-good videos along the way. Hence, a model based on MOOCs that raises funds through exam provision, advertising, or job placement seems much more secure.

**The Flipped Classroom**

The model of instruction by which a teacher stands in front of a class of students and imparts knowledge is easily criticized. It is a far better ideal to use contact hours for activities higher up the Bloom’s Taxonomy of Learning Domains (Anderson and Krathwohl, 2001), such that the teacher facilitates the building of wisdom, rather than the accumulation of facts or practicing basic skills. Students can absorb the facts in their own time through videos or other means. The flipped classroom can be associated with touch-screen portable devices, because students can take their learning to their most comfortable environment, such as a couch or a hammock.

However, the flipped classroom model has been possible for as long as we have had textbooks. Textbooks have improved dramatically in clarity and presentation over the last few decades, yet the value of an unopened textbook today is the same as it has always been. The expectation that new technologies will free our classrooms for deeper learning activities is based on two assumptions:

1. That students will consume instructional multimedia (videos, in particular) outside class more often than they have previously read textbooks.
2. That knowledge acquisition via instructional multimedia is comparable to, or better than, knowledge acquisition via textbook.

There is little doubt that most students in the UAE consume more video than text on a daily basis. However, it is not clear whether either of the above assumptions is true. Certainly, most students have probably learnt some kind of peer-valued skill through an internet-sourced video, and many will
have learnt about a topic of interest through watching documentaries. There are many circumstances where video has a distinct advantage, such as conceptualizing daily life in an ancient society, or observing the inner workings of a biological cell. Students learning by video are more likely to pair a piece of information with an emotion or an artistic reference such as a song or a color, which is associated with higher retention rates. However, video also adds irrelevant, perhaps biasing, information such as a speaker’s mannerisms, and students are less likely to pause to create a mental model of the information and relate it to their own experiences. In other words, video might spark the imagination more, but it might also reduce deeper, critical thinking on a topic. In Jungian terms, video will suit the intuitive feelers of the class, while text will suit the sensate thinkers.

There are practical implications to learning with different media. Video is superior to a lecture in that it can be rewound when a person’s mind wandered and paused for bathroom breaks, but inferior in that it lacks the person-to-person connection. Video is less convenient than a textbook to revise, since it typically means playing the entire file again. With any format, students are advised to habitually take notes to help them concentrate on the information, and for faster revision later. This probably means that students will still study video most effectively at their desk, where it is easier to play the file and take notes at the same time. Hence, the tablet advantage of portability is reduced.

**Content, Skills, and Abstraction**

Education involves a balance between constructing a knowledge base of content, and developing skills that enable the student to use this content effectively. You would expect an economist to know and understand certain abstract concepts of how markets function, and you’d also expect them to be able to cite specific facts relevant to their discipline. However, they also must be able to critically evaluate new information, communicate effectively in a professional environment, and perform numerous other higher-order skills. Attempts to flip classrooms, whether by paper or electronic media, tend to focus on pushing content and lower order skills (e.g.; grammar, numeracy) out of the classroom. Higher order skills (e.g.; critical thinking, teamwork) remain in the class, along with activities to reinforce abstract concepts. This is important to consider, because it is precisely these skills and concepts that differentiate university learning from other post-secondary education. In other words, the skills and knowledge learning that can be moved to touch-screen portable devices are those we associate more with foundation studies or trade schools. The types of skills that employers of graduates repeatedly ask for and that university faculty strive to impart (communication, teamwork, critical thinking) are developed best in a social setting.

**In-class Flexibility**

Much of the current research into tablet and smartphone use in education is aimed at use within classrooms. Some institutions have embraced the term ‘bring your own device’ (BYOD), by which a student is required to bring any internet-connected device to class, whether it be a smartphone, tablet or laptop. This enables teachers to use web-based resources, and multi-platform educational applications such as Socrative. Zayed University was born a BYOD institution in 1998, though students were strongly encouraged to bring a particular brand of laptop. With all students connected it is possible to design class activities that promote equitable participation, thus reaching the introverted personalities more effectively. An example is the interactive quiz, where student entries are immediately projected to the class in graphical or text form. However, it should be remembered that good educators have always found ways to reach the quieter students in the class; this is just another tool.
For the most part, tablets offer very little to the laptop-bearing classroom, particularly if most students also carry a smartphone. Tablets are more portable and quicker to start, but their software is less versatile. Tablets have the toolbox of sensors, but so do smartphones in an even more portable package. One argument sometimes made is that a raised laptop screen puts a physical barrier between teacher and student, but students can use tablets in the same way if they are so inclined.

Information Everywhere

It has often been noted that our relationship to information has changed profoundly, initially by the rise of the Internet and, now, due to ubiquity of connections. Students still need to learn facts relevant to their discipline, but need also to be adept at using this vast knowledge base to their advantage. It is unclear whether education is adapting to this fundamental change.

Many of us remember the introduction of calculators to school classrooms in the 1970s to 1980s. Suddenly, there was an alternative to mental and paper-based arithmetic, and printed logarithmic tables now seemed a bit silly. It was pointless to resist the introduction of calculators because they were destined to become a standard piece of workplace equipment. Nevertheless some teachers did, for well-argued reasons of student intellectual development. Now, decades later, students are less able to perform calculations in their heads, but by the time they are adults they have learnt that a calculator does not correct for mistaken inputs, and that estimation is an important mental skill. Many adults may have difficulty calculating a simple percentage, but they still have a good understanding of its significance when one is quoted. Many others have developed their mental arithmetic because it is faster. Most importantly, capitalism didn’t collapse in a heap of mathematical illiteracy, and teaching of higher order mathematics remained largely unchanged.

As calculators increased the need for good math estimation, the Internet has increased the need for good information evaluation.

In With The New

As tertiary educators, we are training our students for success in a workplace that will span the next forty or so years. Some of the technology used in their classes will be out of date before they graduate, and much of what they will use professionally has not been invented yet. Nevertheless, we have a responsibility to keep students as current as possible.

It’s a bit of a joke, expecting middle-aged educators to teach young adults about the use of ever-changing technology. It’s true that many of us learn from our students; particularly when we are adapting to a new, unfamiliar device or application. However, it’s also true that many students only learn common workplace applications such as spreadsheets and publishing software, when required to use them for classes. Perhaps as importantly, students must learn professional habits for a technology-ubiquitous workplace. This means such things as managing time when social feeds are permanently on, organizing and securing files, managing security when there are too many passwords to remember, and learning appropriate modes of communication for different settings. Methods and tools have changed, but students need to learn that these things are important to do, rather than to learn a specific way to do them. The most important reason for adopting new technology in the classroom is not for what that technology can do, but rather so that students can adapt to working professionally with that technology.

For a good illustration of this, let’s remember how overhead projectors changed education. These precursors to presentation software were rapidly adopted by University professors. Yet I can remember both good and bad lecturers who used the technology, and also good and bad lecturers who didn’t; the quality of a lecturer was dependent
mainly on other factors. However, student public speaking was changed by the technology. Students who previously had to rely on oration could now put time into their visual presentation. There were some skills learnt regarding how to make visuals that impact well, but students also had to learn that to be good, they still couldn’t rely on the visuals. It was important for students to learn this at University, rather than in the professional world.

Conclusion

The main value of introducing tablets into university curriculum is not one of pedagogical improvement, but rather that tablets are to this generation what calculators were a few decades ago. The workplace that our graduates will move into is one in which tools and information are readily available, as are the distractions they offer. Education systems must therefore evolve to train students to optimize the use of this enormous and distracting information source.

However, the danger of putting too much emphasis on the adoption of tablets into the curriculum is that it can distract from other priorities. Currently the world’s higher education sector is undergoing an unprecedented amount of innovation, which may dramatically disrupt the current accepted model within a decade or so. The development of MOOCs and, as a possible consequence, the emergence of world university brands, is a trend that should be monitored carefully.

Adoption of tablets into the classroom is a marginal but necessary development in higher education. The emergence of MOOCs, however, is potentially disruptive to the very business model of universities. While research into the adoption of tablets is commendable, the lack of research or even discussion about the impact of MOOCs to the UAE is worrying.
References


Analyzing the Satisfaction of Learners by Accessing Blackboard Using Smartphones/Tablets

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Abstract
In this paper, the researcher will measure and analyze the satisfaction of Hamdan Bin Mohammed Smart University Learners’ in using the smartphone/ tablet in virtual classrooms. To this end, the author has distributed an online survey to HBMSU learners. A total of 36 HBMSU learners’ have responded and participated in this survey which was distributed using learners’ emails and the e-campus “VLE system” oat the university website. The researcher analyzed the collected primary data and concluded that generally speaking HBMeU learners’ are satisfied with using the smartphone/ tablet in accessing the virtual classes. Also the study has also provided HBMSU Staff a clear vision on their learners’ and what type of smartphone/ tablet they are using and their experiences on it. This knowledge can be used to advise the new learners on using the proper smartphone/ tablet to access the virtual classrooms at the university VLE system.

The study has revealed that 80.6% of the participations have used a smartphone/ tablet to access the virtual classroom. In the smartphones side, the highest rate was for the Galaxy (37.9%) while the iPad was used by (20.7%) of the learners and it was the highest rate than its competitor (the tablets). In order to find the best smartphone/ tablet to be used in accessing the virtual classroom, the research has included in the survey a question to measure the best battery life for the virtual class without recharge, best sound system while connected virtually, the best screen resolution for the virtual classroom, and the best screen size for attending the virtual classroom. Generally, the research found that the Samsung Note is the best tablet for the virtual classroom and the Galaxy is the best smartphone to be used in the virtual classes.

Based on the collected data and the SPSS statistical analysis, the study failed to approve the hypothesis: “Hamdan Bin Mohammed Smart University learners depend on smartphones/ tables to attend the virtual classrooms”.

Keyword: HBMSU learners, smartphone, tablet, survey research, virtual classroom.

Introduction
The technology in these days has been developed more than ever before and the world became small due to globalization. The laptops are becoming smaller and smaller and the cell phones have computerized features and they are called smartphones. Nowadays, many businessmen/ women are sending/ receiving emails from these smartphones and some by tablets.

Hamdan Bin Mohammed Smart University is depending on these technologies in teaching and transferring the knowledge from the courses instructions, doctors, and professionals, to the learners, also between the learners themselves.

Whereas Hamdan Bin Mohammed Smart University’s vision is: “To be the University of Choice in the Arab World in shaping the future of education and learning through innovative solutions.” And his mission is:
“To provide high quality programs using virtual learning environment, supporting the pursuit of lifelong learning, addressing critical activities of economic development in the Arab World, pioneering in e-learning, providing unique learners experience and growing knowledge and its dissemination through excellence in research and knowledge transfer.”

In that regards, Hamdan Bin Mohammed e-University recently lunched the blackboard system, which allows the learner to attend the virtual classes by these smartphone as well as tablets with full control as he/she attend from any normal laptop/PC.

In this paper, the researcher will try to focus on the learners and are they use these technologies and how they are benefit from it.

Literature review

The smartphone is a normal mobile phone/cell phone built on a mobile operating system “OS”, with more advanced in computing capability and connectivity than a feature cell phone. “A smartphone is a device that lets you make telephone calls, but also adds in features that, in the past, you would have found only on a personal digital assistant or a computer--such as the ability to send and receive e-mail and edit Office documents, for example.” Cassavoy, Liane. (2013). The smartphone is accompanied some of the computer’s abilities to the mobile. The mobile operating systems “OS” used by modern smartphones such as Google’s Android, Apple’s IOS, Blackberry Ltd’s BlackBerry OS, and there are many operating systems.

Worldwide sales of smartphones exceeded those of feature phones in early 2013. As in 2013, 90% of global handset sales are attributed to the purchase of Android OS “Samsung, Google” and IOS OS “iPhone smartphones”, Webmaster. (2013).

When smartphones first appeared on the scene if you were like me your phone almost never left your hand. The ability to surf the web on the little phone was an amazing experience. Online activities previously relegated to a big computer or a laptop could suddenly be done on the little phone. In the early days I used my smartphone for all sorts of things. First there was handling email, then reading e-books. Using the phone for Facebook and Twitter followed soon after. Then there was watching hours of video on YouTube. The phone was always at hand and kept the laptop in the gear bag, James Kendrick (2013).

In 2013, Stephen Shankland mentioned that: "We define a mobile device as a pocket-sized computing device, typically having a display screen with touch input or a miniature keyboard. Tablets, while portable, are not considered mobile devices according to this definition".

Problem Statement

Recently Hamdan Bin Mohammed e-University launched the blackboard system that allows the learners to attend the virtual classes using the smartphones and tablets. Therefore, in this research the author will focus on the learners and do they depend on smartphones to attend the class after the blackboard give them the full authority in participating. The research question is:

Are Hamdan Bin Mohammed e-University learners’ satisfied from using the smartphones/ tablets to access the virtual classes?

Research Methodology

The research will be based on quantitative information. Therefore, a questionnaires/survey will be conducted to figure out and answer the research question that has been mentioned above as well as two hypotheses.

1. Hamdan Bin Mohammed e-University learners depend on smartphones/tablets to attend the class virtually.
2. Hamdan Bin Mohammed eSmart University learners do not depend on
smartphones/tables to attend the class virtually.

**Research Design**
The data that will be used in this research is a primary data, and the author will prepare questionnaires in that matter and it will be sent to Hamdan Bin Mohammed Smart University learners to be filled and collect the required data.

**Figure 1: Flow Chart Research Design**

[Diagram showing the research design process]

**Research Target/Subject**
The research will give the HBMSU staff a clear vision about the HBMeU Learners’ and which smartphone/tablets they use and recommend their colleague to use. Therefore, the HBMSU staff can advise the new learners to use a particular smartphone/tablet to access the virtual classes based on learners’ experience.

**Questionnaires**
The author will prepare a questionnaire to collect the required primary data from the Hamdan Bin Mohammed Smart University learners’. The questionnaire has been divided into two parts where as the part one is to tick the correct answer that has been provided by the author. The part two is rating which starts from totally disagree up to totally agree to the provided statement and in between is neither agree/disagree. These data will be analyses later by SPSS statistical package.

**Simple Size**
The questionnaires will be distributed among Hamdan Bin Mohammed e-University learners’ (undergraduate/postgraduate) via VLE system, emails and a
personal distribution to postgraduate learners and then a sample from the respondents will be selected randomly to the analysis by the researcher.

There are approximately a total of 377 Learners at HBMSU. The sample size is 36 responses and will be selected randomly from the HBMSU Learners’.

**Statistical Technique**

There are many statistical tools can be used in the business research but the researcher is going to use the SPSS statistical tool in analyzing the primary data which will be collected from Hamdan Bin Mohammed Smart University Learners and will determine the correlation between the variables.

**Collection Data Plan**

The data will be collected electronically by using survey monkey program but the distribution will be though the VLE system which is used by the HBMSU and exactly in the shout box.

The survey money program will not allow any person to fill the survey two times which will give more confidence in collecting the responses.

The survey that will be distributed via survey money is attached herewith (Appendix A).

**Data Collection**

The questionnaire has been built electronically on survey monkey as explained above and has been distributed. Two samples of the responses are attached herewith in (Appendix B).

A hardcopy has been distributed by physically visit to the site to collect feedback and test the data for a pilot study purpose. Based on the collected feedback the researcher updates the survey to the final use and has been distributed among Hamdan Bin Mohammed Smart University Learners via emails and e-campus “the VLE through” using the shout box and the survey monkey is collecting the data.

**Data Analysis**

The primary data that has been collected from the HBMSU Learners’ through survey monkey program will be analyzed using a SPSS statistical tool.

**Summary of Collected Data**

The survey has been distributed among HBMSU Learners’ via VLE and collected by automatically by Monkey Survey. The total survey received is 36 feedbacks from HBMSU graduation learners’ and under graduation learners’ as well. 29 learners are using the smartphone/ tablet to access the virtual classroom while 7 learners are not using the smartphone/ tablet to access the virtual classroom.

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<td>1</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

**Graphical Representation**

The researcher will show the responses to each question/statement written in the survey in a graphical way and will explain all represented figures.

**Figure 2: The total number of learners that participated in the questionnaire?**

As shown above there is a total of 36 responses to the question number 1 and as the figure 2 shows there is 24 responds from the postgraduate learners and 12 responds from the undergraduate learners who participated in this survey which mean the postgraduate is having 66.7% from the total responses and 33.3% for the undergraduate learners.
Figure 3: Number of learners who ever use smartphone/tablet to access virtual classes?

In regarding question number 2 there was also 36 responses and 80.6% of participates have been used the smartphone/tablet to access the virtual classroom which mean 29 learners from the total of 36 learners. There are 7 learners didn’t use the smartphone/tablet to access the virtual classroom and the author will discuss this matter in question number 7 to explore their opinion regarding this issue.

Figure 4: Type of smartphone/tablet that have been used?

Figure 4 shows the percentage of the selected smartphone/tablet that is used by the participant in accessing the virtual classroom. The highest percentage was for the Galaxy and it was 37.9% that mean 11 learners using it to access the virtual classes, while 8 learners use the iPhone in accessing the virtual classes and has a 27.6% and 20.7% from the participant are using the iPad in accessing the virtual, while 10.3% is using the Samsung Note and 1 participant is using HTC One.
There are 18 learners using the Wifi to connect to the virtual classes and only 11 participants is using their Data Package to access the virtual classroom. The 18 learners have a large percentage that is 62.1% from the participant of using the Wifi.

In figure 4 above we saw the most participants used the Galaxy to access the virtual class, and to have deep understand how they are satisfy from using the selected smartphone/ tablet we can see in this figure 6 just above that 6 participants are totally agree from using the Galaxy in accessing the virtual classes, while 5 participant are only agree from using the Galaxy in virtually access. On the other hand, there are 4 participants and totally agree from using the iPhone is accessing the virtual classes and 2 participants are agree as well as 2 neither agree/ disagree from using iPhone in accessing the virtual classes. There are 4 learners agree from access the virtual class using the iPad while 2 learners totally agree from using the iPad and at the same hand 2 learners are totally agree from using the Samsung Note to access and virtual class.
There is one learner used the HTC One to access the classes virtually and he/she is totally agree from using the mentioned smartphone/ tablet. None on the participant is totally disagree or either disagrees from using his smartphone/ tablet in access the virtual classes.

**Figure 7: Factors influence HBMU Learners’ satisfaction.**

Figure 7 is shown the total responses for statement number 6 in the survey and it’s to measure how the participant is satisfied from the smartphone/ tablets they have used in virtual classes, and the author is going to explain each point of the question separately in figures bellow according to each smartphone/ tables has been selected and used.

**Figure 8: Satisfaction of battery life of the smartphone/ table that used by learners.**

In figure 8 you can see the major from the galaxy users are agreeing the statement that said the smartphone they have used to access the virtual classes gave them a sufficient battery without recharging while three of them are totally agree with the provided statement and 2 of them are disagreeing with that statement. In regards the iPhone users 3 of the participants are agreeing with that same statement regarding the sufficient usage of the battery, while 3 different users do not agree or disagree the statement, therefore the author can’t urge with this smartphone. 50% of the iPad users are agreeing with the statement and they think the iPad give them a sufficient usage of battery. In the other hand, 66.6% from the Samsung Note users are agreeing and they believe the Samsung Note battery is sufficient to use while they are connected virtually to the class.
The figure 9 identifies the best sound system for the virtual classroom and as shown, 75% from the iPhone users believe that the iPhone provides the best and an excellent sound system for the virtual classes. Only 54.5% of the Galaxy users think that Galaxy provides an excellent sound system for the virtual classes.

The figure 10 shows which smartphone/tablet is the best screen resolution for the virtual class while connected virtually from the smartphone/tablet. There is 6 out of 11 learners who selected the Galaxy agreed the provided statement and believe that the Galaxy provides the best resolution. While a 71.4% from the iPhone users agreed to the same statement and they think the iPhone is the best in the resolution.
Figure 11: Satisfaction from screen size of the smartphone/tablet that used by learners in the virtual classrooms.

Figure 11 will show which the best screen size for the virtual classes according to the participant learners. According to the Galaxy users, 5 of them totally agree and believe that the Galaxy provides the best screen size for the virtual classes while connecting from the smartphone/tablet. While Samsung Note users are totally agree and agree that the Samsung Note is better in screen size while you are connect virtually from smartphone/tablet.

Figure 12: Factors affecting the usage of smartphone/tablet to access virtual classes.

As shown before, there are 7 learners didn’t use the smartphone/tablet in accessing the virtual classes and here in figure 12 will explore their opinion and will know why they are didn’t use the smartphone/tablet. 4 learners think it’s not a proper way to learn and study using the smartphone/tablet. In the other hand, there is 1 learner totally agree there is a lack of advertisement from HBMSU regarding using the smartphone/tablet, while 4 learners agree him. Some learners do not know how to use the smartphone/tablet to access the virtual classes.
Analysis of Results

The SPSS statistical package has been used in this project to analyze the collected primary data and to test the hypotheses in order to answer the research question. Therefore, the result of the analysis is shown below.

There are a total of 36 learners participating in the survey. 66.67% from the participants are postgraduate learners and 33.33% are undergraduate learners. 80.56% from the participant are using the smartphone/tablet to access the virtual classes while the 19.44% didn’t use the smartphone/tablet in virtual classes.

The Galaxy gets the highest percentage among its competitor smartphone with 37.9% and the iPhone get 27.6%. In the tablets side, the iPad gets 20.7% and the Samsung Note 10.3% according to the statistical analyze.

According to the descriptive statistical from the SPSS statistical package, the author found that 11 learners selected the Galaxy as their smartphone used to access the virtual classroom and 8 learners selected the iPhone to get access to the virtual class, while 6 learners uses the iPad and only 3 learners uses the Samsung Note to access the virtual. The table bellow will show the details of the mean, median, and the range of learners.

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Range</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Galaxy</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>3</td>
<td>11</td>
</tr>
</tbody>
</table>

As an overall there are 54.5% are totally agree from the usage of the Galaxy in accessing the virtual classes and 50% are totally agree for iPhone as a smartphone. In the tablets side there are 66.6% are totally agree on the usage of the Samsung Note and 33.4% for the iPad.

The question number 6 in the survey was used to measure the battery life for the virtual class without recharge, device sound system, screen resolution, and screen size to explore which is the better to be used in the virtual class. The total percentage of the agree and totally agree of the selected smartphone/tablets were as mentioned in the bellow table:

<table>
<thead>
<tr>
<th></th>
<th>Galaxy</th>
<th>iPhone</th>
<th>iPad</th>
<th>Samsung Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery life for the virtual class without recharge</td>
<td>63.7%</td>
<td>37.5%</td>
<td>66.6%</td>
<td>66.6%</td>
</tr>
<tr>
<td>Smartphone/tablet sound system</td>
<td>90.9%</td>
<td>87.5%</td>
<td>66.6%</td>
<td>66.6%</td>
</tr>
<tr>
<td>Smartphone/tablet screen resolution</td>
<td>81.8%</td>
<td>62.5%</td>
<td>83.3%</td>
<td>100%</td>
</tr>
<tr>
<td>Smartphone/tablet screen size</td>
<td>81.9%</td>
<td>12.5%</td>
<td>83.3%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Result Summary

In this paper there were a total of 36 learners divided between the postgraduates and the undergraduates. 24 learners from the postgraduate participated in this survey and 12 learners from the undergraduate programs. 80.6% learners who used the smartphones/tablets in accessing the virtual classroom. The highest rate among the smartphone was 80.6% and it was for the Galaxy while in the tablets was 37.9% and it was for the iPad. A total of 62.1% of the learners who used the smartphones/tablets in accessing the virtual classrooms connected via wifi and 37.9% used their data package. Almost all learners are satisfied from the smartphones/tablets they have used only a 25% are neither agree/disagree. Regarding to find the best
smartphone/tablet to be used in virtual class, the author found the Galaxy smartphone has the highest rate in the battery life with 63.7% and the tables had the same rate 66.6% while the iPhone got only 37.5% for the battery life. Also, the Galaxy got the highest rate for the sound system with 90.9% and the iPhone got 87.5% but there is no change in the percentage of the tablet, so each one of the iPad and Samsung Note got 66.6%

For the screen resolution the Galaxy got 81.8% while the iPhone got 62.5% and the Samsung Note got 100% perfect for the screen resolution and the iPad got 83.3%. The Samsung Note got 100% perfect for the screen size for the virtual classes and the iPad 83.3% while the Galaxy got 81.9% and the iPhone got 12.5%.

As found in this paper, there are 7 learners didn’t use any smartphones/tables in access the virtual classes. A 57.14% from the learners who didn’t use the smartphone/tablet to access the virtual think it’s not a proper way to study and attend classes through smartphone/tables and at the same time a total of 71.43% are agreeing that there is a lack from HBMSU in advertising to use the smartphone/tablet and 28.57% do not know how to use the smartphone/tablet in accessing the virtual classroom.

Research Finding

Based on statement number 2, we found that 80.6% of the participated learners are used to access the virtual classrooms using a smartphone/tablet and mainly the HBMSU Learners’ use the Galaxy smartphone in the accessing the VLE system as found in statement number 3. In same regards, we didn’t notice any dissatisfaction to the usage of the smartphone/tablet in accessing the virtual classrooms but we found 25% from iPhone users said they are neither agree or disagree of the usage. Therefore, the study failed to approve the hypothesis: “Hamdan Bin Mohammed e-University learners’ depend on smartphones/tables to attend the virtual classrooms”.

In regarding to find the best smartphone/tablet to be used by HBMeU Learners’ in accessing the virtual classroom the author asked the participates deeply to assist the used smartphone/tablet in the battery life, sound system, screen resolution and screen size. According to the analysis, the author found that the Galaxy and the Samsung Note is the best tablet in accessing the virtual classrooms.

As seen above in the sample size section, there are approximately 377 learners in HBMSU, so we can’t say the selected sample of 36 learners is representing the HBMSU learners’ but the statistical analysis was done according to what has been collected by the electronic survey.

Research Recommendation

1. The HBMSU should spend more in advertisement and encouraging the learners to use smartphones/tablet in accessing the virtual classrooms.
2. The HBMSU should to conduct more training session to HBMSU Learners’ on how to use the smartphone/tablet to access the virtual classrooms.
3. The author is highly recommending the HBMSU Learners’ to attend the classes virtually either via Galaxy or via Samsung Note.
4. The HBMSU must spread the awareness of the smart government between learners and motivate them to keep up with the technology age.

Acknowledgements

The researcher would like to send the warmest gratitude to Dr. Raid Al-Aomar for his support and encouragement that gave the author the chance to participate in a real-world business application. Also, the author would like to express his appreciation to the colleagues and friends who shared their information in the surveys.
References


Appendix A

Questionnaire:
I am conducting a research on satisfaction with use smartphone/tablet by HBMeU Learners’ to access the virtual classes. I would like to have your cooperative in answering the questionnaire honestly.
Your information will be confidential.
1. Which program you are in?
   Undergraduate (...) Postgraduate ()

2. Have you ever use smartphone/tablet to access virtual classes?
   Yes (...) No ()
   If (No), please go to question number “7”.

3. Which Smartphone/tablet do you use?
   iPhone (...) Galaxy (...) iPad (...) Samsung Note (...) Other specify (............)

4. Which service do you use while connecting to the HBMeU classes virtually?
   Wi-Fi (...) Data Package (...)

Scale: 1 = Totally Disagree, 2 = Disagree, 3 = Neither Agree/ DA, 4 = Agree, 5 = Totally Agree

<table>
<thead>
<tr>
<th>Statements</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Overall how satisfied are you in using smartphone/tablet to access HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Rate the following factors in influence your satisfied;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 The smartphone I use gives sufficient battery life without recharging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2 The smartphone I use gives excellent sound system for HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3 The smartphone I use provides the best screen resolution for HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4 The smartphone/tablet I use give the best screen size to access HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The end.

Thank you for your participation...

Answer this question if you answer (NO) in question number 2 ONLY

7. Rate to what extend the below factors affect the use of smartphone/tablet to access virtual classes;
   7.1 I think it’s not a proper way to learn.
   7.2 Lack of advertisement from the HBMeU.
   7.3 Do not know how to the smartphone/tablet to access virtual classes.

The end.

Thank you for your participation...
Appendix B

Questionnaire:
I am conducting a research on satisfaction with use smartphone/tablet by HBMeU Learners’ to access the virtual classes. I would like to have your cooperative in answering the questionnaire honestly. Your information will be confidential.

1. Which program you are in?  
   Undergraduate (....)  Postgraduate (√)

2. Have you ever use smartphone/tablet to access virtual classes?  
   Yes (...)  No (√)
   If (No), please go to question number “7”.

3. Which Smartphone/tablet do you use?  
   iPhone (...)  Galaxy (...)  iPad (...)  Samsung Note (...)  Other specify (.............)

4. Which service do you use while connecting to the HBMeU classes virtually?  
   Wi-Fi (...)  Data Package (...)  

Scale: 1 = Totally Disagree, 2 = Disagree, 3 = Neither Agree/DA, 4 = Agree, 5 = Totally Agree

<table>
<thead>
<tr>
<th>Statements</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall how satisfied are you in using smartphone/tablet to access</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rate the following factors in influence your satisfied:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 The smartphone I use gives sufficient battery life without recharging</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2 The smartphone I use gives excellent sound system for HBMeU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3 The smartphone I use provides the best screen resolution for</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4 The smartphone/tablet I use give the best screen size to access</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The end.

Thank you for your participation ...

Answer this question if you answer (NO) in question number 2 ONLY

| 7. Rate to what extend the below factors affect the use of smartphone/     |   |   |   |   |   |
| tablet to access virtual classes;                                        |   |   |   |   |   |
| 7.1 I think it’s not a proper way to learn.                            |   |   |   |   |   |
| 7.2 Lack of advertisement from the HBMeU.                              |   |   |   |   |   |
| 7.3 Do not know how to the smartphone/tablet to access virtual classes. |   |   |   |   |   |

The end.

Thank you for your participation...

1
Questionnaire:
I am conducting a research on satisfaction with use smartphone/tablet by HBMeU Learners’ to access the virtual classes. I would like to have your cooperative in answering the questionnaire honestly. Your information will be confidential.

1. Which program you are in?
   Undergraduate (....)  Postgraduate (√)

2. Have you ever use smartphone/tablet to access virtual classes?
   Yes (√)  No (....)
   If (No), please go to question number “7”.

3. Which Smartphone/tablet do you use?
   iPhone (√)  Galaxy (....)  iPad (....)  Samsung Note (....)  Other specify (.............)

4. Which service do you use while connecting to the HBMeU classes virtually?
   Wi-Fi (....)  Data Package (√)

**Scale:** 1 = Totally Disagree, 2 = Disagree, 3 = Neither Agree/ DA, 4 = Agree, 5 = Totally Agree

<table>
<thead>
<tr>
<th>Statements</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Overall how satisfied are you in using smartphone/tablet to access HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>6. Rate the following factors in influence your satisfied;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>6.1 The smartphone I use gives sufficient battery life without recharging.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>6.2 The smartphone I use gives excellent sound system for HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>6.3 The smartphone I use provides the best screen resolution for HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
<tr>
<td>6.4 The smartphone/tablet I use give the best screen size to access HBMeU virtual classes.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√</td>
</tr>
</tbody>
</table>

The end.

Thank you for your participation...

Answer this question if you answer (NO) in question number 2 ONLY

7. Rate to what extend the below factors affect the use of smartphone/tablet to access virtual classes;
   7.1 I think it’s not a proper way to learn.
   7.2 Lack of advertisement from the HBMeU.
   7.3 Do not know how to the smartphone/tablet to access virtual classes.

The end.

Thank you for your participation...

2
The Effect of Delivery Method on Persistence, Performance and Perceptions

Danielle Morin
Concordia University, Canada

Jennifer D.E. Thomas
Pace University, USA

Samie Li Shang Ly
Concordia University, Canada

Abstract

University administrators are more and more looking at the possibility of using online delivery of course content to manage increasing costs of education, to wit, even the increased interest in the use of Massively Open Online Courses, also known as MOOC’s. A review of several meta-analyses indicates that few past studies examined persistence in relation to blended learning, and for performance and perceptions, most compared blended or hybrid learning with traditional learning rather than to online learning. In this paper, the focus is on the 3 P’s – performance, perceptions and persistence, as impacted by two online delivery modes – Hybrid (Traditional + Online) and Total Online in an introductory Business Statistics course. It was found that in fact, online delivery produced the least persistence and the lowest grades, while a hybrid delivery approach produced the greatest persistence and highest grades. Perceptions of the contribution of course resources and activities to various higher-order thinking and team-building skills were also more favorable in the hybrid sections. This has implications for the viability of MOOC’s in education.

Keywords: Online learning, hybrid courses, MOOC’s

Introduction

The advent of the computer age has seen the increasing use of various technologies to augment the delivery of instruction, Tablets, iPad’s and even iPhones and iTunes, as well as Computer Assisted Instruction modules to deliver or supplement learning. Now this is also often augmented with an online component, delivered via some form of learning content management system (CMS), such as Moodle™, Blackboard™, WebCT™, etc., often referred to as hybrid or blended learning. On the other hand, in some cases, course delivery is now entirely online, the content of which is created and managed by the instructor of the course. This has since morphed into what are called MOOC’s. As university costs rise, administrators are seeking ways to manage these costs and online are one way that may make this possible. In this paper, different modes of online delivery are evaluated for their impact on performance, persistence and perceptions of students in an introductory undergraduate Business Statistics course. As institutions move further along the spectrum of online learning to MOOC’s, it is important to understand the potential impact on learning.

Literature Review

An appraisal of a number of meta-analyses conducted over recent years indicate that blended situations bear out the contribution technology makes to the learning situation,
whether that technology is in the form of computer assisted instruction, clickers, number cruncher software, web-based communication, or other. The articles investigated in the meta-analyses shown in Table 1, below, indicate that augmenting traditional lectures with these technologies results in greater performance measures over lectures only (Tamin et al., 2011; Kay & LeSage, 2009; Sosa et al., 2010; US Dept. of Ed., 2010). The exception was the studies investigated in Zhao and Breslow, 2013, which produced mixed results. Investigating blended learning versus online learning, Adam & Nel, 2009 found no difference in performance.

Table 1: Meta-Analyses of Delivery Methods and Performance, Perceptions and Persistence – Blended Learning vs. Traditional Learning

<table>
<thead>
<tr>
<th>Authors</th>
<th>Sample</th>
<th>Delivery Method</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Performance</td>
</tr>
<tr>
<td>Sosa, et al. 2010</td>
<td>45 studies, 9639 students</td>
<td>Tech + TL vs. TL</td>
<td>CAI + TL &gt; CAI &gt; TL</td>
</tr>
<tr>
<td>Sitzmann, et al. 2006</td>
<td>1966-Feb 2005, 96 studies, 19,331 students</td>
<td>BL vs. TL</td>
<td>BL &gt; TL (declarative knowledge, procedural knowledge)</td>
</tr>
<tr>
<td>Zhao et al. 2013</td>
<td>42 studies</td>
<td>BL vs. TL</td>
<td>BL &gt; TL</td>
</tr>
<tr>
<td>Adam &amp; Nel 2009</td>
<td>6 years</td>
<td>OL vs. BL</td>
<td>OL = BL (GPA)</td>
</tr>
</tbody>
</table>

Note: OL refers to online learning, distance education, web-based instruction, virtual education, e-learning. TL refers to traditional lecture, classroom instruction. BL refers to blended or hybrid learning – technology + traditional classroom lecture. CAI refers to computer assisted instruction or learning. Technology refers to CAI, Clickers, laptops, iPads, iPhone, iTunes, web assistance, course content management systems, etc.

The results are not as homogenous for perceptions. The meta-analysis by Kay and LeSage, 2009 found that adding clickers in a traditional classroom was preferred over strict lectures, however, the studies analyzed by Sosa, et al., 2010, found adding computer assisted instruction did not improve perceptions over lectures alone. In Adam & Nel, 2009, perceptions were more positive in the blended learning situation than in the online only, lending credence to the idea that technology plus lecture is preferred to either lecture alone or online alone. However, Sitzmann, et al., 2006 found the traditional face-to-face lecture format was preferred over the blended model.
None of the meta-analyses examined persistence in relation to blended learning and most compared blended or hybrid learning with traditional learning rather than to online learning.

In this paper, the focus is on the 3 P’s—performance, perceptions and persistent, as impacted by two online delivery modes—Traditional + Online (Hybrid) and Total Online. The aim is to shed additional light on these delivery methods, and their possible implications for online learning and the growing trend towards MOOC’s.

**Research Methodology**

Two different online teaching delivery formats, Hybrid (Traditional + Online)/ and Total Online, were examined in an undergraduate introductory Business Statistics course at a Canadian university as follows:

- Hybrid method is a combination of the traditional lecture format and online format where in addition to in-class teaching, the professor connects actively with students through online discussion forums, emails and online practice problems on the Moodle™ platform.
- Online method offers students all required material online on the Moodle™ platform, including videos, discussion forums, emails and online practice problems without ever meeting the students.

**A. The course**

For all sections, the following activities and resources are available to students:
- Textbook
- Moodle™ Discussion Forums
- Material on Moodle™
- Case Analyses
- Multiple-Choice Practice Problems
- Quizzes
- CAI Learning Aids

The teaching methods include supports available during tutor office hours, tutorials before the midterm and the final examinations, and group work on case analyses of real-life business problems. There are also additional review questions, some of which may be attempted online. Students are evaluated based on Quizzes (15%) which are administered online through Moodle™, a Case analysis (5%) which is an assignment intended to reinforce specific methodological objectives treated in this course done in groups of four, a Midterm examination (25%) and a Final examination (55%).

**Study I Modes of Delivery and Performance and Persistence**

1. **The Sample**

This first study, examining differences in the modes of delivery as they impacted performance and persistence, involved several hundred students from the Business School of a Canadian university, enrolled in an introductory undergraduate course, "Business Statistics". This course in mandatory for all business students and is normally taken by first year students.

The persistence and performance in the course were analyzed across teaching methods. Sections of the course using similar pedagogy were grouped and the grade distributions were compared as well as the percentage who abandon.

2. **Persistence Analysis**

It is often believed that students registered in an online course tend to abandon or vanish from the course. It could be due to several reasons such as the lack of motivation or for personal reasons. Carr (2000) states that the dropout rates could be as high as 80% and that traditional teaching methods always score better in that respect. Our sample of 970 students were examined in terms of status in the course: Completed, Vanished or Abandoned, where

- Completed means that a student has completed the course, including writing the final exam
- Vanished means that a student did not write the final exam
Abandoned means that a student has officially withdrawn from the course.

3. Performance Analysis

Students’ success in this undergraduate Statistics class is very important as it is the basis of many courses in the Business program. Students can obtain the following set of grades: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D-, F (Fail). An average of letter grades can be calculated where A, B, C and D carry the points: 4,3,2,1 respectively. A “+” adds 0.3 to the score and “-“ subtracts 0.3 to the score and F is a fail grade and carries a “0”. To simplify the presentation, results will be grouped as follows: A, A and A- will be grouped in the A category, similarly for the other letter grades.

Study II Modes of Delivery and Perceptions

1. The Sample

We note in Table 2 that 53.42% of the Online class are female students, while 53.47% of the Hybrid students are male students. Online students tend to be a little older with more computer experience.

<table>
<thead>
<tr>
<th></th>
<th>Hybrid</th>
<th>Online</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>21.63</td>
<td>22.83</td>
</tr>
<tr>
<td>Computer experience</td>
<td>2.17</td>
<td>2.34</td>
</tr>
</tbody>
</table>

2. Perceptions and definitions

All students were asked to identify the extent to which they felt various activities and resources were perceived to support their acquisition of various higher-order thinking and team-building skills, providing no support, moderate support, or a lot of support, contrasting the two different methods of online delivery, “hybrid” and an entirely virtual “online” course.

The following definitions were used:

**Higher-Order Thinking Skills**

- Critical Thinking: analysis, inference, reasoning, evaluation, explanation, interpretation
- Problem Solving: deriving alternatives and solutions for complex problems/ issues with incomplete information
- Research: investigating, finding, and synthesizing information from multiple sources
- Creative Idea Generation: ideas that are novel or unique

**Team-Building Skills**

- Communication: conveying ideas effectively, both orally and written
- Work Coordination: bringing together work from multiple sources and team members
- Team Cooperation: interpersonal skills, resolution of differences

These concepts derive from prior research conducted by the authors (Thomas 2001, Morin and Thomas 2012) and the finding of Thomas and MacGregor, 2005 that students viewed asynchronous learning as appropriate for assignments that require reflection, time and deep thought, whereas synchronous was appropriate for brainstorming, team-building and social connections.

Results

Study I Modes of Delivery and Performance and Persistence

In Table 3, below, we can observe that 21.7% of students in the online course did not complete the course, that is, they either abandoned or vanished, while the proportion is 13.2% for the hybrid method. The Chi-square test has been performed to test the hypothesis of independence between the pedagogy used and the students’ persistence in the course. The results indicate that the independence is rejected with a p-value of 0.0194. Therefore the persistence in the course is affected by the methods of
delivery. These results are in agreement with the study of McLaren (2004) which was based on a smaller sample.

Table 3: Persistence Analysis

<table>
<thead>
<tr>
<th>Status</th>
<th>Pedagogy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hybrid</td>
<td>Online</td>
</tr>
<tr>
<td>Completed</td>
<td>86.8%</td>
<td>78.3%</td>
</tr>
<tr>
<td>Vanished</td>
<td>3.1%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Abandon</td>
<td>10.1%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Total</td>
<td>356</td>
<td>157</td>
</tr>
</tbody>
</table>

Table 4 below presents the distribution of grades by the teaching methods. We note from the data collected that students performed the best on average in the Hybrid class surpassing the online sections. Of those students who completed the course, 10.0% of the students in the Hybrid section and 6.3% of the Online section received a grade A. Also 21.9% of those who completed the Hybrid course and 11.8% of the Online group obtained a grade B. This leads us to believe that teaching and learning could benefit from a certain level of in-class teaching integrated with technology. The Chi-square test was also performed to test the hypothesis of independence between the pedagogy used and the students’ performance in the course. The results indicate that the independence is also rejected with a p-value of 0.0292. Therefore, the grade distribution is impacted by the methods of delivery, which is in agreement with McLaren (2004).

Table 4: Distribution of grades by teaching methods

<table>
<thead>
<tr>
<th>Grades</th>
<th>Pedagogy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hybrid</td>
<td>Online</td>
</tr>
<tr>
<td>A</td>
<td>10.0%</td>
<td>6.3%</td>
</tr>
<tr>
<td>B</td>
<td>21.9%</td>
<td>11.8%</td>
</tr>
<tr>
<td>C</td>
<td>31.3%</td>
<td>31.5%</td>
</tr>
<tr>
<td>D</td>
<td>21.3%</td>
<td>31.5%</td>
</tr>
<tr>
<td>F</td>
<td>15.6%</td>
<td>18.9%</td>
</tr>
<tr>
<td>DISC</td>
<td>10.1%</td>
<td>19.1%</td>
</tr>
<tr>
<td>Total</td>
<td>356</td>
<td>157</td>
</tr>
</tbody>
</table>

Table 5 below compares the overall contribution of each activity of the course to the higher-order thinking skills and team-building skills, contrasting the Hybrid and the Online delivery methods.

Table 5: Overall Contribution of the Activities to Higher-Order Thinking and Team-Building Skills

<table>
<thead>
<tr>
<th>Activity</th>
<th>HYBRID Mean*</th>
<th>ONLINE Mean*</th>
<th>HYBRID SD</th>
<th>ONLINE SD</th>
<th>HYBRID Positive impact</th>
<th>ONLINE Positive impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>1.970</td>
<td>1.873</td>
<td>2.243</td>
<td>2.292</td>
<td>78.22%</td>
<td>83.90%</td>
</tr>
<tr>
<td>SD</td>
<td>0.657</td>
<td>0.641</td>
<td>0.681</td>
<td>0.667</td>
<td>60.40%</td>
<td>57.53%</td>
</tr>
<tr>
<td>N</td>
<td>202</td>
<td>73</td>
<td>202</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td>75.21%</td>
<td>60.96%</td>
<td>76.23%</td>
<td>64.38%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle™ Discussion Forum</td>
<td>Mean*</td>
<td>1.927</td>
<td>2.301</td>
<td>1.890</td>
<td>2.210</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.734</td>
<td>0.612</td>
<td>0.759</td>
<td>0.680</td>
<td>60.40%</td>
<td>57.53%</td>
</tr>
<tr>
<td>N</td>
<td>202</td>
<td>73</td>
<td>202</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td>75.21%</td>
<td>60.96%</td>
<td>76.23%</td>
<td>64.38%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moodle™ Material</td>
<td>Mean*</td>
<td>1.526</td>
<td>1.818</td>
<td>1.652</td>
<td>2.068</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.628</td>
<td>0.671</td>
<td>0.696</td>
<td>0.738</td>
<td>60.40%</td>
<td>57.53%</td>
</tr>
<tr>
<td>N</td>
<td>202</td>
<td>73</td>
<td>202</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td>90.43%</td>
<td>84.25%</td>
<td>86.23%</td>
<td>67.58%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Case Analyses</td>
<td>Mean*</td>
<td>1.618</td>
<td>1.699</td>
<td>1.718</td>
<td>2.059</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.718</td>
<td>0.689</td>
<td>0.772</td>
<td>0.791</td>
<td>60.40%</td>
<td>57.53%</td>
</tr>
<tr>
<td>N</td>
<td>202</td>
<td>73</td>
<td>202</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td>86.14%</td>
<td>86.64%</td>
<td>80.53%</td>
<td>64.84%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple-Choice Practice</td>
<td>Mean*</td>
<td>1.764</td>
<td>1.856</td>
<td>2.150</td>
<td>2.361</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>0.684</td>
<td>0.689</td>
<td>0.746</td>
<td>0.726</td>
<td>60.40%</td>
<td>57.53%</td>
</tr>
<tr>
<td>N</td>
<td>202</td>
<td>73</td>
<td>202</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Positive impact</td>
<td>82.10%</td>
<td>77.74%</td>
<td>62.26%</td>
<td>46.12%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
A first glance at the results indicate that the overall perceived contributions of certain activities and resources to higher-order thinking skills significantly differ whether the course is offered in the hybrid setting or online at the 5% level of significance. This is the case for the Moodle Discussion, the Moodle™ Material, the Quizzes and the CAI Learning Aids. However no significant difference was observed with the Textbook, the Case Analysis and the Multiple-Choice Practice Problems. The Moodle™ Material has the highest positive contribution to higher-order thinking skills with a score of 90.43% for the Hybrid section while the CAI learning aids were the lowest, 51.11%. In the Online setting, it was Case Analyses which contributed the most, at 84.25%, but not significantly so, and Moodle™ Discussion the least, 60.96%, which was significant.

Similarly, the results also indicate that the overall perceived contributions of certain activities and resources to team-building skills significantly differ whether the course is offered in the Hybrid setting or Online at the 5% level of significance. This is the case for the Moodle Discussion, the Moodle™ Material, the Multiple-Choice Practice Problems and the Quizzes. In those four cases, the Hybrid section valued the activities and resources more than the Online section. No significant differences were observed for the Textbook, Case Analysis and the CAI Learning Aids. The Moodle™ Material has the highest positive contribution to team-building skills with a score of 86.23% for the Hybrid section and 67.58% for the Online section, while the CAI learning aids were the lowest, 40.59% for the Hybrid and 41.10% for the Online, though not significantly so.

Perceptions of the contributions of the various resources and activities in the course to both higher-order and team-building skills, while not all significantly different, were generally higher in the Hybrid sections compared to the Online sections. This concurs with what was expected.

**Conclusion**

Research by Crede, Roch and Kieszczynka (2010) found that class attendance was the better predictor of college grades than other factors. If this is so, and given the high drop out rates of students from MOOC’s (Liyanagunawardena, 2013), it is important to understand students’ performance, perceptions and persistence with this approach to learning. The results of the studies conducted in this paper support the need for a hybrid model of learning, which augments in-class lectures with a level of online component. It was found that performance, perceptions and persistence were more favourable in the hybrid sections than in the solely online sections. In addition, perceptions of the contributions of the various resources and activities in the course to the acquisition of higher-order thinking and team-building skills, while not all significantly different, were generally higher in the Hybrid sections compared to the Online sections. This would tend to imply the need to carefully evaluate MOOC’s before widespread adoption of them is made. Monetary expediency should not trump wise pedagogy.
References


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Abstract

The educational landscape is renown for its adoption of a plethora of technological tools. Among the most recently acknowledged tools is the asynchronous discussion forum (ADF), which is characterized by online discussions. The ADF offers a flexible arena for individuals to converse, enabling students to discuss pertinent topics and issues from wherever they are located at any given time. Hence, the discussions offer an excellent means for students to learn from one another; apart from exchanging diverse ideas, they can explore conflicting points of view. ADFs are now popular teaching tools for most universities across the world. This paper reviews the advancement of the ADF research from 2003 to 2013, drawing upon articles published in three digital library databases. What is noteworthy is that the number of articles has significantly increased during the past 10 years. Moreover, this paper identifies the implications of the ADF for education as well as the criticism and challenges confronting the ADF. The findings reported in this paper can be used as the basis for further research and development.

Keywords: asynchronous discussion forum; collaborative learning; e-learning;

Introduction

The digitisation of information and the availability of intelligent digital devices and high-speed transmission technologies have transformed the way that we interact with the world and what we expect from it. Education is one sector that has been highly influenced by information technology, with the growth of the Internet and web technologies resulting in the origin of e-learning (Sloman, 2001). Online learning had a low success rate during the early years of its inception, as it was merely a static repository for content—simple, but unattractive to students. This initial arrangement led to a student–instructor disconnect that resulted in low access rates, high dropout rates, and poor learning outcomes (Fernandez-Manjon et al., 2009). However, over the years, e-learning has evolved to encompass powerful web-based platforms (Kahiigi et al., 2007). Researchers have conducted studies to exploit the new possibilities that the rapidly evolving technology offers for enhancing the learning experience, leading to the origin of the asynchronous discussion forum (ADF) for learning (Gao et al., 2013).

Motivation Based on the Literature

According to Sampson et al. (2010), two of the main research challenges of e-learning are the elimination of the barriers of time and distance and the personalisation of the learner’s experience. The e-learning research field contains numerous models, approaches, and pilot studies, mostly relating to course content management, student administration, monitoring, and evaluation. The research efforts have been focused solely on the learning and pedagogical requirements from the teacher’s perspective (Sampson et al., 2010). Thus, it has become essential for the research to focus on solving the challenges of e-
learning, particularly from the student’s perspective. It seems that today’s e-learning systems fail to sufficiently consider the communication between students, which is an important factor for a successful learning experience (Bodendorf, 2009). Some researchers have argued that students do not achieve higher-level learning or a strong cognitive presence in online courses. Therefore, online discussion has been proposed as a solution to bridge this gap between the online and face-to-face learning environments (Darabi et al., 2011). Accordingly, this literature review operates on the basis of the following two research questions:

1. What are the implications of using asynchronous discussion forums in education?
2. What are the criticisms of and challenges facing the asynchronous discussion forums that the research community is currently addressing?

Methods and Procedures

A comprehensive literature review was carried out on the basis of the following inclusion criteria: studies published in English-language journals between 2003 and 2013, studies focusing on ADFs in education, and studies whose titles included the phrases ‘asynchronous discussion’, ‘asynchronous computer-supported collaborative learning’, ‘asynchronous/collaborative’, and ‘asynchronous/communication’. Extensive document searches were carried out using common electronic databases, including ScienceDirect, EBSCOhost, and Wiley InterScience. The snowball method was applied when reviewing the references in the relevant articles. The application of the above criteria led to the selection of 136 articles. Then, the content of these articles was examined in detail, with regard to their purposes, methodology, findings, and results. Based on my detailed review, I chose 20 articles that had addressed implementation and criticism in education, and which clearly answered the questions listed in the section above.

Status of the Asynchronous Discussion Forum Articles

Figure 1 shows the trend in the number of articles about asynchronous discussion forums in education published between 2003 and 2013. The figure evinces a visible, crucial trend in the publication of these articles. It is obvious that there has been tremendous growth in the research done in this particular field since 2007.
Implications of Using Asynchronous Discussion Forums in Education

The ADF is an online tool that can be used for teaching and learning. The forum involves the use of various online communication media, such as e-mails, chats, posted newsrooms, and online discussions. ADFs have been used effectively for teaching learners in both online educational programs as well as programs that incorporate both conventional on-campus teaching and online learning. Asynchronous discussion boards are now popular teaching tools for most universities across the world. Several recent studies have shown the usefulness and effectiveness of these forums. As will be mentioned and supported in the following paragraphs, ADFs are effective for learning and instruction in the online environment.

According to Andresen (2009), several studies have confirmed that the ADF has the ability to create the critical dimensions of learning found in the traditional classroom. This is supported by the fact that the effectiveness of ADFs in learning is not second to traditional learning but an important aspect of teaching/learning. In a study by Ajayi (2009), the participants indicated that the asynchronous discussion board was a vital instrument of learning, since it afforded customized learning experiences, encouraged situated learning, and facilitated the social construction of knowledge. Ajayi’s study (2009) yielded excellent results. The participants reacted optimistically towards ADF; they asserted that ADF embraces autonomy and freedom, enabling individuals to exercise their sovereignty online. Besides, the participants perceived ADF as a genre of technology that enables them to devise their learning experiences according to their distinctive situations. Moreover, the ADF technology proved to be a supreme genre of situated learning. While using the technology, the participants found it easy to control it in a manner that suited their tasks. In this context, the participants could easily employ their skills and knowledge while using ADF. In addition, ADF appeared to play an exceptional role in extending individual knowledge. From this perspective, the participants had the freedom to explore the site by navigating their colleague’s postings and downloading, uploading, and printing materials from the sites, while linking with the sites. These activities enabled them to expand their knowledge, as they learnt novel things from their peers. The ADF did not merely prove to be a learning arena; it was also a social locality where the participants were capable of interacting socially within the discussion boards. Hence, the information derived from the study indicated that the participants had a positive perception of the ADF. That is, they viewed it as a significant tool for inventing knowledge, as it allowed them to share what they know while learning what they did not know. The aspect of discussing and sharing experiences, perspectives, and ideas seemed to facilitate the social construction of knowledge. In fact, this constitutes an essential step for persons learning the art of teaching. In support of this argument, Kayler and Weller (2007) accentuated that the social invention of knowledge emanating from ADFs produces self-motivation, development, and self-reflective practices in individuals. The authors further emphasized that ADFs portray lived experiences for the contributors.

Distance learning is a type of learning that often requires students to use online discussion forums. The growing number of distance education programs at the tertiary level is creating a huge demand for the effective use of ADFs. As mentioned by Green et al. (2013), ADFs are effective in enhancing the learning outcomes in the classroom. For instance, since all the reviews and comments posted by the professor and other students can be found in one discussion forum, this provides the learners with a holistic view of the concepts and issues under discussion. Mohammad et al. (2013) conducted a study with students...
from the National University of Malaysia, and they discovered that ADFs can enhance students’ reading and comprehension. Therefore, the literature discussed in this paper thus far has shown the effectiveness and importance of ADFs.

How learners perceive a teaching and learning strategy is very important. The students who took part in Kocaman-Karoglu et al.’s (2011) study expressed positive perceptions and attitudes towards online discussion forums. This study revealed that learners bore a huge responsibility in the effective use of online discussions. The academic works and dialogues that are present in an online discussion forum enable learners to view comments from other classmates and leave comments for the classmates as well.

A study by AbuSeileek and Qatawneh (2013) provided evidence to show that learners who made use of ADFs elicited significantly higher degrees of discourse functions related to question types and strategies as compared to students in the other treatment condition (synchronous group). The study additionally demonstrated that ADFs stimulated learners to ask a series of questions which required detailed answers with concrete examples. In addition to ADF’s effectiveness in learning, it has been observed in the research that ADFs are used extensively and resourcefully by students of computer science and related courses (Özcan, 2011). Moreover, as a result of the effectiveness of ADFs, the learning of programming languages has hugely improved (Özcan, 2011).

Another study by Kubasko et al. (2008) indicated that learners in the asynchronous group made significantly more written notations about what they had learnt from the investigations than the students in the synchronous group. This is a clear indication that students who are involved in ADFs are more active in the learning process as compared to those who take part in synchronous discussions. In addition, on the basis of their research, Patriarcheas and Xenos (2009) concluded that electronic forums are becoming increasingly attractive as part of the learning process.

In conclusion, ADFs are beneficial not merely for the individual participants but also for the entire learning process. In fact, many researchers have embarked on studies aimed at determining the significance of ADFs for learning. The results suggest that ADFs are critical learning tools, and they have modernized the manner in which learning takes place within online platforms. Learners are also finding it interesting to employ technology to achieve the goals of given lessons. The opportunity to interact and socialise with other students overseas via the Internet is exciting, since the discussions and the acquired knowledge are about more than generating new ideas; they are also deemed rich in diversity. According to the evidence in this paper and much more evidence-based research, ADFs provide effective learning tools. In sum, online discussion forums offer insight into the future, given that technology is developing and advancing rapidly.

**Criticism and Challenges of Asynchronous Discussion Forums**

The provision of education services through ADFs faces many challenges, and although much research has been conducted, many critical questions remain unanswered and many other issues have yet to be resolved. The biggest challenges lie in achieving a clarification of these arguments, finding answers to open questions, and providing a clear understanding of the topic.

According to Kocaman-Karoglu et al. (2011), the volume of posts on a discussion board is the largest limitation of this collaborative learning method. Since every student must post to the discussion board, and others reply to the post, shifting through hundreds of posts can be difficult for both the students and instructors. For example, if a class has 40 students, and each post on the discussion board receives an average of three replies, the instructor will have to read through about 160 posts per discussion topic. A further problem with such
information overload is the relevance of the posted messages. Some students may post non-factual and incomplete analyses of the discussion topic (Kardan and Ebrahimi, 2012, p. 97). When other students read this as correct information, the accuracy of the learning is affected. Kardan and Ebrahimi (2012) suggested a data mining system to filter the desired information from all the posts.

Integrating asynchronous learning with emerging technologies is another major challenge to this new method of learning. Furthermore, emerging computer technology is a challenge to the designers of online learning boards. According to Gao et al. (2012), emerging technology means that teachers may need to fundamentally change their teaching strategies every time a new technology is introduced. Most discussions are held through computer networks, but they will soon have to move to smartphones. Moreover, as computing technology continues to change rapidly, the designers of the online discussion board will have to continually integrate them with new technology as it emerges (Gao et al., 2012, p. 476). Additionally, the existing ADFs have interfaces that confuse learners. For instance, the range of devices that can connect to such interfaces, including tablets, smartphones, and PCs, might prove to be a challenge to use or may disorientate new learners in determining how the ADF works. For instance, when a user moves from using a PC to a tablet or a smartphone, he or she might encounter challenges in opening files or in zooming, reducing the consistency of the ADF experience.

The successful integration of online discussion boards with smartphone technologies is already bearing fruit for most educators. Obviously, if students are able to discuss educational materials using their phones, the convenience of the learning is increased. Furthermore, Lan et al. (2012) were able to show that using mobile devices for online asynchronous discussion resulted in better student performance in the discussion. When they contributed to the discussion using their mobile devices, the students were more reflective and shared more, thus constructing more knowledge. The diversity of ideas and the way they were expressed were also significantly better as compared to the use of other devices. This underlines the need for instructors to consider mobile phones as the dominant forum for conducting online asynchronous learning.

In an ordinary classroom, a teacher is able to use non-verbal cues, such as gestures and tone of voice, to teach. In contrast, communication via online discussion boards is purely text-based; hence, non-verbal actions cannot be used to support the message. This is especially disadvantageous for individuals who are unable to express themselves eloquently through spoken words. According to Girasoli and Hannafin (2008), asynchronous discussion boards should include audio/visual tools to enable students to better express themselves.

Hew and Cheung (2013) advocated for audio-based asynchronous discussion to overcome the lack of visual cues associated with text-based asynchronous discussion boards. In a study conducted at an Asian university, audio-based discussion was found to have six distinct advantages over text-based discussion. However, the students still preferred text-based discussion over the more advantageous audio-based discussion. In particular, audio-based discussions are particularly useful when the students cannot meet each other or their instructor face to face (Hew and Cheung, 2013, p. 373). Unlike text-based discussion, the voice and tonal cues involved in an audio-based discussion help the student to correctly interpret the messages of the other students and the instructor.

In the view of Hew and Cheung (2008), asynchronous online learning is limited if there is no teacher guidance. The absence of teacher guidance has been shown to affect the behaviour of students and the quality of the content that is contributed to the discussion board. Yap and Chia (2010) argued that students may hold misconceptions about the topics under
discussion, and if they misunderstand the instructions, they can cause the discussion to head in the wrong direction. Furthermore, the nature of the learning environment prevents the teacher from immediately correcting the misunderstanding. In contrast, the teacher can easily identify and clarify a misunderstanding in a face-to-face discussion (Yap and Chia, 2010, p. 1590).

According to Jeong and Frazier (2008), the day of the posting affects the number of responses that a topic will receive on an online discussion board. Dringus and Ellis (2010) argued that delayed responses to messages also affect the quality of the discussion in the online discussion board. Their results revealed that day-in-topic, time of day, and day of the week were some of the most important indicators of the intensity, density, response count, and latency of the discussion. Activity on a particular topic with no specific end date is likely to last between 21 and 28 days (Dringus and Ellis, 2010, p. 349). Students were more likely to contribute quality content in early to midweek, while the vitality of the discussion was not affected by the time of day. Therefore, it is important for instructors to factor in the time of a posting and the end date for topics when designing assignments for online discussion boards.

Thus, using an online discussion board as a tool for learning is a strategy that faces multiple challenges. Chief among them is information overload, where students and instructors must sift through hundreds of posts. Second, to be effective, online discussion environments require integration with emerging technologies. As seen with mobile phones, conducting discussions via popular technology improves the quality of the discussion. However, the lack of non-verbal cues to support the messages being delivered remains a significant challenge to the online discussion environment. Therefore, it is imperative that the designers of online discussion forums consider these challenges and devise strategies to address them in order to enhance the effectiveness of these forums as teaching methods.

**Conclusion and Future Work**

This paper reviewed the advancement of ADF research from 2003 to 2013, by examining articles published in three digital library databases. Strikingly, the number of articles on ADFs has significantly increased during the past 10 years. ADFs have revolutionized the way that learning occurs in online platforms. There is vast literature on the topic. In general, all the studies that were discussed in this paper have shown that the ADF is a crucial tool for learning. The use of technology to achieve the objectives of a lesson can be intriguing to learners, and the use of the Internet and online discussion platforms has made it possible for students from different parts of the world to interact, hence making the discussions rich in diversity and novel ideas.

The articles that were discussed in this paper have provided sufficient evidence to support the effectiveness of ADFs for learning. However, this paper noted that ADFs do have some limitations in terms of interactive content. More specifically, most ADFs do not maintain their content within acceptable limits. For instance, there are too many posts in the discussion forums. This means that participants might have difficulty articulating or absorbing all the information in the forum. As such, the congested posts will bore many participants, leading to learning challenges. Thus, the resources must be brought within acceptable limits. Additionally, there is a lack of integration with emerging technologies in ADFs. The lack of non-verbal cues to support the messages being delivered remains a significant challenge to the online discussion environment. The findings in this review can be used as the basis for further research and developments. Future work could focus on finding ways to keep the interactive content in ADFs relevant to individual participants while improving their cognitive presence, and on scaling the ADFs so that they can be accessed on various devices.
References


Mohamad, M., A. Omar, et al. (2013). "Asynchronous Forum as a Discussion Tool in a Preparatory Reading Course for First
Year Distance Learners." Asian Social Science 9(13): 53-62.


2012


2011


Khee Foon Hew, Wing Sum Cheung 2011 , "Higher-level knowledge construction in asynchronous online discussions: an analysis of group size, duration of online
discussion, and student facilitation techniques”.

(Ozcan Ozyurt, 2011) Analysis of asynchronous dialogues to reveal the effect of discussions on learning programming languages by candidates of computer programmers.

**2010**


Lei, L., J. Finley, et al. (2010). "Which is a better choice for student-faculty interaction: synchronous or asynchronous communication?" *Journal of Technology Research* 2: 1-12.


Vlachopoulos, P. and J. Cowan (2010). "Reconceptualising moderation in asynchronous online discussions using
grounded theory." *Distance Education* **31**(1): 23-36.


**2009**


**2008**


De Smet, M., H. Van Keer, et al. (2008). "Cross-age peer tutors in asynchronous discussion groups: studying the impact of


2007


2006


2005


2004


2003


Abstract

Investment in eLearning systems has increased as a reaction to the view that traditional education is in crisis, which center around three issues, the cost of providing education, access to education, and geographical difficulties. We believe that eLearning, as a development strategy of school education; will provide at least part of the solution to many of these issues.

The acceleration of the interest in eLearning appears to be centered on the concern that standard educational contents and teaching strategies might not be able to continue its control on the delivery of education in concern with 21st century skills. Unfortunately, much of eLearning developments are information wise and focused around the level of teachers’ strategies, planning and thinking, while learners’ needs and experience goes largely uncovered. Therefore, in order to create a compelling and effective eLearning content, learners must be targeted in advance. Determining who the target audience is will help to communicate with them more effectively and thus satisfy their needs.

In this paper, we briefly present the art of eLearning strategies planning and thinking, and then we propose a fundamental framework for the design, development and implementation of an eLearning system in school education which focuses around the level of student experience. In this context, we shed light on the current experience of partners for sustainable development in developing digital interactive books among other projects (such as Khan Academy Arabi) that aims to supply mainly Palestinian students, and Arabic speaking learners, in general, with digital learning resources. This is to overcome the limitations of accessing education, due to poor technological services and infrastructure in the Palestinian educational system.

Keywords: eLearning; Instructional Design; Learner Driven; Framework; Digital Content.

Introduction (The Art of eLearning)

Time and distance have become the most common challenges for traditional learning. Therefore, seeking a new strategy, system, or even technology to face such challenges has delivered what so called eLearning.

According to the Distributed and Electronic Learning Group for the LSC in England, 2002 “electronic learning can be represented as a spectrum ranging from internet-supported distance learning in which the learner has limited physical contact with the tutor or other learner, to teacher-led, classroom based activity which is interspersed with occasional computer-delivered or facilitated assignments”.

In one hand, learning using information and communication technologies (ICTs) is an eLearning. It could be two groups of students from two different countries collaborating in a project via internet, or a satellite broadcasting of an operation from operating room of one hospital to a room full of medical students in another hospital, it could be even a child playing with an interactive game- all counts as eLearning.

eLearning ranges from internet supported distance learning, in which the learner has limited physical contact with the tutor or other learners, to teacher-led, classroom-
based activity which is intersected with occasional computer-delivered or facilitated assignments.

One may ask, “Why do we need eLearning?”, and the first answer might be “because it is a new technology”. Well, it is true to say that eLearning is a new learning technology, but it is not the only reason behind its importance. Lack of time and long distance has led students to withdraw from school education, and eLearning has resolved this. In addition to the fact that eLearning is less expensive to support, it is not constrained by geographic considerations, thus students with time scheduling or distance problems can gain profit because eLearning, which can be called distance learning as well, can be more flexible in terms of time and can be delivered virtually anywhere, it can improve the quality of learning experience, and extend the reach of every tutor and teacher.

**Literature Overview**

Before we go on in our research, we had to run into eLearning concepts and terminologies. There are number of terms that are frequently used in eLearning definitions, and to have a closer look to the terms that are relevant to our understanding to education in what follows we introduce and define some of these terms.

**ILT:** Information and learning technology, this term refers to the application of IT and ICT to the running core of learning and teaching, it could be the management of information and resources within the learning environment to enable successful learning.

**Distance Education:** is taking place when a teacher and student(s) are separated by physical distance, and technology (i.e., voice, video, data, etc.). (Willis 1994)

**Online Education:** (Kearsley, 2000), “Online Education allows students to study at virtually any location and at any pace that can accommodate their other commitments such as work and family”.

**Distributed Learning:** (Oblinger and Maruyama 1996) characterizes a distributed learning environment as follows: "where the learning environment exists among a dispersed student population, is structured according to learners' needs, and tends to integrate traditional institutional functions (e.g. classroom and library)."

**Computer-Based Training (CBT):** Training (of humans) done by interaction with a computer. The programs and data used in CBT are known as "courseware."

We can thus, from all these related terms, define eLearning as “an effective teaching and learning process created by combining e-digital content with local community and tutor support along with global community engagement.”

In this paper we shall use the terms student, learner or audience referring to specific users who are interested and will benefit from the eLearning system. Term tutor refers to all who teach learners; sometimes guide and help them through applying the eLearning systems; they are simply the mapping of teachers in traditional educational systems.

**Research Methodology & Problem Statement**

In this paper we used critical quantitative research methodology, interviews and focus groups were held with school students, teachers and administrators to answer two specific questions: what is the impact of enhancing learning with ICT within the classrooms? What kind of digital content students would prefer?

Through analysing the answers for those questions and investigating attitudes, culture and characteristics of targeted groups, we observed that eLearning has proven its success and importance in school education. But, despite the fact that eLearning has become a major requirement in school education, Unfortunately, much of the eLearning developments are information wise and focused around the level of teachers’ strategies, planning and thinking,
while students’ needs and experience goes largely uncovered. As a reason of this, some disadvantages have appeared while applying eLearning; we can categorize them as student-wise and information-wise disadvantages.

**Student-wise disadvantages:**

Students with low motivation or bad study habits may fall behind; without the routine structures of a traditional class, students may get lost or confused about course activities and deadlines. Students may, sometimes, feel isolated from the teacher and classmates, especially, when teacher is not available when students are studying or need help. Managing computer and online learning can sometimes seem complex for students with beginner-level computer skills.

**Information-wise disadvantages:**

In eLearning systems, if the represented information is not structured properly, maintenance problems occur, which are very similar to those in databases: redundancy, inconsistency, incompleteness and obsolescence. This is not surprising as eLearning systems may provide a large amount of information that need to be maintained. But the same phenomena also lead to usability problems experienced by students using eLearning systems.

Out of these disadvantages, we have concluded that the development of eLearning systems within the level of information and content only can cause learners to be distracted away from what they really need, and limiting their demands around the exiting information.

Therefore, in order to create a compelling and effective eLearning system, the audience (system users) must be targeted in advance. Determining who the target audience is will help to communicate to them more effectively and thus satisfy their needs.

**Proposed Framework LDCD**

LDCD, Learner-Driven Framework for Content Digitizing, is Learner-driven; this means that we design eLearning systems based on the requirements of the intended students. To do so, LDCD gives consideration to the fact that eLearning systems usually have different types of users with different needs.

Different types of students may have different information requirements. This should be reflected in the eLearning system. For example a student should be able to get directly to the needed information without traveling through non-relevant and unnecessary information. Next to the fact that different type of students may have different information requirements, it may be necessary to represent the same information in different ways to different kinds of students. This depends on students' characteristics.

Our framework consists of four phases, as shown in figure 1. The first phase is to define the Assertion. The assertion indicates the purpose and the subject of the eLearning system, to be developed and declares the target audience. Based on this assertion a two-step student modelling phase is performed. In the first step, student categorization, the different kinds of students are identified and categorized. Members of the same student category have the same information and functional requirements. The second step is called student category characterization, in which the characteristics of the different student categories are given. The result of this phase, student modelling is a set of student categories with an informal description of their information, functional and usability requirements, and their characteristics. In case some members of a students’ category have different characteristics from other members of the same category a sub-child category is introduced to join that group of members.

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6 Sub-child category is treated twice, first individually and second in the joint with the main (parent) student category.
The next phase is the conceptual design, which also consists of two steps, the information modeling, in which the information requirements of the students’ categories, specified in the previous phase, are modeled into what so called object chunks. Object chunks are designed by elaborating the information requirement into elementary information requirement and making an object chunk for each elementary requirement. Notice that object chunks of main students’ categories are also available for sub-child categories. As an example, a new student elementary requirement is to find information of how to participate in the university eLearning system, and then there should be an object chunk models the participation process.

The second step is the presenting design, in this step the conceptual structure of the eLearning system and a model of how it will be presented to its users are specified (i.e. create a directing tracks for each students’ category). Presenting chunks are designed for each student’s category and sub-child category, and then merged into a directing track. The last phase in the framework, Development, is the actualization of the eLearning using a chosen implementation environment, and special eLearning development technology and tools.

**Framework Specifications**

**Phase 1: The Assertion**

The first step in LDCD is to define the assertion of the eLearning system. The assertion must identify the purpose, the subject and the target audience of the eLearning system. We believe that without giving due consideration to the purpose of the eLearning system, there is no proper basis for making decisions, or for evaluating the effectiveness of the eLearning system and the users will have little idea what the eLearning system is for.

The target audiences (i.e. learners or students) are the audiences that we want to address or that will be interested in the eLearning system. To be able to address them in an appropriated way in the eLearning system, one needs to have a clear understanding of the target audiences. Therefore we first have to agree on who are the target audiences of the eLearning system.

Related to the purpose and the target audiences is the subject of the eLearning system, which must allow fulfilling the purpose of the eLearning system and it must be suitable for the target audiences. It is important to identify the subject because this will allow later on to decide which information must be included in the eLearning system or which is not.

Not all information is good. After all, no matter how much information is put on the eLearning system, if nobody is interested in, nobody will ever look through it. As an example, we give the assertion for an eLearning system of an eLearning educational school. The assertion states what follows, figure 2:
Figure 2: (Phase 1) the Assertion-example

- Enhance the participation of new students in the available eLearning courses.
- Personalise information, advice, and guidance services to help computer-unskilled students to participate in applying eLearning courses.
- Offer flexible learning, anytime or anywhere, at home and school to students who are distance from their schools.

Figure 3: (Phase 2) Student Modelling

Step 1: Identifying Student Categories

To identify the different student categories we look at the activities of the organization for which the eLearning system is built. These activities are decomposed in order to refine in each decomposition step the target audience given in the Assertion.

We only consider the activities that are related to the purpose and subject of the eLearning system. In our eLearning educational school example we consider only the activity “To get Education”.

Each activity involves students. These students are potential users if they belong to the target audience given in the assertion. In our example, the activity “To get Education” involves new, old and computer-unskilled students. (See figure 4).

Other type of students, such as students of special needs do not belong to our initial target audience. Given the purpose of the eLearning system, there is also no reason to include them in the target audience; therefore we do not consider them further on in the design of the eLearning systems. This leaves us with the new, old and computer-unskilled students. To decide whether these can be in one students' category or we need several students' categories we look to their

Phase 2: Student Modelling

In general, the Assertion only gives the general indication of the target audience of the eLearning system. However this specification is too broad to decide whether this target audience should be modelled as one students’ category or as two or more students’ categories. Next phase is student modelling with two main steps, Figure 3.
requirements. By definition we state that all members of a students' category have the same information and functional requirements. For our example we can formulate the following requirements:

- **Old students**: require detailed information about eLearning courses and the ability to easily get to courses anytime and anywhere.
- **New students**: require detailed information on study programs and eLearning courses.
- **Computer unskilled students**: require guide information on how to participate in eLearning courses.

The requirements of these different groups are sufficiently different to put them in different student categories. This result in the initial student categories: New, Old and Computer-unskilled Students.

In order to check whether we have to refine these student categories, we check if we can decompose the activity “To get Education” into sub-activities. For example, we can decompose this activity into “To get Primary Education” and “To get Secondary Education”. This result in a new activity diagram (figure 5).

**Figure 5: Decomposition of Activity diagram-example**

![Diagram](image)

However, old primary students and old secondary students do not have distinct information or functional requirements. Therefore there is no need to put them in different students' categories. The same applies to new primary students and new secondary students. This decomposition of the activity “To get Education” does not result into any new students' categories, and therefore this decomposition is stopped. In general, we continue the decomposition of an activity until no more new students' categories are found or until no decomposition is useful anymore.

The method can be summarized as follows:

Consider the activities of the organization which are related to the purpose of the Assertion;

For each activity:

- Identify persons involved in the activity;
- Only consider those who belong to the target audience formulated in the assertion;
- Divide these persons into students' categories based on different information or functional requirements;
- Decompose the activity if possible;

Repeat step 2 until no new students' categories are found or no decomposition is possible.

This method is based on the fact that we are able to identify the requirements of students involved in an activity. For projects where we exactly know the students involved in the activities and where we can involve the students in the development process, we can use the standard techniques like questionnaires, interviews, etc. to collect the requirements. In the example, the part of the eLearning system to enhance the participation of new students in the available eLearning courses is an example of such a project. In most eLearning projects we usually are unable to involve the target audience themselves in the development process. In the example, this is for instance the case for the new students. Therefore it looks as if we have to “guess” for their requirements.

Studying the characteristics of the audience (see next section) may help to formulate their requirements. Usually, once the system is implemented and running feedback from
the students will be needed to adjust and enhance the design.

**Step 2: Characteristics of Students' Categories**

As already explained, all members of a students' category potentially have the same information and functional requirements. However, the members of one students' category may diverge on how the information should be presented to them, i.e., they may have different usability requirements. E.g., computer-skilled students have more flexibility in applying eLearning systems than those who are unskilled. Therefore, we also analyze the characteristics of the students' categories.

Some examples of user's characteristics are: level of experience with eLearning systems in general, frequency of use, language issues, education/intellectual abilities, age, lifestyle...etc. Some of the characteristics may be translated into usability requirements while others may be used later on in the development phase to guide the design of the "look and feel" of the eLearning system, e.g., choice of colours, fonts, graphics, etc.

If within one students' category we can distinguish groups of members with different characteristics, we introduce student sub-child categories. Consider in the school eLearning system example the students' category Old Students. In this class we may distinguish between Arabic speaking students and English speaking students. Both have the same information requirements but they have different characteristics and usability requirements.

Arabic Speaking prefers Arabic language for communication, but has in general a good understanding of English, while all communications with English speaking students should be in English.

Therefore, for the Students' category Old Students, we will distinguish two sub-child categories: Arabic Speaking Students and English Speaking Students.

**Phase 3: Conceptual Design**

During the first phase, Student modelling, the information, functional and usability requirements and the characteristics of the students are identified and different students' categories and sub-child categories are recognized. The goal of the conceptual design, figure 6, is to turn these requirements into a high level, formal description which can be used later on to generate effective eLearning systems.

During conceptual design, we concentrate on the conceptual “what and how” rather than on the visual “what and how”. This means that we describe what kind of information will be presented, but we also describe how the information will be structured and how it will be possible to be presented. This is needed because directing through the information space is an essential characteristic of eLearning systems. If the presenting is not well designed or not adapted to the target audience, serious usability problems occur. The conceptual “what” is mainly covered by the information modelling step, while the conceptual “how” by the presenting design.

*Figure 6: (Phase3) Conceptual Design*

**Step 1: Information Modelling**

The purpose of the information Modelling step is to model the structured data offered by the eLearning system. The reason to do this is that it will offer more structure and will enhance the maintenance.

**Information modelling in a learner-driven approach**

In our learner-driven approach we start by modelling the information requirements of the different students' categories. For each student’s category, a conceptual schema is
developed expressing the information needs of the members of that category. We call these conceptual schemes Student Object Models.

**Step 2: Presenting Design**

During presenting design, the second step of the conceptual design, we describe the (conceptual) structure of the eLearning system and model how the members from different students' categories will be able to apply and go through the eLearning system. For each student category a different directing tracks is created. All directing tracks together form the presentation model.

A directing track is described in terms of components and hyperlinks. Components represent units of information. Such a unit can contain text, pictures and some other kind of multimedia information as well as structured information modelled by means of the student object models.

Components are connected by means of hyperlinks. We use hyperlinks to model the structure of the eLearning system, but also to indicate the need for directing links. We recognize that our concept of link is overloaded. However, there is no need to distinguish between these different types of links. Both types of links (as well as other type of links) will be translated into directing links in the current eLearning technology. There is no added value for the modeller to bother about the difference, also not from a Modelling point of view. The structure described by the components and links in the presenting model is a conceptual one. The translation into implementation components and links need not to be one-to-one. As explained later, a single component may be split into different components may be grouped into a single component.

To arrive at the presenting model, we construct a directing track for each student's category. The directing track for a students' category starts with a single component that will be used to identify the track. This component is the top of the directing track. The rest of the directing track is built taking into consideration the requirements formulated for the student category. The process to do this is similar to the process of building the student object model: relevant requirements are selected and elaborated, and are decomposed into elementary requirements.

To be able to access all information represented by the components each component should be within reach, directly or indirectly from the top of the directing track. Further on, the components and links form a directed graph. This means that the same component may be accessible in different ways.

Finally, if all directing tracks are constructed, linking the tops of the different directing tracks to a new ‘top’ component derives the presenting model. This component will provide the information that allows a user of the eLearning system to identify the directing track that is most appropriated for him in a given situation. Also note that the different directing tracks are disjoint.

**Phase 4: Development**

Development is the realization of eLearning system; in this phase we leave the development open to all developers in which they can chose the necessary technologies and tools that meet their developing abilities, nevertheless their budget. Notice that in the development phase, students' categories characteristics and usability requirements should be taken into consideration.

These days there are many tools that are available for the development of eLearning, such as Multimedia tools: eLearning material consists of media types that may include text, images, sound, video, animation, etc. to develop such materials; there are a number of multimedia tools such as macromedia flash for animation, sound forge for sound, 3D max studio for 3 dimension media.
PSD experience-examples of LDCD

In this section we briefly introduce and shed light on the current experience of Partners for Sustainable Development with some eLearning development application that are outputs of applying LDCD framework, including the digital interactive books and Khan Academy Arabi online videos.

Digitized Books

PSD is digitizing Palestinian curriculum textbooks. Textbook content is kept authentic and in-line with instructional design models and is then enriched with interactive multimedia resources and components: Video, audio, animation and simulations that help the learners to visualize, hear and interact with material and, thus, explore different learning styles to suit their individual needs.

Khan Academy Arabi

Khan Academy is an online library of thousands of videos on subjects including math, physics, computer science and economics. These videos, designed as instructional tools for students, are uploaded to YouTube and accessed worldwide. They personalize education and allow students to review basic material and repeat lessons or skip ahead, depending on their learning rates. Through their strategic partnership, PSD and Khan Academy have created the Khan Academy Arabic Channel where more than 1600 videos have been translated and uploaded for access via internet.

These systems are considered as an eLearning applications that allow students to apply their information, functionality and usability requirements. We believe that the proposed framework will structure the required information and with modelling the system components we can easily reach the students requirements, this leads to more functionality and effectiveness in applying available systems.

The next stage in developing digital multimedia eLearning products will be in producing online courses, following the proposed framework to ensure the functionality and affectivity in applying.

Results and Future Work

LDCD is an eLearning system design method based on a new approach, called learner-driven. This means that not the data available in the organization or the available technology but the requirements of the target student is the starting point of the Modelling process. This approach must prevent so-called “jumble eLearning systems” and “ego eLearning systems”. Jumble eLearning systems are systems that contain all information the developer could collect and that are organized in a way only obvious for the developer. Ego eLearning systems are those systems that are built to satisfy the ego of the developer, not to fulfill user needs.

The method is based on the principle that the eLearning should be designed for and adapted to its target students. We have also explained the need for a conceptual design phase in eLearning design. Therefore, the emphasis in this method is on student modelling and conceptual modelling rather
than on layout and presentation aspects. In principle, the development can be generated once the conceptual design is completed.

As a consequence of our student-oriented approach, the conceptual information schema of an eLearning system cannot be seen as a single schema but as a collection of schemes; each students' category has its own conceptual information schema. To relate the different schemes and to control the redundancy possibly introduced in this way, a Business Object Model is used. Because directing is an essential characteristic of eLearning systems, the conceptual design also includes a presenting model that is a collection of directing tracks, one for each student’s category. A directing track describes the structure of the eLearning system and shows how the members of the students' category will be able to direct through the information.

A case-tool generating well-structured eLearning systems from student requirements and business domain models is the next logical step.
References


mProgramming: m-Learning Tool for Programming Courses–Android Application

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Abstract

Using the general guidelines for online teaching and learning and mobile learning as a backdrop, we have investigated best practices that are effective specifically in the context of Computer Science (CS) courses that involve programming and hands-on laboratory explorations. In this paper, we describe our preliminary effort in this direction. More specifically, we propose M-Learning tool called mProgramming - Android Application, designed to be used as a handbook or just-in-time training for CS programming students. It works mostly offline so can be used anywhere, anytime. This application aims to help programming student to come over programming difficulties and obstacles; it provides efficient references such as how to write your first application, tutorials and programming references websites. It also includes some tools such as programming numbering converter and programming terms translator. It mainly focuses on three programming languages: Java, C++ and Python, but generally provide tools and information that may help in most of programming languages.

Keywords: Mobile Learning; Programming; mProgramming

Introduction

In this age where technology grows significantly, knowledge and education are spreading easier and faster. People nowadays not necessarily need schools or universities to learn, they can easily learn through mobile applications, websites, social networks, email messages, text messages and many other ways using their mobile devices such as laptops, tablets, smart phones, cellular phones and so on (Woodill, 2010).

With M-learning trending, knowledge is available to anyone anywhere anytime. M-learning can raise the knowledge quality and improve the access to education especially in the poor countries and environments, and though improve the quality of peoples’ lives (ELI, 2010).

With the wide spread of smart phones, students nowadays use their smart phones as references most of the time; to check for a term meaning, to search for some information and so on. Consequently, a lot of educational applications and tools have been developed to facilitate the way they get the information and speed it up (Caudill, 2007). In this context a tool like mProgramming may add value to the educational field and help in facilitating programming learning.

The purpose of this paper is to address some of the difficulties faced by CS students in programming, and add a reference tool that will be a just in time training to help CS student in overcoming some difficulties.

The major motivation behind our proposed tool is to help CS students while learning or facing problems in programming. So we would like to help students and add value to the CS field. Other motivation is the lack of applications related to programming in the “Google App Store”. Also, some of the applications are useless others are not well designed and most of them are specialized in one programming language.
Such tool is intended to help CS students in learning new programming languages, assists them in a previously known language, and provides them with references to learn programming. As a mobile application that can work mostly off-line, it can be a just-in-time training for students so they can get the needed information whenever they need it.

The proposed mProgramming tool is designed to achieve the following two main aims:

1. To establish a usable application that can be used as a handbook for programming students. The objectives are:
   - Create decimal / binary/ octal / hexadecimal converter which help and save time
   - Provide enough references for simple basic tutorials, useful websites and MOOC.

2. To provide beginner programmers with efficient programming helper. The objectives:
   - Create a translator that’s help in understanding programming languages terms.
   - Provide efficient explanation about arithmetic & Logic operators.
   - Provide simple tutorials explaining how to write a new application.

**Literature Review**

By the rapid rise of mobile phones and the decreasing of the telecommunications service cost, people started to reduce the sources and tools of knowledge they used to use such as books, newspapers, calculators, and more others into their small, light cell phone which they can use anywhere, anytime (Woodill, 2010). People now days searching for fastest and easiest way to get the information they need, which makes them need to be always connected to the internet.

Students, especially, has changed their problem-solving ways to easier and faster ones using their mobile phone applications. So M-Learning is the trend these days, and smart phones are the most common m-learning platforms currently (ELI, 2010).

The history of the mobile learning is the combination of the history of telecommunication, radio and computing. It starts with the invitation of the radio in, goes through the inventions of wireless phones, super computers, calculators, desktops, mobile phone service, laptops, smart phones and tablets (Woodill, 2010).

There are various classifications schemes to categories m-learning applications (Bryan et al., 2006); Gay, Rieger, and Bennington (2002), have classified applications based upon the educational objectives which motivate their use. These categories are:

- Productivity
- Flexible physical access
- Capturing and integrating data
- Communication and collaboration

Roscelle (2003) discriminates solely upon activity claiming that instances of the three main types:

- Classroom response systems
- Participatory simulations
- Collaborative data gathering

Naismith et al. (2005), divided applications based upon the educational theory that they support. The “theory-based categories” classified categories as:

- Behaviorist
- Constructivist
- Situated
- Collaborative
- Informal and lifelong learning

There is much definitions for m-learning and a much more debates wither it is the new e-learning stage or a new e-learning tool. Some M-learning definitions include:

“... the intersection of mobile computing and e-Learning: accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance-based
assessment...e-learning independent of location, time and space.” (Quinn, 2000)

“A mobile learning educational process can be considered as any learning and teaching activity that is possible through mobile tools or in settings where mobile equipment is available.” (Colazzo, Ronchetti, Trifonova, and Molinari, 2003)

“The point at which mobile computing and e-Learning intersect to produce an anytime, anywhere learning experience” (Kambourakis, Kontoni, and Sapounas, 2004)

“Mobile learning is when the learning experience that you’re trying to happens to be out and about in the world.” (Dikkers et al., 2012)

The common concept of all definitions listed above is that m-learning is using mobile technology to facilitate learning process and knowledge spreading.

**Research Methodology**

Extreme Programming (XP) which is one of the Agile processes has been selected to develop the proposed tool. Extreme Programming is effective and flexible method that based on simple rules and five values: communication, simplicity, feedback, respect, and courage. This methodology’s lifecycle phases are: (Wells, 2013)

1. Planning: the first phase of Extreme Programming life cycle, where ‘user stories’ or requirements are created – aspects of this stage are described in details in the next section (Analysis & Design).
2. Designing: in this phase prototypes and XP programming give priority to the actual coding over all other tasks are – aspects of this stage will be described in details in the Design section.
3. Coding: the most important phase since XP programming gives priority to the actual coding over all other tasks.
4. Testing: code testing which runs frequently in corresponding with the development phase. Acceptance testing to be completed as well.
5. Listening or feedback: frequent feedbacks from our stakeholders.

**Research Tools**

The software tools include (1) Eclipse; open source programming application; the basic application which we worked on, it has graphical layout, xml sources and Java sources, (2) Java SDK; plugin for Eclipse since it’s the used language.; (3) Android SDK Manager and AVD Manager; plugins for Eclipse to make the code compatible with android devices, and (4) Photoshop; to design the logo & icons. The hardware tools include Laptop, and Galaxy Note II (android OS). The Programming languages used are Java: to implement the whole program and Xml – coding language to design the layout.

**Analysis & Design**

**System Requirements**

Functional Requirements provided by the application include:

- Allow users to access the application and all of its features without login/out.
- All of the application features, except references, should be accessible without internet connection.
- Provide the user with information (translation, writing first app, Arithmetic & Logical operators, and references) in Java, C++ and Python (There’s no official statistics for such information but I did some search and find out that these 3 languages came in the places between the 1st and 10th of the programming languages used in 2013).
- Allow the user to convert decimal to binary, octal and hexadecimal & vice versa.
- Support Android API levels from 2.2 to 4.4 (Depending on Android statistic in August 2013 said that versions older
than 2.2 accounted for about 1% of devices that checked in Google services.

Non-Functional Requirements include:
- Availability: The application will be available to any user to use without any login/out method and mostly anytime with/out internet connection.
- Usability: The application will be with high usability, even if the intended audience is programmers.
- Simple navigation way
- Colorful but simple GUI

System Architecture
The functionality of the system is described in the use case diagram in Figure 1:

Sub Modules
Convert:
- Decimal/Binary
- Decimal/octal
- Decimal/Hexadecimal

Translate:
- Programming languages keywords, data types and notations terms to natural language definitions.

Operators:
- Assignment Operators
- Arithmetic Operators
- Unary Operators
- Equality and Relational Operators
- Conditional Operators
- Bitwise and Bit Shift Operators
- Membership Operators

References:
- Programming Websites
- Video Tutorials
- MOOC

First Application:
- In C++
- In Java
- In Python

Detailed System Design
Logo Design
The mProgramming logo was designed by choosing simple colours and design (Figure 2); the curly braces “{” used to represent the “M” letter of the title “mProgramming” and used to indicates programming since it is a symbol which is used a lot in programming languages.

As the logo is used as the application launcher we design it with 5 in multiple sizes to support different densities (medium, high, x-high, xx-high, and xxx-high) as recommended in the Android Iconography Guidelines.
Layout Design

We tried in most of the application’s activities to follow the “Android Metrics and Grids Guidelines” which suggested that:

- Right and left padding of the page should be 16dp
- Touchable UI components are generally laid out along 48dp units
- Spacing between each UI element is 8dp.

Application Home Page Design

We designed the home page in a colourful trendy way (Figure 3). We meant by trendy way if you just observe, you will notice that large companies like Microsoft and Apple changed their simple blue or black and white GUIs to colourful ones; in Windows8 and iOS7.

We believe that now days with the rapid development and regeneration in everything around us, people are tend to get bored easier and faster, which makes old trendy blue or black and white GUIs monotonous. But still the amount of colours should be limited which makes us use four different colours, two of them are light, with two gradients of grey. We used a picture on the top of the page with a programming style motivation quotes. The blocks of colours are buttons; each button takes the user to different activity of the application.

Activities Design

Convert Activity

Convert activity main page will ask the user to choose between 6 types of converting using radio group buttons since the user will choose only one type at a time. In each sub-page there is:

- Edit text to get input from the user
- Convert button
- Text view shows the input that the user entered
- Text view shows the result

To prevent errors the input type of the edit text is numbers, except for the hexadecimal. But in case user entered wrong or out of range values, he will get an error message in red as a result.

Translate Activity

Translate activity will ask the user to enter a programming term to be translated. The page consists of:

- Edit text to get input from the user
- Translate button
- Text view shows the definition
- Text view shows simple examples
To differentiate between the definition and the example, different fonts are used. To provide more efficiency, copy/paste feature is enabled for the results. In case there is no definition stored for the term entered by the user, he will get a message to inform him about that.

**Operators Activity**

Operators Activity is an expandable list view, the main list view include the titles of the main operators and the expanded view of each item contains a list of operators with description and example for each of them.

**References Activity**

References activity first page will ask the user to choose between three programming languages using a radio group buttons since the user will choose one language at a time. Clicking on the next button will take the user to the next page of the references activity which will ask him to choose a reference type using a radio group button as well.

Clicking on the click button will take him to the required page which may be one of the following:
- Java video tutorials
- C++ video tutorials
- Python video tutorials
- Java websites
- C++ websites
- Python websites
- MOOC websites

Under each link to a website or a tutorial we provided a brief description of its type or contents.

**First Application Activity**

The first page of the activity will ask the user to choose between three programming languages using a radio group buttons since the user will choose one language at a time. Clicking on the next button will takes him to the next page which includes a very simple way to write his first programming language. By providing a very short and simple way we attempt to convince the user that programming is easy and simple.

**About Activity**

The About Activity includes some information about this application, our names and email addresses.

**Implementation and Testing**

**Software Development Platform**

The software development platform used to develop this application is Eclipse Standard 4.3.1, offered by the Eclipse foundation. This platform includes all the tools needed to develop and debug an application: Java and Plug-in Development Tooling, Git and CVS support, including source and developer documentation. We also installed some java and android SDK to use the android libraries.

In this platform, for each activity we have a source java file to write the code, and a layout xml file to add and adjust the appearance items; we could write the xml as coding or by select the items from the menu and drop them to the view. We also have two main files to deal with: strings file to add all the strings of the whole project, each single item added to the project need to be declared in the strings file, the other file is the manifest were you should declare each new activity in the project. And there are the drawable files where we should include 5 sizes of each graphical item, logo, icons, and pictures and so on, we added to our project.

We used java programming language to develop this application and will describe the code design in details for each activity in the appendices section.

**Verification**

We reviewed the functional and non-function requirements that was established from the beginning and we believe that our application meets all of the requirements except: the simple navigation, and that was because of the complexity of the platform, we tried to add the home button to the action
bar in all of the pages but it didn’t work. Which means the user needs to use the back button in order to get back to the home page.

**Validation**

The purpose of this application was to add a reference tool that will be a just in time training to help CS student in overcoming some difficulties, and we believe that our application results in a tool that can be used as reference for programming students.

**Evaluation**

We combined many tools/activities in one application and this is what adds a value to it since most of the available applications are providing one tool, like converters, or specialized in one language. The other thing is the graphic design; we believe that our application has better appearance than most of the offered applications since most of them where with poor graphic design and this really make a change especially for the some people, like us, who care a lot about the design before the content.

**Results**

Our mProgramming tool, designed to help programmers, include a variety of programming languages including JAVA and C++, a huge amount of information regarding each language and a lot of tools such as converter, debugger, and so on.

**Implications for Future Research**

Such application will not magically end the students’ problems but it makes an effort to help them and provide them with as much as possible references and information to solve their problems. And if more applications were developed with different ideas and more types of references, programmers’ problems will decrease which will raise their confidence and increase their productivity.

An application designed to help programmers may extends to include a variety of programming languages, a huge amount of information regarding each language and a lot of tools. But to narrow the scope of this project with consideration to the limited time given, this project will includes information regarding Java, C++ and python only.

Other limitation was the complexity of the platform which makes adding some simple items to the project a hard task and though increases the time taken to develop each single activity.

For next versions of this application we planned to add more information to the current tools and add more programming languages. We would like to add more efficient tools such as error references, a search tool that can expect what a beginner user wants to ask about, and a tool that can convert normal language to programming language.

**Conclusion**

This paper sought to propose and develop an Android application as M-Learning tool called mProgramming. The intended audiences are the programming students. This application can help programming students who’s always facing errors and bugs through their programming practices, which makes them always need just-in-time training. Most of the application’s features can work offline to be available to be used anywhere, anytime. With the simple structure and design this application is easy to be used and navigated through by beginner users.

This tool has two primary aims. First it establishes a usable handbook for programming students with the objectives of creating decimal/binary/hexadecimal/octal converter which help and save time, and providing enough references for applications, tools and tutorials. Second it provides beginner programmers with efficient programming helper with the objectives of creating a translator that’s help in understanding programming languages terms, providing efficient explanation about arithmetic & Logic operators, and providing simple tutorials explaining how to write a new application.
References


Appendices

MainActivity.java

```java
package com.example.mprogramming;
import android.os.Bundle;
import android.app.Activity;
import android.content.Intent;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;

public class MainActivity extends Activity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // initializing the buttons
        Button BtnConv = (Button) findViewById(R.id.buttonConvert);
        Button BtnRef = (Button) findViewById(R.id.buttonReferences);
        Button BtnTrans = (Button) findViewById(R.id.buttonTranslate);
        Button BtnApp = (Button) findViewById(R.id.buttonFirstApp);
        Button BtnOpr = (Button) findViewById(R.id.buttonOperators);
        Button BtnAbt = (Button) findViewById(R.id.buttonAbout);

        // set buttons listener
        BtnConv.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                Intent intent = new Intent(v.getContext(), Convert.class);
                startActivityForResult(intent, 0);
            }
        });
        BtnRef.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                Intent intent = new Intent(v.getContext(), References.class);
                startActivityForResult(intent, 0);
            }
        });
        BtnTrans.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                Intent intent = new Intent(v.getContext(), Translate.class);
                startActivityForResult(intent, 0);
            }
        });
        BtnApp.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                Intent intent = new Intent(v.getContext(), FirstApplication.class);
                startActivityForResult(intent, 0);
            }
        });
        BtnOpr.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                Intent intent = new Intent(v.getContext(), Operators.class);
                startActivityForResult(intent, 0);
            }
        });
        BtnAbt.setOnClickListener(new OnClickListener() {
            public void onClick(View v) {
                Intent intent = new Intent(v.getContext(), About.class);
                startActivityForResult(intent, 0);
            }
        });
    }
}
```

Convert.java

```java
package com.example.mprogramming;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.view.View.OnClickListener;

public class Convert extends Activity {
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.convert);
        final RadioButton DB = (RadioButton) findViewById(R.id.RbDeciBin);
        final RadioButton BD = (RadioButton) findViewById(R.id.RbBinDeci);
        final RadioButton DO = (RadioButton) findViewById(R.id.RbDeciOct);
        ```.```
final RadioButton OD = (RadioButton) findViewById(R.id.RbOctDeci);
final RadioButton DH = (RadioButton) findViewById(R.id.RbDeciHex);
final RadioButton HD = (RadioButton) findViewById(R.id.RbHexDeci);

Button next = (Button) findViewById(R.id.ButtonConverter);
next.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub
        int choice = 0;
        if (DB.isChecked()) {
            choice = 1;
        } else if (HD.isChecked()) {
            choice = 6;
        }
        if (choice == 1) {
            Intent intent = new Intent(v.getContext(), DeciToBin.class);
            startActivity(intent);
        } else if (choice == 6) {
            Intent intent = new Intent(v.getContext(), HexToDec.class);
            startActivity(intent);
        }
    }
});

Translate.java

package com.example.mprogramming;
import android.app.Activity;
import android.graphics.Typeface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class Translate extends Activity {
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.translate);
        final EditText searchTxt = (EditText) findViewById(R.id.editTextTrans);
        Button TransButton = (Button) findViewById(R.id.button1);
        final EditText ResultTxt = (EditText) findViewById(R.id.textViewResult);
        final TextView ResultEg = (TextView) findViewById(R.id.textViewExample);
        Typeface example = Typeface.MONOSPACE;
        ResultEg.setTypeface(example);
        TransButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                . . .
            }
        });
    }
}

Operators.java

package com.example.mprogramming;
import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
import android.app.Activity;
import android.os.Bundle;
import android.widget.ExpandableListView;
public class Operators extends Activity {
    ExpandableListAdapter listAdapter;
    ExpandableListView expListView;
    List<String> listDataHeader;
    HashMap<String, List<String>> listDataChild;
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.operators);
        // get the listview
        expListView = (ExpandableListView) findViewById(R.id.expandableListView1);
        // preparing list data
        prepareListData();
        listAdapter = new ExpandableListAdapter(this, listDataHeader, listDataChild);
        // setting list adapter
        expListView.setAdapter(listAdapter);
    }
    private void prepareListData() {
        listDataHeader = new ArrayList<String>();
    }
}

Operators.java
listDataChild = new HashMap<String, List<String>>();
// Adding child data
listDataHeader.add("Assignment Operators");
listDataHeader.add("Arithmetic Operators");
listDataHeader.add("Equality and Relational Operators");
listDataHeader.add("Unary Operators");
listDataHeader.add("Conditional Operators");
listDataHeader.add("Bitwise and Bit Shift Operators");
listDataHeader.add("Membership Operators");
.
.
listDataChild.put(listDataHeader.get(0), Assignment_Oper); // Header, Child data
listDataChild.put(listDataHeader.get(1), Arithmetic_Oper);
listDataChild.put(listDataHeader.get(2), Comparison_Oper);
listDataChild.put(listDataHeader.get(3), Unary_Oper);
listDataChild.put(listDataHeader.get(4), Conditional_Oper);
listDataChild.put(listDataHeader.get(5), Bitwise_Oper);
listDataChild.put(listDataHeader.get(6), Membership_Oper);

References.java

package com.example.mprogramming;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.RadioButton;
public class References extends Activity{
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.references);
        final RadioButton BtnJava = (RadioButton)findViewById(R.id.RbJava);
        final RadioButton BtnCpp = (RadioButton)findViewById(R.id.RbCpp);
        final RadioButton BtnPython = (RadioButton)findViewById(R.id.RbPython );
        Button Next = (Button)findViewById(R.id.btnNxt);
        Next.setOnClickListener(new OnClickListener()
        {
            @Override
            public void onClick(View v) {
                // TODO Auto-generated method stub
                int choice = 1;
                if(BtnJava.isChecked())
                {
                    choice = 1;
                    Intent intent=new Intent(v.getContext(), References1.class);
                    String firstChoice = (String.valueOf(choice)) ;
                    intent.putExtra("EXTRA_CHOICE", firstChoice);
                    startActivity(intent);
                }
                else if(BtnCpp.isChecked())
                {
                    choice = 2;
                    Intent intent=new Intent(v.getContext(), References1.class);
                    String firstChoice = (String.valueOf(choice)) ;
                    intent.putExtra("EXTRA_CHOICE", firstChoice);
                    startActivity(intent);
                }
                else if(BtnPython.isChecked())
                {
                    choice = 3;
                    Intent intent=new Intent(v.getContext(), References1.class);
                    String firstChoice = (String.valueOf(choice)) ;
                    intent.putExtra("EXTRA_CHOICE", firstChoice);
                    startActivity(intent);
                }
            }
        });
    }
}

FirstApplication.java

package com.example.mprogramming;
import android.app.Activity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.RadioButton;
public class FirstApplication extends Activity{
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.first_app);
        final RadioButton BtnJava = (RadioButton)findViewById(R.id.RbJava);
        final RadioButton BtnCpp = (RadioButton)findViewById(R.id.RbCpp);
```
final RadioButton BtnPython = (RadioButton)findViewById(R.id.RbPython);
Button Next = (Button)findViewById(R.id.btnNxt);

    Next.setOnClickListener(new OnClickListener()
    {
    @Override
    public void onClick(View v) {
        // TODO Auto-generated method stub
        int choice = 1;
        if(BtnJava.isChecked())
        {
            choice = 1;
        }
        else if(BtnCpp.isChecked())
        {
            choice = 2;
        }
        else if(BtnPython.isChecked())
        {
            choice = 3;
        }
        String Choice = String.valueOf(choice);
        if(Choice.contentEquals("1"))
        {
            Intent intent=new Intent(v.getContext(),
            firstAppJava.class);
            startActivity(intent);
        }
        else if(Choice.contentEquals("2"))
        {
            Intent intent=new Intent(v.getContext(),
            firstAppCpp.class);
            startActivity(intent);
        }
        else if(Choice.contentEquals("3"))
        {
            Intent intent=new Intent(v.getContext(),
            firstAppPython.class);
            startActivity(intent);
        }
    }
    });
    }

About.java
package com.example.mprogramming;
import android.app.Activity;
import android.os.Bundle;
import android.text.method.LinkMovementMethod;
import android.widget.TextView;
public class About extends Activity {
public void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.about);
    TextView mail = (TextView)
    findViewById(R.id.TVabout);
    mail.setMovementMethod(LinkMovementMethod.getInstance());
}
```
```
Introducing European Quality Higher Education to Oman
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Abstract
Bridging the gap between European university culture and the local education system in the Gulf region poses many challenges for students, teachers, and administrators. In this article, I will explain some of the problems we have been experiencing in Oman. This starts with a students culture very different from what you find in central Europe, and ends with education ministries that severely restrict the academic freedom even of private universities, in particular denying them the ability to react quickly to challenges and improve the overall standards. I also suggest solutions to some of the problems, in particular the use of e-learning tools to improve the learning quality and to give weaker students the opportunity to catch up by intensively studying at home.

Keywords: education standards, Bologna process, ECTS, e-learning, MOOC

Introduction
In the past two decades, Western higher education has come to the Gulf region [Romani, 2009]. However, bridging the gap between century-old European university culture and a not yet fully developed local education system poses many challenges for students, teachers, and administrators. In this article, I will explain some of the problems we have been experiencing in Oman. This starts with a students culture very different from what you find in central Europe, and ends with education ministries that severely restrict the academic freedom even of private universities denying them the ability to react quickly to challenges and improve the overall standards. I also suggest solutions to some of the problems, in particular the use of e-learning tools to improve the learning quality and to give weaker students the opportunity to catch up by intensively studying at home.

European Higher Education
There have been universities in Europe since more than 900 years, the oldest one being the University of Bologna which was established in the year 1,088. Since then, a rich European university culture has developed which is mainly characterized by the co-existence of teaching and research and the protection of academic freedom (originally of universities from local governments, later of professors from any external influence [Kreckel, 1996]). This system was shaken up by the Bologna reform of higher education that started in 1999 with 29 European countries and that has only recently been fully implemented [Bologna, 2014]; there are now 47 participating countries, many outside of the EU.

The main goal of the Bologna reform was to establish a unified qualifications framework for students in Europe. It is student-centered, and its main feature are the introduction of ECTS credits that are purely based on student workload, and ECTS grades that are purely based on the assessment of learning outcomes [ECTS, 2009]; both lead to better comparability of

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student achievements and encourage higher student mobility. Many universities have already introduced voluntary or even mandatory study semesters abroad. Denmark, for example, recently decided to send at least half of all students abroad for one semester by 2020 [Myklebust, 2013].

An academic year is worth 60 ECTS credits and corresponds to a workload of 1,500-1,800 study hours (in the classroom and outside the classroom), depending on the country. A Bachelor's degree requires three to four years and 180-240 ECTS credits. The Bachelor's degree is usually followed by a Master's degree, worth 90-120 ECTS credits, and a doctoral degree that typically has no ECTS credit requirements because it is mainly focused on research.

**Omani Higher Education**

The roots of Arabic higher education can be traced back more than 1,200 years (the University of al-Qarawiyyin in Fes, Morocco, is considered to be the oldest university in the world, founded in the year 859) and the early Arabic university ideals influenced early European universities. Nevertheless, the growing influence of Western higher education in the Gulf region in the last two decades has been a cultural paradigm shift [Romani, 2009]. Higher education in Oman only began in 1986 when the first public university, Sultan Qaboos University (SQU), opened [al-Balushi, 2012]. Today, there are 33 public higher education institutions and 27 private universities and colleges [MoHE, 2014], but SQU remains by far the largest one with about 15% of the total student enrolment. To raise the quality of higher education, all private institutions are required to be affiliated with an international partner university that is involved in the design of study programs and monitors their implementation [Therein, 2011]. This affiliation can be anything from a loose cooperation to the establishment of a branch campus of a foreign university.

My own university, the German University of Technology in Oman (GUtech) [GUtech, 2014], was founded in 2006 in cooperation with RWTH Aachen University, one of the leading technology universities in Germany [RWTH-Aachen, 2014]. GUtech's mission is to "provide students with the education required to become highly qualified and socially responsible graduates, guided by German excellence in science and technology and with a firm grounding in Oman's culture and heritage." Other universities have partner universities in the UK, India, Italy, and Australia.

While German universities traditionally use absolute grades on a scale from 1 (best) to 5 (fail) even for final degrees, the new ECTS grades are very different because they are rank-based, i.e., they measure relative performance. There is no relation between these two grading systems, so German universities now usually provide two degree certificates for the two different grading scales. GPA is not used in Germany, but it is prevalent in the Gulf region (in Oman, many companies require a minimum GPA of 2.5, or even 3.0, for job applicants). GUtech has therefore adopted a system of absolute grades that can be translated into a GPA, but on request also provides European ECTS grades transcripts. It should be noted that GPA is a rather poor performance indicator because each university can define their own formula to compute GPAs which makes it impossible to compare student performances from different universities solely based on GPA. To help students to remain competitive in the labor market, GPAs are continuously rising, a trend known as grade inflation [grade inflation, 2014].

**Challenges**

Since the universities in the Gulf region have only recently started to offer PhD programs, Romani [Romani, 2009] estimates that it will take at least fifteen years before the universities can hire the majority of their teachers from a local pool of PhD graduates. Until that time,
universities will be dominated by foreign faculty (which is also true in the US, for example, where most top universities have a high percentage of foreign faculties). The problem, however, is that Omani labor laws require universities to hire at least 17% Omani academic staff, the so-called Omanisation quota. At the moment, many higher education institutions are struggling with this quota [MoM, 2014]. Jobs at public universities and public sector are more attractive for academics returning from PhD studies abroad because they offer secure positions and a guaranteed high pension after only twenty years of work. If the goal is to establish high quality higher education programs that can compete on an international level, would it not be preferable to hire the most qualified teachers for the local students, independent of nationality? One way to deal with the Omanisation quota is to hire foreign professors only as fly-ins for block courses or have them deliver online courses from their home offices.

Another bureaucratic challenge for private universities in Oman is the Ministry of Higher Education (MoHE) which is responsible for licensing all degree programs in Oman. Since MoHE does not give the private universities sufficient flexibility to design new and adapt existing degree programs, the universities cannot fully utilize the strengths coming from their association with a foreign university partner.

The quality of students entering university in Oman is very inhomogeneous. Even after the students spend one or two years in a foundation program, which nowadays most universities in Oman offer as a pre-university preparation program, the skills of students entering a Bachelor program can differ widely. This means that first and second year courses must offer challenges for good students while simultaneously teaching the basics slowly to the weaker students. This can only be achieved by using blended learning with e-learning modules where students can learn at their own pace. At GUtech, we are using moodle [moodle, 2014] for course management, online exercise tools like Mumie for math courses [Mumie, 2014], and we will now introduce blended e-learning modules for the basic programming courses required by all computer science and engineering students. To be more precise, the programming courses in the Foundation Program will start with a short block course to learn the basics of programming; the rest of the semester is dedicated to self-studies, guided lab sessions and projects using eLearning tools.

Massive open online courses (MOOCs) have recently become very popular. Two strong consortiums in the US, Coursera and edX, are offering these online courses free of cost to anyone in the world who wants to participate [Pappano, 2012]. For smaller universities these courses can augment or even replace own courses, the challenge is to find ways to do this outsourcing of teaching in a way that is beneficial to the students and still maintain the high quality of own degree programs. Good candidates for MOOCs are courses on general topics, like for example College writing [ColWri2.1, 2013] and programming courses. Recently, 24 students from GUtech (and 25 million learners worldwide) participated in the Hour of Code [Hour of Code, 2013], an online tutorial to learn the first programming steps within one hour. I myself took both courses, and while I found the Hour of Code tutorial very useful, I had mixed feelings about the college writing course.

Conclusions
It is a great challenge to bring European style higher education to Oman. Student skills and work habits differ greatly from students in middle Europe. E-learning modules can help weaker students to catch up while working at home, while at the same time giving the lecturer the opportunity to offer bigger challenges to the strong students. They can also be used to replace fly-in professors who usually teach unpopular block courses.
References


How Facebook Groups Enhance Social Cohesion among Students in Online & Blended Classroom Models

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Abstract

In two pilot studies, we examined whether Facebook groups could forge a sense of community when students and instructors do not meet in person. In one study, we created Facebook discussion groups for selected blended courses offered by a US-based institution to students living in Lebanon. In another pilot study we explored whether a Facebook group created for a summer residency could connect students who attended the residency in person with those participating online. We found that Facebook groups increased student participation, academic performance, and sense of connection with other students and their instructors. We observed that participation depended upon the time of day posts were made (evening, when most students are active online), what type of post (photo or text-based), whether the instructor initiated the post, or responded to posts made by students. While Facebook generates social cohesion within a blended model for a high context culture such as Lebanon, with a subsequent positive impact on academic performance and motivation to learn, the authors contend that other tools that allow real-time, visually synchronous communication when used in combination with Facebook would even more effectively deepen the sense of connection, and consequently, better improve academic performance in a blended model.

Keywords: online; blended; pedagogy; community; social media

Introduction: Blended and Online Learning in Lebanon

Through collaborative efforts with private universities in Lebanon, eligible students study in the SUNY Empire State College (ESC) Lebanon Residency program (LRP) for their final 32 credits. Prior to this, students study at one of several campus universities in Lebanon within a traditional classroom environment. Therefore, when these students transfer to the LRP blended model, their learning environment changes considerably. LRP courses include a one week face-to-face residency when instructors travel to Lebanon or Cyprus to work with the students. The remainder of the course is online. The residency meeting is of paramount significance to the online course, as it is the one point in the term when students interact face-to-face with their instructors, classmates, possibly a mentor/advisor and the academic program director. Prior to and after the residency, students interact with their instructors and staff primarily online.

The blended model used in the LRP reflects the growing popularity of e-learning throughout the world. E-learning attracts students who find it inconvenient to travel to a traditional classroom, usually due to issues with time, work or geographical location (Serhan, 2010). Online studies with an institution such as ESC allow students to earn a US degree while remaining in Lebanon. However, problems with bandwidth, Internet connectivity and electricity (www.economist.com, 2013)
have challenged this format of study. LRP students, in particular, have cited the Internet and electricity as reasons for not being able to engage in the online portions of their studies as much as they would like. This is especially true in the winter, when inclement weather tends to disrupt the Internet, particularly in rural areas.

Despite these technological inconveniences, LRP students, most of whom are part of generation Y, and have been dubbed “digital natives” (Palfrey & Gasser, 2010), spend a considerable amount of time texting and chatting on their mobile devices. Additionally, as a group they appear to be avid users of social media, especially Facebook. Many of the students do not have a personal email account, and rely on and use the one the school creates for them.

**Personal Communication is Vital Component of Online/Blended Studies**

As LRP students transition from the traditional classroom learning environment to our blended program of studies, some trends emerge. Shifting from face-to-face, classroom-based interactions to communicating primarily online reduced student engagement, motivation, and retention, as studies suggest (Keengwe & Schnellert, 2012; Westervelt, 2013). The residency, on the other hand, helps strengthen relationships between the students and instructors, connecting them more to the program.

The face-to-face residency typically takes place around 5-6 weeks after the term begins. Prior to this, some new students may have difficulty navigating and understanding online learning. In a worst case scenario, a student may have only logged on to their courses a few times or not at all, waiting for the residency to find guidance and motivation from the instructors and staff in attendance. Depending on the nature of the course the student is taking, this moment may be too late for them to catch up with their work.

In addition to challenges transitioning to learning primarily online, other factors can reduce opportunities for face-to-face contact. Periodically, some LRP students find jobs abroad and are unable to travel to the residency. Also, due to regional unrest, residencies have been cancelled on several occasions. Such instances of loss of personal interaction resulted in lowered student engagement, and within some courses, a less socially cohesive community. Students themselves ask for more personal interactions, as indicated in survey results.

Instructors observed that some students have difficulty with the transition from the highly social classroom environment to the independent learning style of the online course, thus reducing their motivation to study online. Such students tell instructors that they did not know what to do, that they did not understand assignment instructions, and seemed to need a dialogue about how to proceed with any given assignment. This reinforces some stated disadvantages of online learning, such as how students cannot get an instantaneous answer to a question, and that there are no group discussions about assignments as exists in a traditional classroom (Serhan, 2010). Typically, if a student has a question about an assignment, they will post an online message in the learning management system (LMS) or email the instructor. Students sometimes complain that they can wait up to several days before receiving a response.

Another factor affecting the online course environment is that students have difficulty connecting socially with their classmates or instructors. Students said they were not forging many relationships in our program. Also, at times they appeared unmotivated in the absence of a competitive environment that a classroom environment may generate.
Facebook Groups to supplement student activity and course communication

According to various academic studies about student use of Facebook, the number of US college students who use it keeps rising, and was as high as 97% in 2010, based on student surveys (Hurt et al, 2012). LRP students tend to mirror such statistics, as the majority appears to have a Facebook account. Country statistics released in 2013 indicate that the majority of Facebook users in Lebanon are in their 20’s, and use it with a high level of engagement (Jazra, 2013). This same study says that 84.5% of Facebook users in Lebanon use English vs. 11.3% who post in Arabic.

There has been remarkable growth in the use of Facebook in higher education due to its ability to increase student engagement in course activity (Chung-Hsien & Shy-Jen, 2011; Esteves, 2012). Miller (2013) has observed that students engage in Facebook discussions more frequently than in discussions that are posted in a LMS such as Moodle. Also, there has been much success with Facebook chatting, which is used mostly synchronously. We wondered whether Facebook groups could indirectly increase personal engagement and social cohesion, by increasing student participation in course discussions as well as academic performance.

We conducted two case studies using social media. In one study, we created Facebook discussion groups for selected online courses. In a second pilot study we created a supplementary residency Facebook group during the summer 2013 term, because we made physical attendance at the residency optional. The Facebook group served as a virtual space to create community between online students present at the residency in Cyprus and those participating virtually.

We also wanted to see how students would respond to an increase in interaction with their instructors via social media. Other studies (Mazer et al, 2007) have shown that the more an instructor self-discloses to students in Facebook via photographs and/or personal information, the more the students are motivated, enjoy the learning experience and perform effectively on their course assignments. Therefore, this also has an indirect contribution to social cohesion.

Data Analysis and Discussion

Virtual Residency on Facebook

In the summer pilot study, the LRP academic program director created a Facebook discussion group to create community between students attending the residency in person and those participating virtually. Participation in the Facebook group was not required, but was strongly recommended. All posts in the group were analyzed. Forty-eight out of 55 students who joined the group participated (of 63 enrolled in the summer term), as well as six out of nine instructors and/or staff. All twelve of the students in attendance participated, but the virtual students were more verbose. Fourteen virtual students self-disclosed that they felt a part of the residency due to their Facebook participation; this finding was further supported by student comments at the subsequent residency in the fall.

It was also observed that students were likely to respond when an instructor engaged them with a question. The discussion post with the most responses was one posted by an instructor about civil marriage in Lebanon, a topic discussed at the residency. Other posts that generated a lot of responses were photographs that were posted by either instructors or students in attendance at the residency. Of the 66 original posts made, 59 were primarily photos, and of the replies to original posts, 67% were in response to photos.
Furthermore, students in attendance may have been less likely to engage actively in online discussions, probably because they had done so already in person. Of four Facebook discussions, only the one on civil marriage generated posts from students in attendance at the residency (contributing 17% of the posts). Assuming that engagement correlates directly with average word count, the students participating virtually did feel connected to events happening at the residency; they posted more often, and wrote more in response to the discussion topics.

### Facebook Discussion groups to supplement online study

Building on the Community of Inquiry (CoI) model (Shea et al., 2010), both instructor and student presence was assessed in one case study, primarily in supplementary Facebook groups. Approximately 18-24 LRP students were added to a Facebook group each term over five subsequent terms in various online courses between 2011 and 2013. Participation in the Facebook group was mandatory and part of the course grade. The instructor compared participation to assignment grades. Student engagement and whether or not they made any friendships online was revealed by instructor observation, self-disclosure or results from course surveys. All student interaction was assessed, including private chats, e-mails, and posts made to both general and course related discussions.

The instructor tallied up the frequency of student participation each week on course related topics in comparison to what was required in four of the five courses with a supplementary Facebook group. (The fifth course is not included in this comparison because it was a summer course with a different term period and different discussion requirements). Approximately 28% of the time, and of the total number of students (n=79), students discussed course content the required two-to-three times a week. Approximately 19% of the time students rarely participated or did not participate, but approximately 52% of the time, students participated more frequently than required. In many cases, students also posted on non-course related topics, but these posts had not been tallied since they did not affect the course outcome. However, this high discussion rate is representative of studies which indicate that students are more apt to create their own discussion questions, respond and share information

<table>
<thead>
<tr>
<th>Summary Table of Discussions</th>
<th>Seen by</th>
<th>Original Posts</th>
<th>Total Posts</th>
<th>Average Word Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to Facebook group</td>
<td>46</td>
<td>10</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Day 1 - field trip to Troodos Mountains</td>
<td>46</td>
<td>9</td>
<td>18</td>
<td>brief written posts; primarily photos posted</td>
</tr>
<tr>
<td>Day 2 - discussion on civil marriage</td>
<td>46</td>
<td>19</td>
<td>27</td>
<td>108</td>
</tr>
<tr>
<td>Discussion two - civil marriage</td>
<td>46</td>
<td>23</td>
<td>42</td>
<td>64</td>
</tr>
<tr>
<td>Day 3 - discussion on technology</td>
<td>46</td>
<td>8</td>
<td>17</td>
<td>259</td>
</tr>
<tr>
<td>Discussion two - technology</td>
<td>46</td>
<td>14</td>
<td>23</td>
<td>54</td>
</tr>
<tr>
<td>Feedback** about Facebook group</td>
<td>46</td>
<td>17</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td><strong>breakdown of feedback from students</strong></td>
<td>14 felt present; 5 discussed technical problem; 1 said it wasn't the same as being there in person; 2 wished they had attended the residency</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
that was not required by the instructors on Facebook than they would in Moodle or another LMS (Esteves, 2012). In these Facebook groups, the frequency of student participation varied throughout the term, peaking at periods with high instructor engagement, and declining during holidays, midterms and when students claimed to be busy with work or personal issues.

### Table 2: Weekly student participation in course Facebook group

<table>
<thead>
<tr>
<th>Course 1 (23 students)</th>
<th>0-1 time/week</th>
<th>2-3 times/week (required frequency)</th>
<th>4-6 times/week</th>
<th>7-9 times/week</th>
<th>10+ times/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>77</td>
<td>100</td>
<td>18</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Course 2 (23 students)</td>
<td>46</td>
<td>63</td>
<td>53</td>
<td>38</td>
<td>30</td>
</tr>
<tr>
<td>Course 3 (19 students)</td>
<td>31</td>
<td>42</td>
<td>53</td>
<td>31</td>
<td>33</td>
</tr>
<tr>
<td>Course 4 (14 students)</td>
<td>43</td>
<td>42</td>
<td>33</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Total (79 students)*</td>
<td>152</td>
<td>224</td>
<td>239</td>
<td>97</td>
<td>78</td>
</tr>
<tr>
<td>Approx. Percent</td>
<td>19%</td>
<td>28%</td>
<td>30%</td>
<td>12%</td>
<td>10%</td>
</tr>
</tbody>
</table>

*Students who failed the course and were not participating in any aspect of the course were not included in this total.

Instructor presence may be directly correlated to quantity and quality of student interaction online (Shea et al, 2010; Sher, 2009). In our Facebook group discussions, the instructor noticed that the more often she posted in the Facebook group, the more likely her students were to respond. Posting a course related question by the instructor was the least effective method of engaging students. Tagging students in questions or responses was somewhat more effective. The most effective method was responding to comments students had posted, and engaging in dialogue with them.

Another factor that makes Facebook successful with students is the students’ ability to communicate synchronously with their instructor via the chat feature, usually from their phones. A recent study has demonstrated that the chat feature of Facebook has helped students find information about assignments instantaneously (VanDoorn & Eklund, 2013). Nearly every one of the students enrolled in courses with the supplementary Facebook group contacted their instructor via the chat feature, usually multiple times during the course. The instructor also found it convenient to communicate with students online instantaneously when needed. It proved to be the quickest way to track down students and solve course related issues.

In order to assess whether or not the use of Facebook increased student performance in courses, we compared final outcomes for students who had also taken a course without a Facebook group, but with the same instructor to accommodate any instructor bias. Also, the instructor teaches courses within the academic disciplines of communication and marketing. This would also provide better consistency for comparison purposes. This comparison showed that nine out of twelve students (75%) received a better grade in the course which included a Facebook group.
Table 3: Comparison of final outcomes between courses with and without Facebook

<table>
<thead>
<tr>
<th></th>
<th>Course #1 grade (no FB)</th>
<th>Course #2 grade (FB group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #1 (male)</td>
<td>C-</td>
<td>B</td>
</tr>
<tr>
<td>Student #2 (female)</td>
<td>B</td>
<td>A-</td>
</tr>
<tr>
<td>Student #3 (female)</td>
<td>B+</td>
<td>A-</td>
</tr>
<tr>
<td>Student #4 (female)</td>
<td>A</td>
<td>A-</td>
</tr>
<tr>
<td>Student #5 (female)</td>
<td>A-</td>
<td>A</td>
</tr>
<tr>
<td>Student #6 (female)</td>
<td>B+</td>
<td>B-</td>
</tr>
</tbody>
</table>

Table 3: Comparison of final outcomes between courses with and without Facebook

<table>
<thead>
<tr>
<th></th>
<th>Course #3 grade (no FB)</th>
<th>Course #4 grade (FB group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student #1 (male)</td>
<td>B</td>
<td>A-</td>
</tr>
<tr>
<td>Student #2 (male)</td>
<td>C+</td>
<td>A-</td>
</tr>
<tr>
<td>Student #3 (male)</td>
<td>D</td>
<td>B</td>
</tr>
<tr>
<td>Student #4 (male)</td>
<td>C+</td>
<td>D</td>
</tr>
<tr>
<td>Student #5 (male)</td>
<td>B-</td>
<td>A-</td>
</tr>
<tr>
<td>Student #6 (male)</td>
<td>F</td>
<td>C</td>
</tr>
</tbody>
</table>

Facebook mobile access seems to provide an effective form of synchronous communication. When the instructor or others post in the group, students can choose to receive a notification alert on their phone. This feature facilitates participation and tends to cause some students to respond quickly. As such, much of the activity around a discussion post may happen within the first several hours, and will die down after a day or two, when the post is buried in the students’ news feed. If the post is popular, the high interaction will keep the post prominent in the news feed and may significantly increase interaction in both time and number. Since a large majority of LRP students tend to be online late at night, posts created at this time tend to receive a higher response rate. However, posts of sufficient interest made during the day will still tend to receive the majority of comments at night. For example, in the residency Facebook group, the academic program director posted something on 24 July 2013 at 3:02 pm. The first response from a student came at 7:24 pm, of which 17 additional responses followed, and of which only two were posted during the day.

Other Community Building Tools in Blended or Online Learning

Social Media Tools: Twitter and Google+

How do other social media platforms compare with Facebook, in particular Google+ and Twitter? These web-based social media platforms provide student access on multiple devices, allowing them greater course access. Google+ was used by one LRP instructor in place of the college’s LMS. It required no training because its format is similar to Facebook; a picture or a link to a resource is posted with a question, and students add answers in the form of comments. Google+ has a simple, flexible interface which allowed the instructor to set up and modify the course easily. In contrast to other social media, there is no ad space on a Google+ “community” page, which makes the learning environment look more like a classroom and less like a social media site. Finally and most importantly, this format was an excellent fit for students who are familiar with social media, and for non-native English speakers, because it allowed them to post shorter but more numerous comments. Its ease of use by students makes it worth studying in the LRP in terms of student engagement.

A second highly popular social media platform, Twitter, has also been adapted for educational use to good effect. According to Junco et al. (2011), it has demonstratively increased both student engagement and performance, while increasing instructor participation. Twitter has the additional advantage for limiting posts to 140.
characters; students therefore must be concise, and brief exchanges can make for a fast-moving, lively discussion. In contrast, discussion posts on Facebook tend to be longer and more in-depth. The use of hashtags also makes it easy to follow an exchange on Twitter. But Twitter’s advantages also limit it; given the 140 character limit, exchanges may be shallow, and more a means of sharing information than truly exploring an idea. Another possible disadvantage of Twitter is that it is public; if used for a course, students should be clearly informed of this fact, and instructors need to be aware of their institutions policy regarding its use. In the LRP, many students do not have Twitter accounts, and if so, do not use them often. Due to its characteristics and lack of student familiarity with the tool, Twitter would probably better serve students as a place for course announcements and assignment Q&A than for in-depth discussions.

Synchronous Tools such as Skype, Zoom, or chat

Other tools which allow for synchronous communication are web-based teleconferencing and instant messaging software (e.g., Skype, Zoom). Teleconferencing allows for real-time communication, during which students and instructors can more easily get to know one another, read body language, and resolve issues. Likewise, with instant messaging, or chat, responses can be immediate, and issues resolved quickly. Yet such tools also have their disadvantages; teleconferences must be scheduled, which can be difficult due to time zone differences, and/or work-related conflicts. Additionally, teleconferencing requires a stable connection; lacking that, communication can be difficult, and the experience frustrating. Chat requires less bandwidth, but does not lend itself well to multiple participants (as is possible with teleconferencing, and other social media mentioned above). In addition, instructors have reported concerns that chatting blurs boundaries between personal and work-life.

Asynchronous Communication

Asynchronous interaction is a key advantage of online learning; it allows both instructors and students to engage with one another and the course material when individually convenient. The primary tools are email and course messages within the LMS. Such exchanges are easily archived, and the majority of instructors are already familiar, and highly comfortable, with these methods. Their key disadvantage is that students do not often check email, and at times, have to be contacted via other means to get them to do so.

Recommendations

The use of a Facebook group for courses as a supplementary or primary course space for any type of blended or online study in combination with synchronous tools is preferential to other options when working with LRP students. Most LRP students have a Facebook account which they access regularly, usually from their phones. Mobile access also allows students to access Facebook when problems with the Internet and/or electricity prevent them from accessing the LMS.

One significant barrier to the common use of Facebook groups as supplementary student spaces is instructor reluctance. Currently, only one out of 11 LRP instructors is actively using it to engage students, and the academic program director is experimenting with it for non-course student activities. When the residency Facebook group was set up to connect students who did not attend with those who had, all four instructors who were teaching summer courses had been added to the group. However, these instructors did not interact much, if at all, with the students on Facebook. One instructor posted five original posts, of which she moderated, and interacted with an additional seven posts from others. However, another instructor
shared only one post about a lecture she gave, but did not comment further. The two other instructors did not utilize the space at all, with one reporting that her course content did not lend itself well to its use. Since high student engagement in Facebook is conducive to the frequency of its use by the instructor (Shea et al., 2010; Sher, 2009), it is essential that the instructors be engaged in Facebook for this method to be effective.

In general discussions with LRP instructors about the use of Facebook, some have stated that they are reluctant to use it due to concerns about privacy, the risk of crossing personal boundaries, or ignorance of the use of Facebook for such purposes. Many LRP instructors prefer communicating with students in the LMS or via email, which is analogous to findings of other studies on how instructors prefer to interact with students (Roblyer et al., 2010). The way to overcome instructor reluctance is to learn about and address their concerns. We could ask them to participate in a Facebook group for administrative correspondence or for a non-course related activity to see how easy it is to use, and how well it engages participants. We could address privacy concerns by explaining how to prevent students from viewing posts placed outside of the group space, and how to handle students tactfully who overstep boundaries. Alternatively, instructors could set up a Facebook account for professional use only. If these concerns are addressed, Facebook may prove to be more effective than more public forms of social media like Twitter. The way to monitor any student group on Facebook is to give the academic program director access to the group, and to give her administrative rights to the group. As such, she can monitor the quality and quantity of discussions taking place in the groups, and also has the ability to delete unsavory posts, if needed. In this case study, she had been given such administrative access to all of the Facebook groups, but had not needed to intervene.

As an additional means of increasing synchronous interactions, we have begun using teleconferencing tools, and in particular, Zoom. Using it, we held brief introductory meetings in every course in the fall 2013 term, and used it again at the residency to connect instructors who did not attend in person with the students present in Lebanon. Student evaluations of the residency, through comments and in comparisons to past residencies when Zoom was not used, indicated a high level of satisfaction. Instructors also like Zoom, as it is easy to use and works well even when internet connectivity is poor (which was not true for Skype). Zoom also allows the instructors to connect with students at times of their choosing, and therefore eliminates any concerns about privacy.

Conclusion

The aim of these case studies was to assess the ability of Facebook groups to improve the student learning experience in a blended program in terms of social cohesion via student engagement and academic performance. Many students indicated in course surveys that they felt more socially connected to their peers and instructor than in their other online courses that did not use Facebook, and felt more motivated to compete academically. Regardless of the final grade received, many students stated that they were satisfied with the experience, and were more apt to register for other courses with Facebook groups. Compared to their other LRP courses, students demonstrated more of a social presence in all online spaces, forged more relationships, and tend to perform better academically. Therefore, the supplementary use of Facebook groups to courses or non-course activity in addition to the synchronous use of teleconferencing tools will be encouraged in the LRP after instructor reluctance is addressed.

It was also noted that Facebook group discussions work best when a large subset of students is online at the moment the
discussion prompt is posted, and as such, questions posted in the evening tend to receive higher responses. Since most LRP students tend to contribute to Facebook posts primarily in the first twenty-four hours after it has been posted, Facebook seems a good substitute of synchronous communication. The pilot study concerning the virtual Facebook residency group suggested that participation could be improved if more instructors participate and post when students tend to be online.

Instructors and instructional designers need to understand the unique needs of students from high context cultures, such as Lebanese and other Middle Eastern students (Hofstede et al., 2010), who participate in online courses, and how the Community of Inquiry Framework applies. Since many instructors may feel reluctant to use Facebook with students without guidance or policies from their institution (Metzger et al., 2010), university administrators should look more closely at how to support and encourage the use of Facebook in online courses and develop social media policies that will enable faculty to use Facebook.
References


Are MOOCs the Future of Postsecondary Education?

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Abstract

"MOOCs will change the world and make the rest of higher education obsolete" Jack Wilson, president emeritus of the University of Massachusetts system. Educators and administrators alike are giving serious consideration to Massive Open Online Courses (MOOC), or free, open-access online courses. By providing higher learning cheaply to many participants concurrently, MOOCs eliminate the traditional constraints of online or in-person learning schemes. Harvard, MIT (MITx & edX) and Stanford University entered the fray along with commercial enterprises (Coursera, Udacity) to develop MOOC platforms for enrollment and content distribution. MOOCs are an extension of the increasingly popular and cost effective online educational movement. The slogan most often associated with MOOCs is "free courses taught by leading professors from the world's top universities".

The potential opportunity and threat posed by MOOCs is enormous. The U.S. postsecondary education market generated more than $600 billion in tuition revenue in 2012 from 21 million college students. Online education in general and MOOCs in particular, have the power to transform the post-secondary education industry. Ideas with enormous transformative power attract deeply held, diametrically opposed, opinions and MOOCs are no exception. Proponents suggest that MOOCs unshackle knowledge and those who produce it by expanding access to learning to anyone, anywhere. Others view this seemingly noble aspiration with increasing alarm. It raises the specter of faculty dislocation, or worse faculty as free agents competing like sports stars, with only a few slots for the stars.

While the ultimate MOOC business model is unclear, some have begun to recognize the potential for data mining. MOOC students are participating in a data-rich Darwinian experiment. Every student keystroke is captured, answers timed and graded in a massive competition. The use of known data mining techniques and “Google-like” search algorithms, the smartest 1% for a particular domain or concept is easily identified very visible. The worldwide market for talent recruiting is more than $130 billion annually. MOOCs have the potential to reduce search for the best talent to a Google search.

Online educational enrollment is growing five times faster than bricks and mortar enrollment. More than 12% of the 2,800 postsecondary institutions surveyed either have, or plan to have, a MOOC offering, up from zero in 2008. Students taking at least one online course increased to 6.7 million in 2012, representing an all-time high of 32.0% of all college students. The growth in online educational enrollment is partly attributable to the growing acceptance of the value of the experience; 77% of all surveyed educators consider online learning outcomes as similar to, or better than, bricks and mortar learning.

Based on an analysis in this study, it seems clear that MOOCs are in their infancy and the ultimate shape is still unknown. A significant open issue is the absence of a MOOC business model to create sustainability. However, at this point in MOOC development, this is not a fatal problem. Tens of billions were invested in the internet before any business model was proven. The presence of MITx, edX,
Coursera, and Udacity means MOOCs will attract funding and evolve rapidly over the next five years.

MOOCs, while representing a small proportion of available higher education classes, have attracted millions of dollars in venture capital and sparked an impassioned debate. MOOCs are raising questions about fundamental issues regarding pedagogy, financial sustainability, content ownership, college credit, and curriculum design, among others. Critics cite the 0.9% certificate completion for a HarvardX computer science course as evidence for the lack of interest in the MOOC offerings (Hill, 2012). While skeptics are debating whether MOOCs are a passing fad or a disruptive technology, prestigious institutions like Stanford, Harvard and MIT, are offering online classes in partnership with providers such as edX (MIT, 2013). Some argue that MOOCs are akin to a destructive technology that will fundamentally alter the relationship between educators and students causing a permanent change in the higher education landscape. If the internet has taught only one lesson, it would be this quote by Peter Drucker, “It is much cheaper to make yourself obsolete than to be made obsolete by your competitors”. Harvard, MIT and the Texas University system have initiated the process in a constructive way, by prompting the rethinking of current models and practices and by challenging educators to consider the possibilities (Carr, 2012). The purpose of this paper is to describe the state-of-play in MOOC development and to analyze the trends.

Background

Online courses evolved initially from ad hoc online courses and programs ranging from faculty exploration of the new medium to the specific needs of particular programs. As scholars developed some history using online coursework, some educators came to believe that learning outcomes improved using online tools. While this belief has taken root, it is still a minority opinion among brick and mortar faculty members. According to Inside Higher Ed and the Babson Survey Research Group, 66% believe that learning outcomes from online education are inferior compared with outcomes from traditional courses (Kolowich, 2012).

Online programs are organized around a concept called the master course. This concept of the master course, which changes the course development and ownership model, is one of the biggest differentiators between traditional classes and fully online courses. A master course is divided into discrete modules and delivered in a strict, repeatable manner. In this approach, design teams (multimedia experts, quality-assurance, curriculum experts, etc.) work with faculty members and/or subject-matter experts to design a master course. Once designed, the master course sections are facilitated by multiple instructors, typically adjunct faculty. The course content is separated from the individual faculty member (Hill, 2012).

The online master course concept severs course content from faculty members with clear implications for course “ownership”. Online schools have non-faculty personnel responsible for designing, delivering, and updating courses—processes that just do not exist in traditional education. The implications of this approach are significant and create a barrier for entry into the online marketplace for traditional institutions. How have traditional institutions that want to provide scale and access available online deal with this barrier? The most common method over the past decade or two has been to create separate online and off-line organizations (Kolowich, 2012). In the nonprofit sector, the online organizations typically fit within the overall system of governance, but the operations, budgets, and academic oversight are provided individually. Examples include Rio Salado College, University of Maryland University College, and Colorado Community College Online. These organizations often have
more in common with their for-profit brethren than with the other institutions within their system. Many of the failures of traditional institutions or statewide systems to successfully create, grow, and sustain online programs can be traced to organizational resistance from the rest of the system to the separate online organization (Diaz, Brown, Pellerier, 2013).

Despite the resistance of traditional institutions to enter the online arena, nearly 32%, or 6.7 million students, of all full-time college students took at least one online course in 2012. The largest and best-known example is the University of Phoenix. In 2008, 15 percent of students said they had taken a class completely online. By 2013, almost half (46 percent) of student respondents had taken any online course in the previous year (Allen & Seaman, 2013).

**Massive Open Online Courses**

MOOCs are a natural progression from the success of online classes and are the result of the convergence of ubiquitous internet access, easy digital video capture, cloud technology, and finally social media. MOOCs are evolving quickly. While the acronym describes one basic form, there is substantial diversity in size, content, and delivery mode. The following is a brief history of MOOCs to provide context and clarify definitions. As shown in Figure 1, a portion of MOOC history has “Connectivist” roots “cMOOCs”. Connectivism is a learning theory that suggests that knowledge, and skills emerge from connections drawn from multiple domains of activity such as experience, learning and knowledge, and social networks (Johnson et al., 2013). cMOOCs developed in Canada in 2008 as a community of like-minded professional sharing insight on mutually interesting questions. More recently, MOOCs are offered both directly and indirectly by prestigious colleges and universities. For instance, Stanford University offers MOOCs indirectly through partnerships with “providers” Coursera and Udacity. On the other hand, the Harvard and MIT MOOC offerings are delivered directly through their edX and MITx initiatives. This second generation of MOOCs launched by elite U.S. Universities, and the venture-capital funded platforms they have spawned, are variously known as “xMOOCs”, “MOOC2.0”, or, increasingly, as they have commanded headlines, as just MOOCs (Hill, 2012).

![Figure 1: MOOC Development Timeline (Hill, 2012).](image-url)
In 2011, the Stanford branch of MOOCs validated the experiment when Sebastian Thrun and Peter Norvig offered "Introduction to Artificial Intelligence" (CS221) for free and 160,000 people worldwide enrolled. CS221 used educational technology to replicate a typical face-to-face classroom experience online, at scale using a web-based customized learning management system (LMS), hosting course lectures, homework, and assessments (Hill, 2012).

Udacity

After the success of this course (CS221), Thrun resigned from Stanford and founded Udacity, funded by Charles River Ventures, and $300,000 of Thrun's personal money (Thurn, 2013). Charles River Ventures is a $2.1 billion venture capital founded in 1970 to commercialize research from MIT. The firm invests in early-stage investments in technology and new media companies with offices in Cambridge, Massachusetts and Menlo Park, California. In October 2012, Andreessen Horowitz led a $15 million venture round of investment in Udacity. Andreessen Horowitz is a $2.5 billion venture capital firm, founded in 2009 by Marc Andreessen and Ben Horowitz, and headquartered the Silicon Valley. The firm invested in Twitter and more than 40 other start-ups since inception (Thrun, 2013).

In May 2013, Udacity announced that the Georgia Institute of Technology College of Computing (Georgia Tech) will be offering of the first ever Online Master of Science degree in computer science (OMS CS) earned completely through the "massive online" format. The degree represented collaboration between Udacity, Georgia Tech, and AT&T. On January 14, 2014, Udacity announced that a total of 2,360 students applied to the program, or 75% more than normally apply for the on-campus degree, and 375 accepted and started the program in January 2014. The cost of the program was 20% of the on-campus tuition. All OMS CS course content, jointly developed by Georgia Tech, Udacity, and AT&T, will be delivered via the MOOC format, with enhanced support services for students enrolled in the degree program (Georgia Tech, 2012). The first five courses are Advanced Operating Systems, Computer Networks, Machine Learning, Software Development Process, and AI for Robotics. The course content was driven by specific talent gaps at AT&T and available only to students admitted into the program. Udacity expects to open up the same courses for everyone on the Udacity platform in the future (Udacity, 2012).

While Udacity marketed the Georgia Tech OMS CS pilot program as a MOOC, it more closely resembled corporate training than a MOOC. On January 23, 2014, Udacity formally announced a pivot toward corporate training. Udacity unveiled a redesigned website highlighting the new focus on corporate training and announced the start of two new courses, developed in partnership with Cloudera and Salesforce. Upon completion, students receive certificates recognized by the Open Education Alliance (OEA), an industry-wide alliance of employers and educators in the service of students throughout the world (Udacity, 2012).

Coursera

In 2011, professors Andrew Ng and Daphne Koller from Stanford University founded Coursera. By the end of 2013, Coursera had raised $85 million of venture capital, including a $16 million from venture capital firm Kleiner Perkins Caufield & Byers (KPCB). KPCB, founded in 1970, may be the largest and most respected venture capital firm in the world, with an unparalleled track-record of investments, including Amazon, Genentech, and Google, among others (Courser, 2013).

Coursera collaborates with universities to put lectures online as low-cost (or free) video courses. Coursera helps these schools establish blended learning systems. Blended learning refers to the practice of students learning at least in part through the online
delivery of content. The company offers over 500 free college-level courses for more than 100 prestigious learning institutions and has nearly 5 million students in its virtual lecture halls. The Coursera platform hosts online courses and provides an easy-to-use authoring and content management system (Coursera, 2012). It works with elite private universities such as Yale and Northwestern as well as state university systems and public university flagships, including the State University of New York (SUNY) and the University of Colorado system. Coursera has partnerships in 11 countries, including the Moscow Institute of Physics and Technology, IESE Business School, The World Bank, a new Ukrainian translation partner, BIONIC University, and two French universities. Coursera has also partnered with the U.S. State Department to offer free online education in over 30 countries (Hill, 2012).

In 2013, five Coursera online courses received approval for “credit equivalency” by the American Council on Education (ACE). ACE is the nations’ most visible and influential higher education association, representing more than 1,800 accredited U.S. colleges and universities. ACE recognition means any student who completes one of the five courses is eligible to receive college transfer credit. To address the accreditation issue, Coursera also introduced a “Signature Track” program in which it charges a small fee for courses that earn “Verified Certificates.” The program generated $1 million of revenue in the first nine months (Coursera, 2012).

**MITx / edX**

Early in 2011, MIT and Harvard announced the creation of, and $60 million investment in, edX and, in the summer 2012, the University of California–Berkeley joined the edX initiative (MIT, 2013). EdX is a combination of technologies and services that hosts courses online by MIT, Harvard, and other partners. MITx refers to those courses hosted on edX that reflect the MIT curriculum. As of November 2013, edX has 29 university partners that offer over 90 courses, and it has enrolled over 1.5 million students worldwide (MIT, 2013). EdX is a not-for-profit, open source platform promoting collaborative development of the MOOC format to more efficiently deliver education (MIT, 2012).

The edX software has two major components. The first is a hosted system for offering online courses to hundreds of thousands of students worldwide. The second is an authoring system called edX Studio for creating an edX course so that it can be offered on the edX site. In June 2013, edX delivered on its pledge to open source its software. The same day, Stanford University joined the open source effort and adopted Open edX as an internal platform (MIT, 2013). In September 2013, edX announced a partnership with Google to create a new site called MOOC.org, based on the edX software, to enable any entity anywhere in the world to upload a course for a global audience. MOOC.org is powered by the edX software platform, and Google also joined the open-source effort (MIT, 2012).

**Challenges**

As shown in Figure 1, the near-term development of MOOCs will be shaped by how Udacity, Coursera, Stanford, MITx, and edX resolve a number of challenges, including: 1) continued funding, 2) creating a revenue model, 3) providing for accreditation (degrees), or certification, and 4) market acceptance.

**Funding**

By year-end 2013, the Big-three MOOC providers, Udacity, Coursera, and edX have raised in excess of $160 million of private capital with nearly all of that funded in the past 24 months. The prestigious list of investors includes founders, angel investors, bulge bracket venture capital sponsors, and private universities. The magnitude of the
investment and the prestigious names associated with MOOCs is a testament to the potential for MOOCs to change the educational landscape. Fresh capital presents the opportunity to create an inflection point in MOOC development and compress a decades of experience into a few short years, for better or worse (MIT, 2012).

While receiving millions of dollars of venture money can accelerate growth, validate a concept, and open doors, it has its drawbacks. In January 2014, Udacity exited the higher education market to focus on what is essentially contract corporate training. While Udacity raised $15 million of venture capital, it competes with the $85 million raised by Coursera and $60 million raised by edX, not to mention their backers, KPCB, Harvard and MIT. Additionally, Udacity was built on a proprietary technology platform and tried to develop its own content, a costly and risky enterprise. In some ways, this is no surprise. As a result, the field has suddenly been narrowed to two (Udacity, 2013).

The Coursera business model is to provide a technology platform and process for the owners of the content, which effectively outsources course production costs to its network of 100+ prestigious institutions. However, there is a finite amount of time to develop a revenue model and demonstrate a profitable business model. Coursera’s monthly expenses are estimate to be $2 million and revenue is $1 million for the first nine months of 2013. Based on the last round of financing, Coursera has enough cash until the end of 2014 to finish the “proof of concept” stage of development and start generating meaningful revenue or risk losing the patience of the VC community.

The Harvard/MIT-owned edX, does not face the short-term need to demonstrate revenue and a profitable business model, in fact, it is a nonprofit. However, edX is the least revolutionary of the Big-Three MOOC providers. While some researchers and practitioners suggest that edX may be the only survivor after the MOOC shakeout occurs, KPCB and a network of 500 prestigious universities is certainly formidable competitor (MIT, 2012).

**Revenue Models**

Revenue is a function of value creation and the capacity to monetize that value. MOOC providers have the potential to create value and monetize it in at least the following ways (Schuwer & Janssen, 2013):

1. Offering ubiquitous access to learning worldwide and creating the manifold societal and economic benefits associated with an educated populace.
2. Offering a hosted software platform for the creation and distribution of course content, whether for MOOCs, online courses or corporate training.
3. Charging a distribution fee for licensed content distributed using the MOOC platform.
4. Offering a platform with enabling an unlimited number of students access to education without an expensive physical plant, driving the cost per class down dramatically. The MOOC model, in theory, could reach students around the world, on their individual schedules, at very low per unit cost.
5. By reducing the cost, MOOCs can deliver education to billions who could not afford secondary education, creating a huge new market.
6. MOOCs enable professors to spread their knowledge to vastly larger audiences, creating “brands” that can be monetized separately.
7. By reducing the price point, MOOCs can generate new revenue from several sources:
   a. Casual leaners looking for inexpensive individual courses for pleasure;
   b. Adults looking to add a specific skill to qualify for a new position can buy a cluster of courses;

While none of the Big-three MOOC providers has generated meaningful

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revenue, Udacity and Coursea have booked some revenue. Udacity generated revenue from the partnership with Georgia Tech and AT&T to create a Master’s Degree specifically targeting the needs of AT&T. This has the potential to create a model for future coursework targeted at real world technical needs on a larger scale. Coursera also extracts a fee from Amazon when a student purchases a book for their class. Coursera generated $1 million of revenue in nine months in a similar effort by charging for Verified Certificates. Coursera is the first to receive recognition for five courses to qualify for transfer credit from accredited institutions. While neither of these efforts represents a large enough market to generate returns on the $160 million investments to date, it is a proof of concept (Coursera, 2013).

**Accreditation/Degrees/Certificates**

Educators, venture capitalists, and journalists all reach the same conclusion when considering MOOCs: MOOC formats pose huge challenges (threats) for existing institutions of higher education business models, for institutions at all levels, for pedagogy, and for international education. Nathan Harden noted, "Recent history shows us that the internet is a great destroyer of any traditional business model that relies on the sale of information" (Daniel, 2013). This may explain why only 28% of chief academic officers believe that MOOCs are sustainable in spite of the unanimously positive attitude of all other stakeholders. The traditional college degree monopoly is a function of three mutually reinforcing factors. First, education is highly subsidized by direct and indirect government grants, loans, and their non-profit status. Second, only accredited colleges are eligible to receive government subsidies and offer credits and credentials that are recognized by employers and other colleges. Existing colleges themselves, meanwhile, control the accreditation system. Third, our society has made an enormous psychological investment in the idea of traditional colleges (Carr, 2012).

Traditional colleges and universities exploit their monopoly by overcharging students and using those “excess profits” to subsidize other activities, including research, intercollegiate sports teams, and status enhancing competition for Nobel Prize winners. There is no incentive to endeavor to overhaul inefficient administrative and organizational structures and their enormous overhead cost. Online for-profit colleges have not been disruptive because while their business methods are different, their product—traditional credentials in the form of a degree—is not. The accreditation system is single greatest barrier-to-entry facing MOOCs today. Udacity, Coursera and MITx exist outside of that system. While the value of the self-issued credentials to the job market is small relative to traditional degrees, this is consistent with the classic theory of disruptive innovation. Clayton Christensen’s theory of disruptive innovation suggests there is a consistent pattern across a wide range of industries whereby disruptive competitors initially competing against non-consumption—that is, by selling inferior goods to people not served by existing producers. With time, the new competitors improve their product or service, at a lower price point, and migrate into the higher margin markets until a tipping point is reached and the traditional provider dramatically loses market share in a compressed timeframe.

The remaining question about the tipping point is timing. When will the quality of new credentials reach a critical mass of acceptance among employers and society at large? Traditional degrees have the great advantage of being simple and universally understood. The catalyst might come from some large, authoritative organization, like the government or AT&T. Perhaps a bona fide third party to auditor will emerge.
In the meantime, MOOCs are making progress. Coursera has begun charging for Verified Certificates and recently received approval from the ACE for five classes to be granted transfer credit to their member institutions. Udacity teamed with Georgia Tech and AT&T to create an accredited program to meet a specific marketplace need. EdX has a consortium of 100 prestigious universities whose relationships might lend credibility to the edX brand. edX issues certificates at the completion of an edX course. These represent a modest start toward sustainability.

Market Acceptance

Market acceptance is driven by two separate factors, both of which are related to accreditation. The first is the willingness of students to pay course fees. Second, the issue of how the learning is assessed, authenticated, and valued by employers. These issues may play a role in the low course completion rates so far. A typical Coursera MOOC enrolled between 40,000 and 60,000 students, of whom 50 to 60 percent returned for the first lecture and approximately 5% of the students who signed up earned a credential signifying official completion of the course. The Chronicle of Higher Education survey of MOOC professors reported a median of 33,000 students per class and with a successful completion rate of 7.8%. While the rate is substantially below completion rates in traditional or online courses, is a completion rate the appropriate metric? On its face, a 10% completion rate in a class of 35,000 seems low; however, it means that 3,500 students learned the course content, or more students than a professor might touch in an entire career.

Using MOOC retention rates as a proxy for market acceptance, or for comparison to traditional institutions, is not particularly useful at this time. Most MOOCs are free which creates two data issues. First, it attracts individuals interested in browsing the newest educational experience, rather than seeking a certificate. Second, the cost of withdrawal is zero. The absence of a financial incentive makes a comparison to traditional or online completion rates inappropriate. Until there is a perceived value for MOOCs and an accompanying cost, retention rates are meaningless.

Conclusion

MOOCs have begun to mature as a viable model for delivering low-cost, high quality learning content online to an unlimited number of students. This unprecedented opportunity has already attracted more than $160 million in venture capital financing, as well as a serious commitment from Harvard, MIT and Stanford Universities. These recent developments have led to serious debates within the higher education community about the MOOC model. The traditional accredited degree-based business model is being questioned for the first time in the history of U.S. higher education. The ultimate impact on faculty, pedagogy, and accreditation is still in question; however given the gravitas of the players in the MOOC market already, it is clear that MOOCs are here to stay.
References


Yuan, L., Powell, S. (2013). MOOCs and Open Education: Implications for Higher Education. Glasgow: JISC CETIS.
The Role of Educational Application in Improving Children’s Language
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Abstract
Since the emergence of TVs, technology has been growing so fast that it touches almost every aspect of our lives. Availability of new technology made it even more desirable. Nowadays, smartphones and smart tablets are considered major devices in every house. With the heavy use of smart phones and smart tablets, people tend to depend on these devices for educational purpose. Instead of exposing their children to TV programs, parents now prefer the use of educational application that interact more with the user. It is a fact that these applications are more effective and less risky than TV programs since they interact to the user’s inputs and build the results upon this interaction (Kimberly Moore Kneas, Bruce D. Perry).

Language development is one issue to be considered. For this sake, many applications have been developed in order to improve children’s language in an early age. Since many researches have proven that exposing to TV actually affect language development negatively due to its passive interaction (Christakis, 2009), application developer should aim to develop application that interact with the child as much as possible in a safe active environment. But what exactly makes such an application? The purpose of this paper is to guide application developer through developing interactive applications that improve the children’s language and insure their benefit. Through this paper, I hope to inspire and motivate all the people working in the application market with new ideas and methodologies for better application. Also, I aim to draw the attention of both parents and educators to the major points that affect the children in order to make them aware while choosing applications.

Using all the available resources to conduct this research including the Internet, books, articles and surveys I came to the result that applications could be a powerful approach to improve the children’s language by adding some functionalities that focuses on the interactivity with the user.

In conclusion, the fact that technology has already reached every aspect in the children live motivates us to engage it with education. As applications appear to be very usable by children, it can be the best way to educate them using technology.

Keywords: Education, Applications, Technology, Children, Language

Introduction
Applications have caused a major change in our daily life activities. In a way or another, they have made accomplishing several tasks easier, flexible and more interactive. The fact that the applications reached even children needs have made them more important, more valuable and usable. It is easy to spot a child in a mall; restaurant or any other place very focused with a mobile device in his/her hands. Whether it is Playing a game, reading or planning, applications with their different category allow us to do it effectively. Children use mobile devices more than watching TV or reading stories. With the friendly interface and interactive environment, applications attract children and encourage them to focus while accomplishing tasks. This point can
be positively used in education. As a result, more and more educational applications were developed to reach the users demands. Educational organizations admit the effective of educational applications and encourage developers to add more features to assure their effectiveness. Nowadays, with all the advanced features, learning became an enjoyable easy process. Language was one field that gains high considerations due to its importance. Because of applications flexibility, interactivity and simplicity, they powerfully helped in improving the children language. Therefore, application developer should seek to develop more interactive applications that are more suitable and safe for children use.

Literature Review

The Applications’ Role in Education

On 2002, James M. Marshal established a research report discussing involving technology in learning, the report displayed positive results. As mentioned in the report, people remember only 10% of what they read, 20% of what they hear, 30% of what they see and 50% of what they hear and see. (Marshall, 2002). In the case of nowadays applications combines images, texts and audio all in one. The child can see, read, listen and interact at once, which make the percentage even higher than 50%.

Additionally, a survey designed by Common Sense Media and conducted by GFK in the United States among 1463 parents with children between the age 0 and 8 has results the following (A Common Sense Media, 2013):

- The number of children with access to smart devices increased by 23% between 2011 and 2012. 52% in 2011 and reached 75% in 2013.
- The percentage of children using smart devices daily has reached 17% in 2013 compared to 8% in 2011
- In general, 38% of children use mobile devices for educational contents.
- Specifically speaking, the percentage of children between 5 and 8 who use mobile devices for educational apps has grown to 44%.
- Children from higher-income families use educational applications on mobile devices (54%) quite more than children from lower-income families (28%).
- The most used category of apps by children between 0 and 8 are educational applications.
- 38% of parents with children of the age 8 or under have reported that their children often or sometimes engage in educational content on a mobile device.

The above results prove that the use of application is dramatically increasing due to the increased access to mobile devices. This increase encourages us to use the applications in major fields in our lives such as education. The availability, easiness and usability of applications allow the children to use them and accept them more than any other method. The fact that applications can interact with the children has made them even more suitable for educational use.

Finally, a fourth year speech pathology student conduct a research on the use of iPad in speech therapy, her research results that there are different types of learning that occurs while a child use an application which are (Maiolo, 2013):

- Learning the game’s tactic and its working methodology.
- Learning the game tasks and mastering it such as counting, searching or matching.
- Use the learned tactics and skills to win higher level or to apply in other apps.

It is clear that the applications provide various features all together. While the child is using an application, he/she needs to understand how the app actually works, what the needed movements are and how to reach the goals. While doing so, the child will understands and masters some task, which he/she will use in other applications as well. This process empowers the child
learning process and increases his/her knowledge.

The Applications’ Role in Improving the Children Language

Language is defined as “the human non-instinctive method of communicating ideas, emotions, and desires by means of a system of voluntarily produced symbols” (Sapir, 1978). It is proven that speaking is a non-instinctive action; it is not developed by nature but acquired from the environment (Sapir, 1978). We are not born with speech ability but we build it according to our culture; this is exactly why speech is closely related to sociality. In 2012 a study conducted in the United Kingdom reported that the percentage of children with speech difficulties have grown by 70% in 6 years (Clark, 2012). This rise indicates a real problem that needs to be solved.

In fact, a lot of studies have seemed to blame mobile devices for the raising number of speech difficulties among children. It might be true, mobile devices can possibly be one reason. But mobile devices, just like any other inventions, are two-edged swords! It depends on the chosen applications and the way of usage. The world’s life style has changed in general, and the amount of time the children spend to socialize have decreased; as a result, children need to cover this gap by finding other ways to learn new words and communication skills. Using educational applications that focus on the children learning ability by interacting and pronouncing words can create a suitable solution. Storytellers and flash cards applications are a good example. Other applications are specifically developed to assist the children in the speech learning process.

Because mobile devices proved their efficiency in the language development, clinicians start to use them in speech therapy, specially the iPad due to its wide screen. Therapist reported that its play based learning and different features are highly demanded in their work. The mobile devices provide a friendly and interactive environment that would greatly assist therapists to achieve better with children (Sidock). Moreover, the varieties of the available applications allow the therapist to choose the best application according to his/her patient nature. Wakefield and Schaber, both experienced speech language pathologists identified four types of apps useable for therapy, which are (Wakefield , Schaber, 2014):

- Purposely designed for intervention skills
- Not originally intended for intervention skills but can repurpose its use to do so.
- Motivation or incentive.
- Tracing data.

Applications in mobile devices have also shown great result on improving speech in children with autism. A study by “Autism Speak” proved those children between 5 and who use mobile devices to improve their speech were able to speak more new words (Brasher, 2013). Mobile devices work perfectly with autism kids because it generates exactly the same recorded or stored word again and again, no difference in the pronunciation or tone. This is very useful for autism children since they demand consistency.

Reading As a Way to Improve the Language

It is proven that reading stories loudly to the children can positively affect their oral language skills (E Duursma, M Augustyn, B Zuckerman, 2008). Reading has always been related to language, it improves the children’s language by teaching them new vocabulary or the meaning of new words. This process was used long ago in the bedtime story activity, where parents used to read stories loudly for their children during bedtime. Bedtime story reading has always been an important part of the day, both for the children and the parents. It’s proven that this simple act could affect the
children forever. Unfortunately, story reading has shown a huge decreasing lately. Whether it is due to the increasing duties in our daily life or the difference interests in the current generation, technology plays a huge role in both reasons.

Then the term e-storybook (which stands for electronic storybooks) appears when the computer became more popular. E-storybooks were CD-ROM storybooks that display stories in the computer screen. On 2006 a research on the CD-ROM storybook declares that both educators and researchers agree on the great outcomes of these storybooks and their support in young children language development. (O. Korat , A. Shamir , 2006). On 2006, electronic storybooks weren’t as powerful as they are now. At that time, electronic storybooks only read the text while showing the images, it might also contain few games or questions after the story, but there wasn’t real interactive from the user’s side. Even though, researches found that those storybooks were helpful for children development. How about now? Using touch screen where the child can flip pages, play games and maybe record his voice in a very simple and safe environment. Additionally, on 2012, a research article written by Gina Biancarosa and Gina Griffiths, E-reading applications were proven to be useful as tools for various learning strategies. It indicates that these applications are showing high promises in developing early reading skills for children, and helping children with visual or language disabilities. The authors also show great interest in the text-to-speech feature used in story reader application. The text-to-speech feature converts the written text into spoken words, sometimes highlighting the word as well while reading it to attract the user. This feature enables the child to focus on the word while listening to its pronunciation, which can develop the child’s speech, reading and probably, writing skills. (Gina Biancarosa, Gina G. Griffiths , 2012)

Research Methodology

Personal Observation

This research was conducted after I personally touched the results of using educational applications to improve a child’s language. I observed a child who faced speech difficulties till he reached four years; he then went through daily speech therapy and used educational applications to catch-up as much as possible. The educational applications including storybook applications, flash card applications and others helped the child to learn a lot of new words, which helped him in socializing and interacting with others. Based on what I’ve learned and observed, I went through different resources to measure the results and draw conclusions.

Online Research

The Internet includes thousands of different academic resources. I used the online research to fully understand this issue and to find contents related to this topic.

Books

The books, including e-books, contain a lot of knowledge no matter how old they are. I relied on books to understand more about the nature of speech and how human can build languages. Because the speech have always been and important issue to human lives, I found a lot of books that discuss this topic.

Surveys

A survey was distributed to fully understand the parents’ opinions and learn more about their children behavior toward applications in general and educational applications in specific. The survey was conducted online and distributed through social networks. The total responds till the submission date reached 20 responds. The survey included 6 important questions that I believed were important to complete this research which are:

1) Do educational apps (the application installed on mobile devices) improve your child’s skills in general?
2) Do you think that educational apps can
improve your child's language (using storybook or flash cards apps)

3) In your opinion, what are the most important features in an educational application that aims to improve the children language?

4) Do you actually believe that educational application can improve the children language?

5) How often does your child use mobile devices?

6) Have you seen any child who overcomes speech difficulties using educational applications?

I tried to make the questions simple and straightforward in order to get accurate answers from the parents. The more accurate answers I get the better I understand their point of view.

Results

Language is about communicating, that’s exactly what makes it essential. In order to live we need to understand each other, we need to communicate and socialize. Speech difficulty is a very dangerous issue that needs a solution as soon as possible. It is believed that it is technology that caused this and probably, it is only technology that would provide its solutions.

The mobile devices have made it possible to combine both education and entertainment in one action. Due to that, users seem to enjoy receiving knowledge and tend to download different educational applications. In July 2013, the educational category was ranked as the second most popular category in the apple application store with the percentage of 10.83 of all application in the store (Apple Most Popular App Store categories in July 2013| statistic). This statistic proves the high demand of educational application and its importance. Moreover, children seems as the as the most targeted group in educational applications. Because children might demand some fun in the educating process, educational application has made it possible to do so.

Applications provide various properties that can be used to improve the children language. Especially those children, unlike adults, demand friendly environment to learn. They need high interaction to keep them concentrated and focused, which can’t be easily accomplished by using physical materials. I divided the applications features into four main features, which are:

I. Interactivity: unlike TVs, mobile devices provide multi-interactive environment that sends signals for the user then build results according to the user’s respond. This process is valuable since it measure the child understanding of the given signal. The interaction varies from one application to another according to its design and usage method.

II. Accessibility: Due to the touch screen, applications are easily accessible and useable. They allow fast interaction and easy navigation.

III. Variety of choices: The application stores are full with variety of different choices of application. On January 2014, the number of applications available in Google Play store has reached 1092,904 application (Number of available Android applications, 2014) while the number of available applications in Apple app store has reached 1000,000 in October 2013 (Apple Special Event , 2013). This huge number allows the user to carefully choose the most appropriate application and satisfies all the different demands.

IV. Combination of features: applications combine number of features to be used all at once. For example, applications can add the feature of recording or repeating the spoken words efficiently while reading texts and viewing an image. This valuable feature enable the parents to handle the mobile devices to their children and allow them to train alone reassured that their
children are engaged in a safely interactive environment.

These properties and more make the application a very suitable method to be used in educating children. In this research I emphasize on application rather than the mobile devices themselves due to their affectivity. It is the application that provides all the different property not the devices. The mobile devices act like the body and the application makes the soul. The application’s design and interactive determine its effectiveness. Because of that we need to raise awareness of the application’s design importance among application developer. Application developer should design applications considering the user demands and abilities. They must include more and more user-friendly interfaces especially when targeting children. They also need to carefully study the application’s output taking in record all the possible input by the users. Because of that I believe focusing on the applications rather than the devices themselves is more accurate, important and essential.

Applications have proven their effectiveness in improving the children language. Since speech or language is not a nature activity, the child must be encouraged to build it and gain it from his/her environment. Applications provide the features to build the languages. In fact, applications can be a solution for such a problem. As we discussed earlier, a child needs to carefully study the environment by socializing and interacting, speaking specifically, by listening to new words and discover their meanings. In another words, the child needs to hear words in order to generate words. Educational applications provide a variety of features and properties that allow the children to listen and understand the words. For an example, an educational application might view an image and pronounce its name clearly to enable the child to memories the spoken word and understands what it refers to. Simply, applications enable the children to improve their language through acquiring from the knowledge afforded by the application outputs.

As a result of the high demand on educational applications, the applications stores provide a wide range of applications that are specifically developed to improve the children skills in different areas including language, memory, matching and more. These applications engage the children in learning while playing games or watching joyful pictures combining the text and audio as well for better learning. Another very popular type of applications are storybooks applications (also known as storytellers). Storybook applications have replaced physical stories due to their interaction and audio features. The main advantage in storybooks applications is that they encourage learning in an interactive environment without the dependence on the parents. These applications display the images and the texts while reading the story loudly to the user. Also, it might contain more features that enable the child to discover and learn more such as pronouncing the name of an object when the child touch it, or adding games that ensure the child understanding.

**Survey Results**

The online survey results reflect the parents’ awareness and understanding of using application to help improving their children’s language. The survey results were as follow:

I. All the parents who answered the survey – which is 100% of the answers, admitted that educational applications do improve their children skills in general.

II. 95% of the respondents think that educational applications can improve their children languages while 5% are not sure if the educational application can do so.

III. 20% of the respondents declared that the audio features are the most important features in educational applications that aim to improve the
children language. Whereas 10% of the respondents stated that games and interactive features are the most important features, and 70% of the respondents believe that audio features, games and interactive features as well as text-to-speech features are all important features for these application.

IV. 100% of the responds declared that the parents do believe in educational application to improve their children language.

V. 5% of the parents stated that their child spend less than one hour using a mobile device, while 35% declared that their child spend one hour daily, and 60% said their child spend more than one hour a day using any type of mobile devices.

VI. 60% of the parents who answers the survey declared that they have seen a child who overcomes speech difficulties using educational applications while 36.84% have not seen.

Recommendations

For application developer:

- Application developer should develop applications with friendly and attractive interface to attract the child to use them rather than using non-educational games.
- Application developer should enhance and increase the play-based learning of their applications.
- Application developer should develop apps that are easy to navigate by the children.
- Application developer should develop apps that assist therapists in measuring their patients and track their development.
- Application developer should consider providing their application within affordable prices.

For Parents:

- Parents should carefully download the most suitable application for their children according to their situations.
- Parents should supervise their children while using mobile devices.
- Parents should limit their children usage time of mobile devices.
- Parents shouldn’t expose their children less than two years to any mobile device.
- Parents shouldn’t greatly depend on mobile devices and forget the importance of spending quality time with their children.

Implications for future research

It is clear that most researchers focus on the mobile devices themselves rather than the applications that create the true power of the device. In my opinion, the applications haven’t gained the attention they deserve from researchers and media. For the future, I recommend concentrating more on the effects of specific applications on children and how it might improve their skills. I also found it very important to study the behavior of the best educational application to get a clear picture of the ideal educational application. Moreover, I highly recommend further studies on the effect of educational application on special needs children.
References


Christakis, D. 2009. Language Use Decreases in Young Children and Caregivers When Television is on, Study Finds. [Report].


An Action Research on the Impact of the Use of Educational Videos as Teaching Aids in Primary School

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Abstract

Technology has changed the way teachers teach and students learn. The traditional way of teaching which is the chalk and talk method have been prevailing for decades. Nowadays information are presented in new ways and learning is moving from the traditional method to modern ways of teaching and one such way is the use of educational videos. Through videos, animations colours and sounds are used to make learning easier and interesting. This project entitled “An action research on the impact of educational videos as teaching aids for Primary School” shows the use of different educational videos and their results on students’ performance in two schools.

The school syllabus has become very bulky and students especially of average and lower abilities find it difficult to cope with all the subjects an above all, the different information on each subject. Therefore it is imperative that teaching aids should be used as a support in order to facilitate learning for them. Teaching aids can take different forms. An educational video can be categorized as one of them. Indeed such teaching as should be used which can help the students to take an interest in their studies and which can facilitate the retention of information easily.

This research analysis, has tried to bring forward that educational videos can motivate students learning. What can be said is that educational videos can be use as an effective learning tool which can promote the willingness to study in low achievers in schools.

Introduction

Education being a lifelong process encompasses the teaching and learning of specific skills, imparting of knowledge, good judgments and wisdom. However, teaching is no longer a process of imparting knowledge to the learners so that they are able to answer questions that are confined to only the use of books. Traditional ways of teaching through the chalk and talk method have become obsolete with the new advent of technologies. In this 21st century, the influence of media has become overwhelming. Television, radio, films and computers are providing a constant information, facts, words and images. As from an early age our children are exposed to one of the most common kind of media which is the television. These media can be used to carry out information for an instructional purpose and which can be considered as building blocks for a more efficient learning environment.

Problem Statement

Schools worldwide and in Mauritius consist of different abilities of students. Some are of high ability ones, while others are low ability and average abilities. ‘Zones D’education Prioritaires’ (ZEP) schools in Mauritius, which formed part of the analysis in this research project, consists students of mainly low abilities; hence not all teaching strategies can be employed with them as one strategy may work for some students but may not work for others. Due to the socio-economic background of different schools,
It has been observed that these students are not motivated and do not value education. As a result, they can scarcely devote their time in learning. Moreover, owing to their problems, they cannot concentrate in class and develop negative behaviours and a low self esteem. Instead of being an active learner in class, they remain passive and easily distracted while studying.

It is up to the teachers to get the students on board for the journey of acquiring knowledge. For these reasons, educational videos are being introduced as a teaching aid in the class more precisely as a pedagogical tool to motivate these students and consequently help them to achieve better academic performances. Videos can be said to provide sensory experience that allows concept to be experienced and guide students on each educational adventure. Research reveals that the most effective way to use video is as an enhancement to a lesson. Video should be used as a medium of instruction along with any other resource material for teaching a particular topic and its use in the classroom should be same as any other teaching aid.

Research Aim and Objectives

The aim of this project is to assess the effectiveness of the use of educational videos as a pedagogical tool for primary school students.

The objectives of this project are:

- Create a conducive learning atmosphere and increase motivation.
- Analyze the impact of three different types of educational videos used in class.
- Assess students’ performance with each type of video.
- Analyze the performance of students for each educational video.

The Need of Educational Video as Teaching Aid

Those days are gone when teachers had to use a blackboard, a few posters and books as the primary tools to teach students in class. Today, schools are equipped with televisions and DVDs, computers, projectors and even interactive whiteboard in the classroom. These technological tools are acting as in some way or the other as motivational tools for the students. Indeed the socio-economic background of these students has adverse effects on their learning. In such a case it is up to the teacher to devise strategies which would help the students in learning what is being taught to them. Teachers are considered as the key to improve educational quality in the educational system. They are the ones who facilitate learning in the classroom.

As it has been observed in the ZEP schools, the students show a lack of interest in their studies, some are unable to concentrate and focus on the subject, while others are easily distracted. Books and the traditional methods no longer have any motivational effect in class. One the main reason is that most of the students do not even know how to read the sentences in books. Moreover, abstract concepts are difficult to explain to these low ability and average ability students. They face difficulty in visualizing certain things compared to the high ability students. Sometimes they are at a loss as they cannot keep pace with the teacher explaining a particular topic.

Indeed, after many reforms that have been carried out in the Mauritian’s educational system, it has been observed that some schools, in some specific region, always come out with high percentage of failures. Not everyone was getting equal access to education because they were “disadvantaged”.

The IIEP Newsletter (2003) defines the “disadvantaged” as those children who due to their economic situation, ethnic origins, geographical location and gender do not have access to education.

In Mauritius, the Certificate of Primary Education (CPE) is the final and main examinations in primary schools in
Mauritius and is carried out at the end of standard 6. A school is classified as a ZEP school when it has had a CPE pass rate of less than 40% over the last 5 years. The philosophy of the ZEP concept is based on the premise that positive reinforcement is required to create favourable learning conditions for the children living in less developed regions. It also aims at reducing school inequalities and in a broader perspective, to combat social inequalities by providing equal opportunities to all primary school children of Mauritius.

The students of the ZEP and average schools come from different backgrounds which in a way have an impact on the students’ performance at school. Problems that children from both schools mostly faced are family cohesion, poverty and illiteracy among others.

Family cohesion includes family structure and background characteristics such as the parent's occupation, family income, parent education, parental mental illness, parenting style, race and ethnicity, and family size. Family cohesion factors also include life events such as divorce, remarriage, death, and other changes that can influence the child development.

Most of these children come from poor families where the latter are not financially well off. Smith et al. (1997), used data from two national datasets, showed that family poverty was significantly associated with lower scores on several measures of child cognitive and school readiness outcomes. According to Leroy & Symes (2001), some factors related to poverty that may contribute to a child’s academic failure are: very young, single or low educational level parents; unemployment; abuse and neglect; dangerous neighbourhoods; homelessness; and exposure to inadequate or inappropriate educational experiences.

Another factor affecting students of both ZEP and the average school is single parenting. Single parents as it appears are sole source of financial support for the family. Consequently, such parents cannot devote enough time to their children’s studies and may not even have time to spend with them giving rise to undisciplined children and less parental control over them. In such cases, teachers are faced with behavioural problems from these children. Examples of such behaviours are: delay in language development, delay in reading development, aggression, violence, social withdrawal, irregular attendance, and depression. These children do not come to school prepared to learn because of the circumstances prevailing in their home environment. These children are unable to concentrate in classes.

Furthermore, illiteracy of parents also plays a great role in the child’s education. The children do not receive any academic supports at home as their parents are themselves illiterate. Thus, any homework or revision work remains undone. A study in Canada by Linda Pagani (1997) and colleagues also found that persistent poverty was significantly related to academic failure.

**Teaching Aids**

Teaching aids are tools that teachers use to help their students learn quickly and thoroughly. A teaching aid can be in any form and it can also be as simple as a chalkboard or as complex as computer simulations or games.

In reality as every learner learns through their own different styles, teachers have to rely on these tools to explain concepts or consolidate the students learning through as the latter has such a wide variety of learning needs. Teaching aids are essential for teachers as they are key factor in differentiating instruction for all types of learners. In a class of 40 students, each and every student has his / her own learning styles. In order to cater for those different learning style the teacher has the responsibility to see to it that each and every student’s requirement are met through the use of teaching aids.
While trying to impart knowledge and education, not only an intellectual skill and a subject knowledge that are required, but the teacher must also ensure that the content is understandable to the learner in a simple and easy manner during a certain lapse of time. Teaching aids can be in any form that can assist in teaching. Examples of teaching aids are printed material, overhead projector, blackboard/white board and chalk, interactive whiteboard, pin board with posters/programmed instructions book, computer and software which can be used for application like power point slides, video, images, movies and records, object for demonstration etc. According to Orakwe (2000:112), nowadays instructional media are paving their ways into the classrooms where new methods are being explored by modern and dynamic teachers so as the transfer of knowledge to learners can be done through the use of prints, visuals and audios or a combination of all.

Students can become bored sitting in a classroom for hours. Teaching aids can provide a welcoming break for students who have been sitting for a while and listening to a teacher explaining in front of the classroom. However, while using the teaching aids, the teacher must consider the following:

- What are the students’ specific needs?
- Do they need to be actively involved?
- What types of teaching aids do they prefer?
- Are they struggling with the subject being taught?
- Create teaching aids that build on students' knowledge and inspire them to learn more?

There are different types of teaching aids which would suit different learning styles of the students. The teaching aids can be classified in three different categories namely:

- Visual aids
- Audio Aids
- Audio - Visual Aids

Videos, if used as a teaching aid, can increase student engagement as people tend to be more affected by what they see rather than by what they hear. The use of Educational videos in classrooms can be exciting and fun for educational videos are more like a story than a lecture. Humans normally tend to remember concepts and facts presented to them in a story. When students listen or watch a story, their imaginations are engaged. Indeed some educational videos can be in the form of stories which can engage both the mind, and imagination with soundtracks, pictures and some animations. Alternatively, in upper primary classes, educational videos can be used to demonstrate how to perform experiments which is not possible to be carried out in the classroom or due of lack of time or being time consuming, the teacher may not be able to perform.

Educational Videos

Educational videos are those short clips or films which are used in education for better learning to take place. According to several studies carried out by the Corporation for Public Broadcasting, the use of educational video and television in classrooms has risen steadily over the past 20 to 30 years. Indeed with availability of educational videos both through YouTube and Mauritius College of the Air (MCA) videos provided to schools and which is also available on sale at the MCA have made its use more frequent in classrooms. Moreover, it cannot be denied that some teachers can also create their own videos with the use of simple technologies (mobile phones or digital cameras) which are available to all easily.

According to a study, educational videos are also highly valued as a means of teaching more effectively and creatively (CPB, 1997). It can be observed through a summary of a current research and educator surveys that educational television and video are effective in the following ways:

- Aids in the development of a common base of knowledge among students
• Student comprehension and discussion are enhanced
• Caters for the diverse learning styles
• Student motivation and enthusiasm are increased
• Promotes teacher effectiveness

Educational videos are not considered as a passive way of learning. It is instead viewed as an active process, one which can be “an ongoing and highly interconnected process of monitoring and comprehending” and “a complex, cognitive activity that develops and matures with the child’s development to promote learning” (Marshall, 2002, p. 7).

On the other hand Mayer (2001) pointed out that viewing, while it may appear to be passive, can involve the high cognitive activity necessary for active learning: “well-designed multimedia instructional messages can promote active cognitive processing in students, even when learners seem to be behaviourally inactive” (p. 19). Even if the learners are physically inactive during the lesson, they are mentally active through their cognitive process. It can be argued that they are gathering information which was new to them or connecting previous knowledge with new ones. Moreover, it can also be said that slow learners are getting acquainted with information which they are slow to mentally create in their own mind, so this new information presented through the videos is giving their creative mind a helping hand. These learners may be sitting idle but their mind may be working at high speed.

If the theory of Gardner (2006) on multiple intelligences is taken into consideration, it can be noted that an individual can process information through eight varying intelligences namely: Linguistic, logical mathematical, spatial, musical, bodily-kinaesthetic, interpersonal and intrapersonal. These intelligences enable learners to take in information through various ways according to their specific intelligences.

Nowadays a range of technologies are available for use in the classroom. Interactive whiteboards is no longer a myth in our Mauritian Primary schools where the upper primary classes are already benefitting from this new technology. It can be used in numerous forms such as display and presentational software, including animations and simulations and the viewing of educational videos which help students to develop an understanding of abstract concepts through concrete examples and graphical presentations.

Katchen (2002) reported that carefully chosen films could be a useful and extremely motivational teaching tool for both practicing, listening skills and stimulating speaking and writing. Digital educational resources can be a source of significant additional learning resources to both teachers and students. This can be quite helpful for teachers who want to provide students with more a more customized learning which can prove to be necessary for a better understanding.

The Action Research

The model proposed a common cyclical process that involves initially with a Diagnostic Assessment which will be followed by a plan, action, observation, reflection and revising the initial plan. ‘Action Research is often qualitative in nature,’ (Dick, 2000). However, the methods that were considered in this research project were both qualitative and quantitative.

Observation

For the present research project, observation was found to be a better data gathering method than questionnaires or interviews. Since students from ZEP schools had difficulty in reading questionnaires and understanding problems, observation methods were mainly considered to gather data. Moreover, observation method has proved to be more helpful in obtaining precise information about students’ change in attitudes towards education while using educational videos in their natural learning
environment. The behaviours and reaction of students were observed and recorded in an observation checklist throughout the lessons.

**Interview**

For the purpose of this action research, an informal interview was carried out with the students after each video in order to have their views. Moreover, some educators also were interviewed informally as regards to the video created by the teacher, who was part of the research team, so that further improvements can be brought afterwards.

**Evaluation / Tests**

The primary aim of assessment is to foster learning of worthwhile academic content for all students (Wolf, Bixby, Glenn, & Gardner, 1991). Schools normally use assessment results in a formative way to determine how well they are meeting instructional goals and as for teachers it is a sort of evaluation for their own classroom assessment practices and instructional procedures, and how they affect students’ achievement. The assessments used were:

**Formative Assessment**

This type of assessment is usually informal type of assessment which tests students’ understanding of a particular topic so that the teacher can best decide how to help them to develop that understanding. A common form of formative assessment is diagnostic assessment.

**Diagnostic Test**

Diagnostic assessment measures a student's current knowledge and skills for the purpose of identifying current and prior knowledge. Self-assessment is a form of diagnostic assessment which involves students assessing themselves. Diagnostic tests were designed as a starting point and as pre-tests to find out the level of the students. These tests were carried out with a view to analyze the learning that the students must have constructed from the use of books which has been formerly used for teaching of the particular topics chosen for this action research.

**Post Test**

After the diagnostic test, the students viewed an educational video which can be said to be acting as an additional resource to the related topics. The post tests were devised to be carried out after the viewing of the videos. In other words, at the end of each cycle, the post tests were administered in order to assess the students’ performance and their understanding of the topics through the use of educational videos. Marks were given for each post tests. The marks scored by the students were compared after each cycle so as to monitor any progress made by the students. Since the students of two different schools were used for the research project, the same type of questionnaire were used and it was designed so as to cater for both different category of students to be assessed so as to have a better analysis of the videos used.

Formative evaluation was carried out in the form of verbal questions after the activities in the groups.

**Sampling**

The sample of study consisted of 40 students from two standard VI classes of an average school and 20 students from a ZEP school. Overall a sample of 60 students was put to test. This choice is based on the fact that their awareness of their strength and weaknesses are already known by the teacher who is also the researcher. The topic taught through the research is directly related to their syllabus.

**Cycle One – Findings**

A diagnostic test was carried out to test the students’ knowledge acquired from their previous lessons in their textbook on the solar system. After viewing a YouTube video, a post-test was carried out to evaluate the performance of the students in order to see if there is any improvement or detriment in their level of understanding. Some results
of diagnostic test and post-test were also compared.

In the diagnostic test, it has been observed that the percentage of students, with a low performance, for certain questions only, the percentage being 35% for normal school, the post-test results was 85%. In some cases for the ZEP school, same results were achieved whereby the low ability students were able to increase their level of performance. After the diagnostic test, it seems that there were still some students who were unable to acquire the basic knowledge about the solar system through the textbooks. The lesson was carried out but the understanding of the topic was quite poor.

The reason behind this increase in the performance level in both schools may be that the song and the animation had positive effects on the students. Animation seems to have a great advantage over static images which enables the learner to capture information more rapidly and help in retaining that information. So the students could better grasp this piece of information. It can be said that the video has indeed been of great help to the students as a teaching aid. It was observed that some of the students chosen in the sample were quite reluctant to participate in the class discourse. Others were unable to concentrate for more than 5 minutes and were distracted and even feeling sleepy. The video in itself seems to be enjoyable through its animation but however the English language that was used was somewhat difficult for them to grasp words easily.

**Cycle Two – Findings**

The overall results of both schools and compared to the results of Cycle 1, it was observed that the mean marks and the individual marks of the students have increased. This video has proved to be better than the video from YouTube. Indeed being a conversation type it was not a boring video to students. It is worth noted that the sub topic on ‘transformation of energy’ was not properly mastered by students from the ZEP school. In the diagnostic test, only 25% of the students had been able to correctly answer the question. Whereas the knowledge acquired by the students of the normal school on the topic ‘transformation of energy’, is satisfactory since more than 50% has been able to correctly answer the question. But after viewing of the video, both schools showed an improvement in their final results. The major increased can be observed in the ZEP school where it was increased to 60%. The video seem to have beneficial in helping the students, who were mainly low abilities, in improving their understanding level. It has to be noted that this increase showed that the concept has been correctly understood by the students. Once a concept has been understood, the students will not find any difficulty in answering any related question.

**Cycle Three – Findings**

The overall result for the Cycle 3 which consisted of creating a video for learning and which were compared to those videos in Cycle 1 and 2. The video had given the students the opportunity to discover some information by themselves. An observation made was that students had gained a better understanding of the concept ‘oxygen’. A real life situation can be said to have more impact on the students’ mind rather than mere pictures. Moreover interactivity can also help in learning. The ZEP school also was not left behind as regards to the performance level. The difference can be noted where the use of textbooks only and letting the students discover the answer to a question by themselves. Students were asked to carry out experiments in class and their observations were recorded in their worksheet. It can be said that this worksheet may have helped them to retain information.

According to the interview carried out among some educators, it has been found that the video created by the teacher, was much appreciated with the use of simple language and by making it interactive so
that the students are more active. The teachers of the other higher classes have requested to use this video on ‘oxygen’ in their respective classes. With the introduction of interactive whiteboard in schools, the use of videos has risen to some extent over the last couple of years. The educators are more willing to make use of audio visuals and they are being motivated to do so.

**Conclusion**

Research has proved that teaching aids has been beneficial in helping the learners in their learning. This action research consists of the impact of educational videos as a teaching aid for primary school. The result of this research has proved that indeed educational videos have been very helpful in the learning process of primary school students. The results above indicate that with the use of educational videos, there has been an improvement in the performance level of the students tested. Their performance on a particular topic was tested before and after using the educational video. The results proved to have positive effects not only on the performance, but also in their level of understanding and in developing a team spirit by working in collaboration among them. Moreover the students have expressed a positive attitude towards learning. With the testing of 3 different kinds of educational videos, the students were transformed from passive learners to active learners whereby all the students had fully participated in the learning process. However, it has been noted that not all types of videos can enable students to learn.
References


Meeting the Challenges of Online Curriculum: A Case Study of the Development of an Online Minor Degree in Computer Science

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Abstract

In an attempt to make a degree in computer science more accessible to both on-campus as well as off-campus learners, the Department of Computer Science at Southern Illinois University developed an online curriculum for a minor in computer science. In this paper we present the process of the development of the online program. The development of the program was approached systematically by using both reported best practices as well as test piloting courses to gain first hand experience by the developers and the faculty. The objective is to go beyond merely providing access but rather to ensure success and learning.

Previous research on successful deployment of online learning points to three major areas: quality and characteristics of the learners and instructors, quality and characteristics of the infrastructure, and quality and characteristics of the content (Alshoshan & Zargham 2013, Ozkan & Koseler 2009). To ensure that all the elements are in place requires diligent planning and a continuous feedback loop. The Department in this case study has policies and practices in place to ensure that the development and the deployment meet the above criteria and that every student’s learning experience is pedagogically sound.

The quality and characteristics of the instructors are assured and maintained by actively having them involved in the planning and delivery of the content. The quality of the learners while, to a great extent, is out of departmental control, has been maintained and equalized by ensuring that all prerequisites are met and adhered to by all the participants. Furthermore, by creating a sense of community for the learners, their participation is fostered and encouraged. The infrastructure is based on a commercially available system that allows multiple delivery mechanisms as well as controls over delivery and evaluation of submissions. The College and the University support the system and ensure its availability and stability with relatively low cost to the Department. The most important component, the content, is developed by a faculty member who is directly involved in the delivery of the materials with the help of support staff. The delivery of all the materials follows a procedure that has proven very effective in getting the learners involved. These include daily chat sessions, weekly assignments, and multiple projects throughout the semester with clear deadlines. Every attempt is made to provide quick feedback and multiple opportunities are offered for resubmission of the assignments. To obtain first hand experience, the Department experimented with two different approaches. These included a completely online presentation as well as a hybrid model. The piloted courses proved very successful with greater than 90 percent success rate. It is expected that the online minor will follow.

Keywords: online content, online delivery, online curriculum, online degree.
Introduction

As the technology has improved we have seen a rise in its use in educational settings, from the 1980’s computer based trainings to the present day online universities. We have moved from single user drill and practice to the Massive Open Online Course (MOOC) with thousands of students in a single class. The contribution of technology to improving and increasing access to educational materials has been phenomenal. There is, however, an important paradigm shift-taking place where we are becoming more critical of the role of technology and its efficacy in increasing learning as well as the transfer of knowledge. For a very long while access has been the focus, we are now becoming more concerned with learning and success of the learners using technology. Anecdotal evidence abounds but evidence supported by research regarding the success of learners in a technology driven environment is spotty. What is emerging, however, is that practices that provide the most access do not produce the promised results. Institutions of higher learning are retracting from commitments that were made based on the promises and expectations that providing access will result in success. For example, recently San Jose State University after a one-semester agreement with a MOOC provider Udacity stopped its offering due to very low success rate and high dropout rate. There are, however, some research based evidence with regards to what would constitute and contribute to a successful e-learning environment that results in documented learning. Factors have been identified that have demonstrable influence on learning. While researchers (Volery and Lord 2000), (Slime 2007), (Ozkan 2009) point to a different group of factors influencing successful e-learning deployment, (Alshosahan and Zargham 2013) have summarized the factors into three essential areas. These include quality and characteristics of the learners and instructors, quality and characteristics of the infrastructure including administrative support and involvement, and quality and characteristics of the content comprising interface design, learning management system, and multimedia support.

Problem and Challenges

While motivation and interest on the part of the learner has always been an important characteristic for successful learning, e-learning seems to put an extra demand on it. The problem and question of how to motivate and maintain the interest of an online learner is a challenge that must be met. Review of the literature suggests two important factors in improving and increasing the student motivation and interest. These include high level of engagement with course and quick feedback (Muntean, 2011, Ollie, & Gorra, 2013, Warburton, & Volet, 2013). Similarly the level of the motivation and interest of the instructor has equally been emphasized. An instructor interested in and comfortable with technology and ability to take advantage of its offerings is deemed as necessary and essential in e-learning. The term e-instructor is coined to refer to a new breed of instructors that see themselves as facilitators and feedback providers in the learning arena. The task of the e-instructor is to gather and provide the best available materials for the learners. In other words, understanding the learner and his or her strengths and supporting learners based on those strengths is part of the responsibility of this new generation of instructors. Assembling audio materials for an auditory learner, visual materials for a visual learner and print material for a text learner is the challenge for the e-instructor. Therefore, other skills set needed to be an effective e-instructor might involve competent use of audiovisual production technology. While preparing videos is technically challenging (for example, lighting quality, sound quality, etc.) and requires professional support, the involvement of the faculty is very important both for the students as well
as the instructor. Merely recording the lectures and making them available online is shortchanging the students and not taking advantage of technology. Therefore some concerted effort must go into the preparation of the videos with specific considerations. For example the videos should not be more than 10 to 15 minutes long. The videos should have time signatures that are synced with the presentation. This allows the learners to go back and forth to specific times and discussions in the video. Persuading faculty and instructors to be the presenters might prove to be one of the more difficult challenges to overcome.

Another important component of the quality and characteristics of the learner and instructors is the interaction between these two. Maximizing this interaction via technology is an essential component of successful e-learning (Puri, 2012; Nathan, 2009). As a result, a model is emerging that emphasizes an approach that combines technology mediated learning with traditional face to face learning, the so called hybrid or blended, environment as an ideal platform for learning. A checklist of best practices for a successful online course, published by (Bonk and Zhang 2008), included here as an appendix, is a very useful guide for the development and delivery of content.

The reliance of both the learners and instructors on the technology requires that it would be reliable, stable, secure and easy to interface with. While the four most popular Learning Management Systems (LMS), Blackboard, Moodle, Desire2Learn, and Sakai do fairly adequate jobs of providing content delivery, tracking, reporting, and management of students, each have their own performance issues (Campus computing.net October 11, 2013 issue). Of the four dominant platforms, Blackboard has the largest share. Initially Blackboard was considered the LMS of choice, however, due to some corporate issues D2L was adopted at our institution as the LMS for delivery of the online materials. The issue that plagues Blackboard is its rapid growth by acquiring smaller competitors and attempting to integrate them into a unified whole. This approach has led to the development of a system that is very large and resource intensive. Furthermore the interface is not as consistent and as uniform as some other platforms. While the LMS used, D2L, does not have some of the add-ons of the Blackboard, it was created from scratch with specific elements of instructional design influencing the development. One particular challenge, however, was the limitation that the system imposes on the size of the video content. Fortunately the department of computer science described in this study has storage resources that were employed and access was provided by links via D2L to departmental servers.

Finally an important and crucial factor in successful e-learning development and deployment is the quality of the infrastructure. The emphasis an institution puts in supporting and updating the technology for online delivery is a major contributor to the success of these endeavors. Continuous support of the infrastructure and technology is required to be able to deliver the diversity of the content materials that rapidly become available such as, interactive videos, hyper content and multimedia materials.

**Departmental Approach**

To gain firsthand experience, the Department of Computer Science offered two courses during academic year 2013 to implement best practices. An introductory course in programming in C# language, CS 391 was offered exclusively online and an introductory to problem solving course CS 201 in a hybrid format. In the hybrid format students were free to attend the lectures in the regular face-to-face sessions that were offered twice a week or attend the lab that was offered twice a week. While there were some similarities between the two deliveries, there were some stark
differences. The chart below highlights the various components of each course.

<table>
<thead>
<tr>
<th>Practice</th>
<th>CS 391, Intro to Programming</th>
<th>CS 201, Intro to Problem Solving</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td>20 Male, 3 Female, of which 5 were non-CS major, and 2 Drop-outs</td>
<td>8 Male, 8 Female, of which 6 were non-CS major, and 5 Drop-outs</td>
</tr>
<tr>
<td>Weekly Assignment</td>
<td>Posted two weeks in advance</td>
<td>Posted and available from the first week till the end of the course.</td>
</tr>
<tr>
<td>Weekly Quiz</td>
<td>On line quiz available Thursday - Saturday</td>
<td>Required to meet in the lab for quiz</td>
</tr>
<tr>
<td>Weekly Discussions</td>
<td>Two hours a week monitored by the Instructor. Active participation was required</td>
<td>Two hours a week monitored by the instructor</td>
</tr>
<tr>
<td>Lecture Video</td>
<td>Provided by the text book publisher. Supplemented by internet based videos</td>
<td>Created by the instructor specifically for the online. Supplemented by internet based videos</td>
</tr>
<tr>
<td>Content Availability</td>
<td>Three weeks cycle</td>
<td>Available the entire semester</td>
</tr>
<tr>
<td>Assessment</td>
<td>Average of the weekly quizzes, participation in discussions, and submitted codes.</td>
<td>Average of three in-lab and in-class quizzes, and submitted code.</td>
</tr>
<tr>
<td>LMS delivery</td>
<td>Desire 2 Learn</td>
<td>Desire 2 Learn</td>
</tr>
</tbody>
</table>

At the end of the semester the quality of the students’ experience was solicited using a nine item open-ended questionnaire. The questions included items like what they found beneficial, questions regarding practices that did not help, and what helped facilitate their learning. Every question offered an opportunity for students to suggest what they would change.

**What We Learned**

Many of the past research findings were validated by our experience. For example, students in CS 391 were hand picked for their interest in the course and motivation. Their rate of success was much higher than students in CS 201 who were allowed to self select for participation. This validates the notion that students’ motivation is an important factor in success of online delivery. A course designer must plan on employing any and all means available via the technology to increase and maintain students’ participation and engagement. This was further substantiated by the participation rate in the discussion sessions. While both classes had designated discussion times, the weekly discussions were part of the grading scheme for the CS 391 participants. Consequently there was a much higher rate of active participation and interaction among the students and the instructor. Students reported that this forced interaction gave them a sense of engagement and involvement. Students in CS 201 interacted with the instructor only when they had issues or questions. There was no active engagement with other students. The take away for our subsequent course development is that each course would require active participation by means of a discussion board.

Students reported that they preferred the videos that were specifically prepared for the course content by the instructor, but liked the quality of the commercially prepared materials better. This might prove to be one of the more difficult challenges to overcome since some faculties are not comfortable in front of the camera. Based on our experience we are experimenting with asking the individual faculty to prepare the materials but have another individual deliver the material. This ensures involvement of the faculty without the burden of performance in front of the camera. Training of the instructors to take advantage of the functionalities of D2L proved to be without stress. An excellent support is provided in D2L for concurrent
discussion sessions as well as delivery and collection of assignments. Detailed reports can be generated on who, where, and when contents were accessed. These reports were utilized to monitor student activities and progress and provide quick feedback. Students reported finding this feedback very helpful and were appreciative of it. While no complaints were voiced in CS 201 where the feedback was provided once a week, it seems immediate feedback has more effect in helping the learners remain engaged. The functionality of aligning the objectives with the activities also enabled the instructors to ensure mastery of the content. The LMS also reported spotty access to and use of other web content, for instance, videos and lectures placed in the repository. Students reported that they found some of the extra content confusing and not helpful.

Our overall estimation is that the course that was totally delivered online CS 391 was more successful. This is attributed to a couple of main factors that include hand selection of students and high level of engagement. While the former is not always possible for online learning, our intention is to adhere to strict pre-requisite requirements. This may ensure more prepared and interested students that could have positive influence on one another. The other factor was a greater engagement of students with the course due to higher demands for interaction by means of mandatory weekly discussions participation, weekly assignments, and weekly assessment. We plan to make this a standard part of any curriculum developed for online delivery.

**Future Plans**

In an attempt to make a degree in computer science more accessible to both on-campus as well as off-campus learners, the Department of Computer Science at Southern Illinois University plans on delivering the curriculum for obtaining a minor in computer science online. Undergraduate students who are interested in a minor in computer science can complete the entire curriculum online or adopt a hybrid path. Similarly a hybrid model for obtaining a Master’s degree in computer science is being implemented. A master’s degree typically takes two years to complete. The plan is to offer two semesters of the content online and two semesters of the content would be provided face to face. The online content can be accessed from any location. With a focus on the success of students, the best elements from our experiences and the research will be incorporated in the delivery of the online content. These include a more uniform background for students, content developed by an instructor who is directly involved with the course, ensure and sustain high level of interaction between the students instructor, and instructors provide quick feedback and discussion sessions.
References


Bonk, C.J. & Zhang, K., 2008, “Empowering online learning: 100+ activities for reading, reflecting, displaying, & doing”, San Francisco, CA: Jossey-Bass. This work is licensed under the Creative Commons Attribution-Noncommercial-ShareAlike 3.0 Unported License. To view a copy of this license, visit http://creativecommons.org/licenses/by-nc-sa/3.0/.


APPENDIX

Quality Check for Online Courses

**Instructor Interaction:** Course must include regular and substantive interaction primarily initiated by the Instructor.

**Instructor Driven:** Course is NOT largely self-paced.

**Authentication:** Course requires proof of student identity through a secure log-in (ex: Network ID), proctored exams, or other technologies.

**Academic Record:** Course uses a system that documents academic activity to demonstrate regular and substantive interaction.

**ENGAGEMENT**

**Content for Reading & Collecting:** Instructor provides methods to acquire and collect information.

**Activities for Reflection:** Instructor provides multiple methods to reflect on content & concepts.

**Content & Activities for Visual Learning:** Instructor provides methods to display content & concepts.

**Activities for Hands-on Application:** Instructor provides methods to engage with content & concepts.

**Balanced Content & Participation:** Course provides opportunities for student ownership in the learning process.

**COMMUNICATION**

**Pre-Course Communication:** Course clearly communicates to students in advance where and when to log-on.

**Syllabus:** Instructor provides a thorough syllabus including course objectives, schedule, and expectations.

**Learning Objectives:** Instructor clearly communicates the learning objectives in the syllabus.

**Instructor to Class Interaction:** Instructor posts news/announcements on a regular basis.

**Instructor to Student Interaction:** Instructor has provided opportunities and guidelines for students to contact instructor and has set reasonable expectations for response turn-around.

**Student to Student Interaction:** Instructor has built in opportunities for students to interact with each other.

**Guided Learning:** Instructor provides ongoing, regular support to students.

**ASSESSMENT**

**Check Student Learning:** Instructor has incorporated multiple methods to check student learning.

**Feedback:** Instructor has built in methods to provide regular feedback to students.

**COURSE DESIGN**

**Consistency:** Course reflects consistency of design and content location.

**Accessibility:** Course is accessible when using screen readers and other assistive technologies.

**COURSE IMPROVEMENT**

**Student Satisfaction:** Instructor provides opportunities, during the course and at the end, for students to provide feedback about the course and their learning experience.

**Course Review:** Course content is regularly reviewed, especially after revisions and updates, to make sure that the learning objectives still drive the content and instruction.
E-learning Quality Assurance in Course Design: A Proposal from the Distance Education Unit of the European University Cyprus

Dimitrios Vlachopoulos
European University Cyprus

Abstract

The purpose of this research proposal is to describe, analyze and evaluate some quality assurance e-learning design standards in order to provide a measure of quality for the e-learning courses in Higher Education. More analytically, this proposal studies the application of these standards and suggests good practices for their future implementation. The study pretends to describe the situation concerning quality assurance in e-learning, by analyzing the most important quality e-learning design standards and evaluating their application in the postgraduate/undergraduate programs offered by Open Universities of face-to-face universities which offer distance learning courses. As far as the methodology is concerned, since the proposed research focuses on a concrete group population, it is obvious that the best methodological choice is the «case study». The target population is the academic staff, instructors (online tutors) and the students of the distance education master programs. The proposed research is expected to contribute to the literature on quality assurance in Higher and Distance Education and to provide to Open Universities and face-to-face Universities, which offer distance learning courses an accredited framework for the quality assurance of their programs. In this regard, the proposed framework will have the potential of leading further research in the field as it can be practiced by other researchers to conduct further studies about the application of e-learning quality design standards in Higher Education. In addition, it can be also revised to be used for the study of the differences and similarities among the different application environments. Thus, this framework will have the potential of being improved and extended with the contributions of other scholars in time.

Keywords: e-learning; distance learning; quality assurance design standards; Higher Education; European University Cyprus

State of the Art and Reasons for Further Research

In times of general economic crisis and insecurity, and in order to develop international competitiveness, most countries are accelerating their Higher Education reformation faster than ever before. The main objective of this reformation is that the tertiary education institutions should create new knowledge, help the private sector to grow and nurture talented people that can meet the demands of the companies and the competitiveness of the market system (Dae-Joon et al. 2006). To this end, universities are embracing globalization and cooperation in educational research (De Young, 2010). During this process and with the development of Information and Communication Technologies (ICT), Higher Education programs are expanding, and a wider international cooperation and interchange between countries is observed (Baker & Letendre, 2005). Moreover, during the last ten years technology coupled with the increasingly frequent use of the Internet and has become the forefront of academia.

As a result, e-learning has been gaining a respected position in the so-called European Higher Education Area (EHEA) with a wide offer of programs (Grifoll et al., 2009). In
In this context, the main problem that arises is how to control and monitor these increasing programs and guarantee their quality in a reliable manner. In addition, the assurance and enhancement of a rapidly growing number of e-learning courses in campus-based universities has increasingly become a concern for Higher Education practitioners and policy makers. There are many publications about the appropriateness for assuring e-learning provisions of the existing internal quality assurance procedures in place in campus-based institutions. The literature (Jara & Mellar, 2010) largely supports the view that these procedures require some modification if they are to be applied to e-learning courses, and this position is based on the identification of distinctive features of e-learning courses which distinguish them from face-to-face and traditional distance learning courses. The independent quality assurance agencies, founded in most advanced countries, have tried to face the above situation and to establish criteria and standards to assure the quality of these programs.

More analytically, the different European University Quality Assurance Agencies have adapted the European Standards and Guidelines in the EHEA according to the e-learning specific characteristics, in order to assess and accredit the e-learning programs. After studying the publications of different Agencies on quality assurance in higher education (Catalan university Quality Assurance Agency (AQU), 2011; European Association for Quality Assurance in Higher Education (ENQA), 2005; Swedish National Agency for Higher Education (HSV), 2008; Quality Assurance Agency (QAA), 2004), we distinguish three basic principles to take into consideration on the consistency of these standards for e-learning (Grifoll et al., 2009): The first one declares that Higher Education institutes that offer e-learning have the primary responsibility for the quality of their programs. The second one states that society is interested in safeguarding the quality and standards of the e-learning programs, while the third one points out that the quality of academic programs needs to be developed and improved across the EHEA.

Taking into consideration these three main principles, Open Higher Education institutions and campus-based universities, which offer distance learning programs, have established some quality design standards to guarantee the quality of their programs and to serve the needs of their users. These quality assurance standards can be directed and shared by all institutions that offer distance learning programs. After studying various official documents and researches about quality assurance standards for e-learning (Pawlowski, 2007; Penn State University, 2008; Frydenberg, 2002; Stracke, 2009; Barker, 2002; ISO 19796, 2006; Ruth, Sammons & Poulin, 2007; Council for Higher Education and Accreditation, 2002; Chao, Saj & Tessier, 2006; Bourne & Moore, 2003; Shelton, 2011; Benson, 2003; Chaney et al., 2009; Haroff & Valentine, 2006; Lee & Dziuban, 2002; Lockhart & Lacy, 2002; Lorenzo & Moore, 2002; Sloan consortium, 2009; Yang & Cormelious, 2005; Jung, 2010; Jung & Latchem, 2007; Jung, 2005) we have identified eight main e-learning quality design standards.

a) **Navigation and technological requirements**

Study, on the one hand, whether the online programs have a consistent and intuitive navigation system enabling students to quickly locate course information and materials; on the other hand, analyze the adequacy of the hardware, software or other resources needed/used for the course delivery, as well as the incorporation of assistive technology.

b) **Student orientation**

Analyze the quality and characteristics of the orientation provided to the students (if any) in order to familiarize them with the courses.
c) Course syllabus and content distribution
Analyze if students have easy access to the course syllabus which contains fundamental information about the courses and their requirements prior to starting. After this, the structure of the courses will be evaluated according to the predominant pedagogical principles and the distribution of contents according to the ECTS units of each course.

d) Adequacy of the learning materials
Analyze the adequacy, accessibility, volume and utilization of instructional resources, according to the courses characteristics and objectives and the students’ needs.

e) Instructors’ training and performance
Identify and analyze the instructors’ training and its adequacy in relation to the e-learning characteristics. Analyze their performance according to the predominant principles of open and distance education.

f) Learning goals
Analyze the learning goals of the courses in relation to the ECTS distribution. Evaluate their adequacy in relation with the course contents and analyze the way they are presented to the students.

g) Learning activities and evaluation system
Analyze whether the proposed learning activities and assessment serve to stimulate student interactions with the course content and determine how student performance achieves the course goals and learning objectives. Examine the adequacy of the evaluation system in relation to the e-learning idiosyncrasy.

h) Input opportunities for improvement
Examine whether opportunities are provided to gather input from the participants of the course (students and instructors/tutors) on an on-going basis in order to inform course improvements. Identify whether there exists an ongoing monitoring process of the courses. Promote exchange and collaboration between the participants.

Research Purpose and Objectives
The purpose of this research is to describe, analyze and evaluate the above mentioned quality assurance e-learning design standards in order to provide a measure of quality for the e-learning courses in Higher Education. More analytically, this research studies the application of these standards and suggests good practices for their future implementation. In other words, it aims to describe the situation concerning quality assurance in e-learning, by analyzing the most important e-learning quality design standards. To provide a more concrete and real-life evaluation, the proposed research will examine the application of the most important e-learning quality design standards in case-studies, in different tertiary education institutions. The specific research objectives that derive from the main purpose of the research are the following:

- Identify and characterize the concepts of “quality” and “quality in e-learning” and compare the findings with the situation in face-to-face university.
- Describe and analyze the application of the main quality assurance design standards for e-learning in a study-case.
- Identify the positive and the negative elements of each course from a pedagogical perspective and according to the main principles of e-learning.
- Incorporate new strategies, instruments and methodologies for the quality assurance in e-learning.
- Extend the research proposal and findings to other universities and/or educational communities.

The consecution of the above objectives can be concreted to the following resources and products:

- Comparative concept map on “quality” in e-learning and face-to-face education.

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- Compilation and analysis of good practices in e-learning.
- Creation of instructional material for a new course “Open and Distance Learning”, necessary for both students and instructors to understand the idiosyncrasy of distance education.
- Manual for the training and preparation of the online instructors and the academic staff of the institution (case study).
- Creation of a concrete framework for the quality assurance in e-learning applicable in the institution (case study).

More analytically, at a minimum, these quality assurance e-learning design standards must be examined in three master degree and/or undergraduate programs. The study will be realized in collaboration with the academic coordinators of the programs and the online tutors of each course. After this first study, a manual of good practices will be published with recommendations for improving the quality of the courses in order to be shared by other face-to-face universities, which offer e-learning programs or even by other Open Universities. Special emphasis will be given to the creation of an introductory course with title “Open and Distance Education”, which can serve for both students and instructors as an additional resource for understanding how e-learning courses should be designed and delivered according to the principles and philosophy of Open and Distance Education. In this context, the publication of this instructional material is planned in order to be used as a manual for the instructors and the students. Finally, a workshop will be organized at the end of the research, with the participation of the academic community and undergraduate/graduate students, where the results of the research will be presented and feedback will be given on the continuation of the quality assurance program of the institution (case study).

The present research proposal, by nature, is not restricted to the boundaries of a single scientific discipline, since e-learning is interdisciplinary. In this context, interdisciplinary requires an open dialogue and collaboration among experts and scientists, who relate their different perceptions of reality and perspectives in interaction; in our case collaboration between academics in Pedagogy, Psychology, Accounting, Economics, Human Resources, Marketing, etc. More concretely, since the pedagogical perspective of the project constitutes its «fundamental» part, it opens the project to multi- and interdisciplinary aspects with education/pedagogy, such as: instructional design, educational assessment and evaluation, educational management, teaching and learning strategies, etc. The importance of the use of Information and Communication Technology in distance education teaching and learning environments builds also a cross-connection with technology and informatics. Another multi- and interdisciplinary aspect is given by the connection with psychology and communication, particularly in the contexts of student orientation, teachers’ training and monitoring, input opportunities for improvement, etc.

**Methodological Approach for Each Objective**

The methodological approach for each research objective is explained below:

**Objective 1:** Identify and characterize the concepts of “quality” and “quality in e-learning” and compare the findings with the situation in face-to-face university.

Literature review in books, scientific journals, reports and policy documents, published after 2005. The main instruments used are check lists (to be developed within the project), bibliography lists of written works on the same topic (quality and quality in e-learning), preparation of a concept map, which permits the comparison between face-to-face and distance education. A report will be prepared for this objective.
Objective 2: Describe and analyze the application of the main quality assurance design standards for e-learning in the distance learning courses at tertiary education institution (case study).

1. Navigation and technological requirements

Interviews with the educational technology staff of the university, the academic coordinator of each program and the adjunct lecturers. Survey sent to the students about their satisfaction concerning navigation and technological requirements. Triangulation of the data collected and preparation of a report about the application of this standard.

2. Student orientation

Literature review about student orientation in e-learning context. Organization of 6 (virtual) focus groups (two for each program), with the participation of the academic coordinator of each program, two-three adjunct lecturers and a small group (3-4) of students. Triangulation of the data collected and preparation of a report about the application of this standard.

3. Course syllabus and content distribution

Literature review on how syllabus and content distribution of e-learning courses has to be developed and delivered to the students. Interviews with the adjunct lecturers and the academic coordinator (same interview for standard 1) and satisfaction online survey sent to the students (one same survey will be sent to cover the application of standards 1+ 3). Triangulation of the data collected and preparation of a report about the application of this standard.

4. Instructors training and performance

Study on the “digital profile” of the instructors, with online surveys sent to all the adjunct lecturers and interviews (online and face-to-face) with part of the total population in order to gather more detailed information about their performance, digital competences and perceptions. Comparison of the results obtained with similar research in European Higher Education. Preparation of a report about the application of this standard.

5. Adequacy of the learning materials

Literature review on the characteristics of the learning materials in the distance education context. Every online tutor should fill in a specific answer sheet evaluating the learning materials used in his/her course. Their evaluation will be discussed by the academic coordinator (interview). Triangulation of the information gathered with the literature review and preparation of a report about the application of this quality standard.

6. Learning goals

Study of similar research (literature review) concerning the adequate establishment of the learning goals in distance education and the distribution of the students’ workload to ECTS. 2 virtual focus groups with the participation of academic staff and students. Preparation of a report about the application of this standard.

7. Learning activities and evaluation system

Study of the theoretical framework of how to design and evaluate learning activities in distance education. Online survey sent to all students about their satisfaction and their proposals for improvement. Evaluate the results of the survey with the academic staff and the coordinator of each program (focus group). Preparation of a report about the application of this standard.

8. Input opportunities for improvement

Creation of the theoretical framework about the importance of having input opportunities for the courses improvement. Establishment of new communication canals with the use of Information and Communication Technologies and Internet (blogs, wikis, forum, etc.) for the participants (students, academics) exchange on this issue. Pilot application of these canals and preliminary
evaluation. Preparation of a report about the application of this standard.

After the study of the application of the above quality standards, a validation of the research model used and the preliminary results will be realized in order to guarantee that all scientific protocols and norms have been followed. The preparation and validation of the data collection instruments count with the collaboration of 2 permanent academic staff of the European University Cyprus, specialized in educational methodology, 1 internal quality manager and the consulting of the president of the Evaluation Council of the Education System of the Catalan government (Spain), Dr. Joan Mateo, Professor of Research Methods and Diagnosis in Education at the University of Barcelona.

Objective 3: Identify the positive and the negative elements of each course from a pedagogical perspective and according to the main principles of e-learning.

Set up, analogue to the decision tree in benefit-costs analysis, of a comparison tree, encompassing the elements to be compared (positive and negative aspects of each course). A report will be prepared for this objective.

Objective 4: Incorporate new strategies, instruments and methodologies for the quality assurance in e-learning.

Use of the Dephi method (panel of experts). At least a 4 round survey will be sent to a group of experts in this field (quality assurance) until they arrive to a final «consensus». The first survey will have as starting point the results and information collected in the reports created for objectives 1, 2 and 3. A report will be prepared for this objective.

Objective 5: Extend the research proposal and findings to other universities and/or educational communities.

Public presentation and reaction to feedback of findings and conclusions. Active participation and/or co-organisation of conferences and workshops, publication in peer reviewed scientific journals, web dissemination of results to the measures proposed as explained below (dissemination plan). A report will be prepared for this objective.

The Instrument: Evaluation Rubric

The Distance Education Unit of the European University Cyprus has established the following evaluation instrument (evaluation rubric) for the evaluation of the e-learning course design standards mentioned above. The importance of each standard can be adapted to the needs and the characteristics of the distance learning programs and/or the Institution which hosts these programs.

<table>
<thead>
<tr>
<th>e-learning course design standard</th>
<th>% in total evaluation</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Navigation and technological requirements</td>
<td>15%</td>
<td>The course doesn’t provide accessible technologies. The course design doesn’t accommodate the use of assistive technologies. Students cannot easily access the technologies required in the course. The course technologies are dated and not user friendly.</td>
<td>Accessible technologies are provided but not user friendly. Limited possibility for incorporating assistive technology. Most of the technological tools are not current.</td>
<td>Most parts of the course course provide accessible technologies &amp; guidance for the navigation. The course design accommodates the use of assistive technologies. Students can access the technologies required. Most of them are current.</td>
<td>The course provides accessible technologies &amp; guidance for the navigation. The course design accommodates the use of assistive technologies. Students can easily access the technologies required in the course. The course technologies are current.</td>
</tr>
<tr>
<td>e-learning course design standard</td>
<td>% in total evaluation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>----------------------------------</td>
<td>-----------------------</td>
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<td>---</td>
</tr>
<tr>
<td>Student orientation</td>
<td>15%</td>
<td>No instructions are given to make clear how to get started &amp; where to find the main course components. Students are not introduced to the purpose, structure and functioning of the course. Course and institutional policies with which the student are not (clearly) stated. Minimum technical &amp; academic skills expected of the student are not clearly stated.</td>
<td>It is not clear to the students how to get started and which are the main components of the course even though some instructions are given. Minimum technical or academic requirements are not clear to the students. Some policies are mentioned but not in a systematic way</td>
<td>There are some instructions about how to get started and some details about the requirements of the course. The institutional policies are stated. Students are introduced to the purpose, structure and functioning of the course. Even there is sufficient info on this standard, systematization is needed.</td>
<td>Instructions are given to make clear how to get started &amp; where to find the main course components/ parts. Students are introduced to the purpose, structure and functioning of the course. Course and institutional policies with which the student is expected to comply are clearly stated. Minimum technical &amp; academic skills expected of the student are clearly stated.</td>
</tr>
<tr>
<td>Course syllabus and content distribution</td>
<td>10%</td>
<td>The course doesn’t have a syllabus developed according to the criteria established by the University. The necessary info is not provided. The content distribution within the syllabus is not coherent.</td>
<td>The syllabus of the course has some important limitations. Some important info about the course are not provided in the syllabus. The distribution of the course is correct but some parts need revision.</td>
<td>The syllabus is developed according to the criteria established by the University. The syllabus contains almost all necessary information about the course. The content distribution within the syllabus is coherent with some minor parts that need reconsideration.</td>
<td>There is a fully developed syllabus according to the criteria established by the University. The syllabus contains all necessary information about the course. The content distribution within the syllabus is coherent.</td>
</tr>
<tr>
<td>Adequacy of the learning materials</td>
<td>15%</td>
<td>The instructional materials are dated &amp; do not contribute to the achievement of the course’s learning outcomes. The resources &amp; materials used in the course are not appropriately cited. The materials are not designed according to the characteristics of distance education.</td>
<td>Some materials are dated &amp; need to be replaced. Many resources &amp; materials used in the course are not appropriately cited. Important part of the materials are not designed according to the characteristics of distance education</td>
<td>Most of instructional materials are current &amp; contribute to the achievement of the course’s learning outcomes. All resources &amp; materials used in the course are appropriately cited. They present a variety of perspectives on the course content. Most of them are designed according to the characteristics of distance education.</td>
<td>The instructional materials are current &amp; contribute to the achievement of the course’s learning outcomes. All resources &amp; materials used in the course are appropriately cited. They present a variety of perspectives on the course content. The materials are designed according to the characteristics of distance education.</td>
</tr>
<tr>
<td>Instructors’ training &amp; performance</td>
<td>15%</td>
<td>The instructor doesn’t have the necessary knowledge and experience in distance education. The instructor hasn’t opened/explained the necessary communication paths with the</td>
<td>Instructor’s knowledge &amp; experience in distance education need reinforcement. Some more communication paths need to open to ensure the necessary interaction and collaboration</td>
<td>Instructor’s knowledge &amp; experience is sufficient for a productive performance. The instructor has opened some important communication paths with the students to achieve interaction and collaboration</td>
<td>The instructor has the necessary knowledge and experience in distance education. The instructor has opened the necessary communication paths with the students to achieve interaction and collaboration within the course. The instructor’s plan</td>
</tr>
<tr>
<td>e-learning course design standard</td>
<td>% in total evaluation</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td>students to achieve interaction and collaboration within the course. The instructor’s plan for classroom response time and feedback on assignments is not stated.</td>
<td></td>
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<tr>
<td><strong>Learning goals</strong> (Objectives &amp; Competences)</td>
<td>10%</td>
<td>The learning objectives are not appropriately designed for the level of the course. The course’s learning objectives describe outcomes that are not measurable and/or consistent with level of the course. All learning objectives are not stated &amp; written from the students’ perspective.</td>
<td>Some learning objectives need to be adapted to the course level. Some of the learning objectives describe outcomes that are not measurable and/or consistent with level of the course. Some learning objectives are not stated &amp; written from the students’ perspective.</td>
<td>The learning objectives are appropriately designed for the level of the course with few exceptions. The course’s learning objectives describe outcomes that are measurable and consistent with level of the course. Few learning objectives are not stated clearly and/or are not written from the students’ perspective.</td>
<td>The learning objectives are appropriately designed for the level of the course. The course’s learning objectives describe outcomes that are measurable and consistent with level of the course. All learning objectives are stated clearly and written from the students’ perspective.</td>
</tr>
<tr>
<td><strong>Learning activities &amp; evaluation system</strong></td>
<td>15%</td>
<td>The types of learning tasks proposed in the course do not measure successfully the stated learning objectives &amp; are not consistent with course activities &amp; resources. The evaluation policy is not explained. The evaluation tools are not appropriate to the student work being assessed. The learning activities and the evaluation system does not give students’ opportunities to measure their own learning progress &amp; the development of competences.</td>
<td>The types of learning tasks proposed need to be more consistent with course activities &amp; resources. The evaluation policy is not clearly explained. Not all evaluation tools are sequenced, varied, and appropriate to the student work being assessed. The learning activities and the evaluation system has to give students’ more opportunities to measure their own learning progress &amp; development of competences.</td>
<td>The types of learning tasks proposed in the course sufficiently measure the stated learning objectives &amp; are consistent with course activities &amp; resources. The evaluation policy is explained, with minor issues for improvement. Almost all evaluation tools are sequenced, varied, and appropriate to the student work being assessed. The learning activities and the evaluation system gives students’ opportunities to measure their own learning progress &amp; development of competences.</td>
<td>The types of learning tasks proposed in the course measure the stated learning objectives &amp; are consistent with course activities &amp; resources. The evaluation policy is clearly explained. The evaluation tools are sequenced, varied, and appropriate to the student work being assessed. The learning activities and the evaluation system gives students’ multiple opportunities to measure their own learning progress &amp; development of competences.</td>
</tr>
<tr>
<td>Input opportunities for improvement</td>
<td>5%</td>
<td>The course does not offer opportunities to the students to express their opinion about the course design and the instructor’s performance. Students</td>
<td>More opportunities need to be offered to both instructors and student to express their opinion and propose changes for the</td>
<td>Even though the participants of the course are invited to express their opinion and to evaluate the effectiveness of the course, systematization of the process is needed to</td>
<td>The course offers multiple opportunities to the students to express their opinion about the course design and the instructor’s performance. Students &amp;</td>
</tr>
<tr>
<td>e-learning course design standard</td>
<td>% in total evaluation</td>
<td>1</td>
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<td></td>
<td>instructors are not asked to evaluate the course. They are not invited to propose changes for its improvement.</td>
<td>improvement of the course.</td>
<td>get the necessary results.</td>
<td>instructors are asked to evaluate the course every semester and to propose changes for its improvement.</td>
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</table>

It is obvious that the above criteria do not cover all aspects of e-learning course design and teaching, but we believe that the evaluation rubric includes all main aspects that need to be considered when evaluating a distance learning course. The Distance Education Unit has established a minimum average of 2.7 points (out of 4) for a course to get a successful evaluation. In any case, after the evaluation process the instructor and the academic coordinator of the program will get detailed feedback and proposals for improvement.

Originality, Timeliness and Innovative Nature of the Project

The proposed research will contribute to the literature on quality assurance in European Higher and Distance Education.

First, as mentioned before, previous researches on this topic have mentioned lack of complete studies on quality in Open Universities and even more in campus-based universities that offer distance learning programs. Within the scope of this study an extensive theoretical framework of how to measure the «quality» in distance learning programs will be designed and shared by other interested Higher Education institutions. The application of this designed theoretical framework in other settings (case studies) can lead to its improvement and, as a consequence, to the creation of a complete and recognized, in international level, evaluation model for assuring quality in distance education. In this regard, the proposed framework will have the potential of leading further research in the field. In other words, it can be practiced by other researchers to conduct further studies about the application of e-learning quality design standards in Higher Education. In addition, it can be also revised to be used for the study of the differences and similarities among the different application environments. Thus, this framework will have the potential of being improved and extended with the contributions of other scholars in time.

Second, this study is planning to provide the scientific community with an overall picture on academics’ beliefs, competences and perceptions regarding the design and delivery of distance learning programs 2.4-2.8). In literature (literature review for objective 2.4), there are studies measuring academics’ beliefs and competences, which can be collected and used to compare the overall situation with the proposed case study research. So, this project will make an important contribution to the literature by presenting the overall picture on this topic and by providing the scientific community with a survey (mentioned in objective 2.4) that will be a more complete and improved version of the existing ones and can be used from now for the study of the academics beliefs, perceptions and digital profile in distance education context. The result will be shared throughout the universities by means of different dissemination activities, such as international conferences, workshops and publications.

Finally, this research is original and innovative in the sense that it will implement a case study in an area that, according to the literature, needs further research. To conduct the case study, a series of data collection instruments will be developed. This study will create a concept map that will present the standards used for
the quality assurance in distance education in comparison with face-to-face education. A manual of good practices in e-learning will be published to facilitate academics’ and instructional designers’ work in different Higher Education institutions. The creation of instructional material about «Open and Distance Education», will help students and academics to better understand the philosophy of distance education and to follow its principles. Moreover, a manual for the preparation of the academic staff - which doesn’t have or has little previous experience in distance learning- that is going to act as online tutor will be published by and will be shared by other interested tertiary education institutions. And of course, the final product of this research, a complete theoretical framework and model for assuring quality in distance education will be designed and offered to other universities.
References


of the ASEM Lifelong Learning Conference: e-Learning and Workplace Learning, Bangkok (Thailand).


Determining Accessibility in e-Learning

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Abstract

E-learning for about a decade ago it seems to be emerging as the dominant model of learning but questions are being raised about the trade-offs in switching from traditional classroom based learning to e-learning; for example, e-learning is cost effective, round the clock accessible and convenient but there are questions raised about its quality and effectiveness. E-learning or over classroom learning has a number of benefits and universal accessibility is the most common one.

Universal and unbiased accessibility is the key to success of e-learning services. Unless these are accessible to all, global adoption of e-learning model might not occur. However, researchers have found it extremely difficult to determine what constitutes accessibility in the context of e-learning. One of the most significant issues has been an excessive focus on technical aspects of accessibility while ignoring the other social, contextual aspects which influence accessibility to the same extent. For example, WCAG (Web Content Accessibility Guideline) is produced by the W3C only targets the technical aspects of accessibility but it ignores the other aspects of accessibility.

Accessibility has always been the focus of policy makers as they struggle to improve accessibility of e-services to poor and deprived. Inequality of access has improved significantly in developed countries like the US and UK, but the situation remains concerning in developing countries. While access and accessibility to e-learning has been discussed very widely but none of the past researches has actually attempted to define accessibility in e-learning. Without knowing what comprises accessibility it is extremely difficult to improve accessibility.

In terms of research none of the previous researches have provided a comprehensive definition of the term accessibility. As a result, there has been no comprehensive accessibility framework which can help to improve accessibility of e-learning service. This is critical not only in developing nations but also developed nations because failure to develop such a framework will lead to a biased learning system, one against the principles of e-learning.

One of the problems in e-learning is reduced focus on pedagogy and social interaction while increased focus on technicalities and development of the content. In technical aspects it has improved accessibility to content, both in terms of availability and volume, but at the same time, it has also reduced accessibility to learning, in emotional perspective. Looking at the social perspective also e-learning has a mixed effect. On one hand, it allows interaction with a global base of learners while at the other hand; these interactions may not be emotionally as satisfying as the face to face interaction.

Keywords: E-learning, accessibility, accessibility framework, universal access.

Introduction

Universal and unbiased accessibility is the key to success of e-learning services. Unless these are accessible to all, global adoption of e-learning model might not occur. However, researchers have found it extremely difficult to determine what constitutes accessibility in the context of e-
learning. One of the most significant issues has been an excessive focus on technical aspects of accessibility while ignoring the other social, contextual aspects which influence accessibility to the same extent. For example, WCAG (Web Content Accessibility Guideline) is produced by the W3C aspect of accessibility but it ignores the other aspects of accessibility.

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This research is a qualitative research based on secondary sources. There has been no comprehensive definition of accessibility to e-learning; however, researchers in other areas of e-services such as e-health and e-governance have attempted to define accessibility. Researching on these papers has provided a valuable insight into what should constitute accessibility in context of e-learning. Based on systematic literature review of researches from different e-services, this paper attempts to provide a holistic definition of the term ‘accessibility’ in context of e-learning. Papers from top ranking journals on e-learning, e-health and e-governance were reviewed to identify two aspects- different dimensions of accessibility and different stakeholders in e-learning. In identifying different stakeholders, needs and expectations of these groups of stakeholders were identified and this is used to present an accessibility framework for e-learning.

**Literature Review**

**Need to Define Accessibility:**

Definition of accessibility is very vital for it is flexible and broad concept. The main strengths of accessibility are based on the flexibility and breadth. The same breadth and flexibility makes the concept of accessibility complex and confusing. Argyropoulos, Sideridis & Katsoulis, (2008) has described accessibility as a ‘slippery’ concept. There are two viewpoints that are used to examine the accessibility, and they include origin (that of the individual) and destination (that of the service provider).

Defining accessibility is critical for without it providing services would be a waste of effort and money. It is so because by defining accessibility we can determine accessibility which, in turn, would ensure that intended beneficiaries are able to use the service that the provider is providing. This is particularly relevant in cases where there is a gap between the available and required skills and resources. In many developing countries, individuals lack the
skills of using internet or are restricted by other problems such as poor infrastructure and lack of resources which restricts their ability to access e-services. Identifying what aspects are essential to ensure accessibility would thus help the providers and policy makers take concrete steps towards not only providing the service but making it accessible.

According to Argyropoulos, Sideridis & Katsoulis (2008) accessibility can be defined as people’s ability to access services at reasonable, cost, delay and ease. There are three dimensions to this definition-time, cost and convenience. Going by this definition accessibility in e-learning can be defined as individuals' ability to access e-learning sources instantly with minimum investment of cost and effort. A more detailed definition was provided by Harding, Blaine, Whelley & Chang (2006), who defined accessibility as the ability to reach desired opportunities (such as goods, services, activities and destinations). This includes several aspects such as information availability, affordability, convenience and comfort, security and prestige. This definition is more elaborate but is too broad and general to be utilized for e-learning.

**Accessibility in e-services**

In terms of e-services accessibility has mainly been discussed in the context of e-health. Access, in the context of healthcare, can have different meanings and interpretations; it can be considered as a noun referring to potential for healthcare use or as a verb referring to the act of using or receiving healthcare (Fichten, Nguyen, Barile & Asuncion, 2007). This leads to confusion in defining accessibility as it could mean ability to access e-service and act of seeking e-service. For example, according to Harding, Blaine, Whelley & Chang (2006) the term ‘access’ is commonly used in two ways: Firstly, Having access symbolizes the potential to utilize a service if required. In other words, having access would mean that the service is available and it is possible to utilize the service as and when required. This means everything including the service and the mechanism to utilize the service is in place. Secondly, Gaining access indicates the process of admission into the processes of utilizing the service. In this respect, access is an entry into utilization.

Similarly, Kamei-Hannan (2008) defined access to healthcare as “the actual use of personal health services and everything that facilitates or impedes the use of personal health services.” This definition consists of two components “the use of health services” and “everything that facilitates or impedes the use.” Some researchers normally try to link accessibility with other characteristics of the users such as education, socio-economic status, age, family income, attitude towards service accessed etc. (Fichten et al., 2007).

According to Guagliardo (2004) it is easier to understand the concept of access if broken down into its stages and dimensions. The first stage is the “potential for delivery” in which there coexists the population which needs the service and the service delivery system itself. The next stage of delivery is actual “realization” stage in which the user overcomes all barriers to utilization of service and the provider overcomes all barriers to providing the service (Guagliardo, 2004).

In general access in context of healthcare has been defined as the process of seeking and receiving care (Kamei-Hannan, 2008). Similarly, Peters et al. (2008) define it as “the timely use of service according to need.” These are the user side definitions and assume that the service is available for use. However, in several cases the provider also finds it difficult to provide the service and hence it is essential to consider both user and provider end of the term.

In e-health research, access is “often conceptualized in survey-based research as whether respondents had unmet medical needs, experienced delays in getting medical care, had a usual source of care, number of
time one visits the physician: in analyses that use administrative data, access or lack of access is often characterized as rates of avoidable hospitalizations or ambulatory care sensitive conditions” (Hall et. al., 2008, p. 626).

According to Gulliford et. al. (2001) facilitation of access involves assisting individuals in commanding and employing the best of health care resource which improves and preserves one's health. In a study conducted for NCCSDO, Gulliford et. al. (2001) highlights 4 aspects of access to healthcare:

- If there is an adequate supply of health care then the population may have access to healthcare.
- Actual utilization of healthcare depends not only on their availability but also on several other financial, organizational, social or cultural factors which can act as either facilitators or barriers to utilization of healthcare services. The overall utilization can be said to be affected by affordability; physical accessibility and acceptability of services and the mere availability of healthcare services may not be adequate. In the context of Saudi Arabia, factors such as knowledge and awareness may also affect people's utilization of healthcare.
- The available services are very vital and effective in case the population is for gaining accessibility to the health outcome satisfactory.
- Services availability and utilization barrier should be evaluated based on the differing perspective concept, the material and health needs and diverse group in the society cultural settings.

While Gulliford et. al. (2001) definition recognizes that access is dependent on several factors but it does not provide any definitive view on which factors could affect access. In this respect, this is an indicative definition only. Access is a multifaceted concept, but it is mostly identified as a quality of service dimension.

Kamei-Hannan (2008), proposed the following four dimensions of accessibility to healthcare:

1) Overall accessibility: This refers to the ability of the patient to register with a new provider.
2) Contact accessibility: This refers to patient’s ability to contact the provider through phone/mail.
3) Appointment accessibility: This refers to the ability of the patient to get an appointment to see a provider.
4) Geographic accessibility: This refers to the proximity of the healthcare provider, both in terms of distance and travel time.

McGuire Scott & Shaw (2003) definition focuses mainly on supply side while not paying enough attention to the demand side which is quite significant. Similar to Hall et. al. (2008), Pechansky and Thomas (1981) suggested that the concept of access describes the ‘degree of fit’ between clients and the service system. They identified five relevant dimensions to the client–service interaction.

- Acceptability refers to attitudes and beliefs of users and providers about each other’s characteristics.
- Affordability applies to the cost implications to the client in relation to need; this includes both direct and indirect costs and perceptions of value.
- Availability refers to the adequacy of supply given by the relationship between volume and type of services (provision) and volume and type of needs (demand).
- Physical accessibility is defined by the suitability of the location of the service in relation to the location and mobility of the client (geographical and physical barriers).
- Accommodation is used to mean how services are organized based on the client’s needs and his perception of their appropriateness (opening times, booking facilities, waiting times).
Pechansky and Thomas’s conceptualization of access are helpful because it identifies different dimensions of the client–provider relationship, and it is not concerned only with entry or utilization of services. The most vital and important point on the definition is that it is not contextual and hence universally applicable.

**Access to e-learning**

There has been some work towards defining access in the context of e-learning. Tenopir (2004) defined access to scholarly content as: “includes many publication and distribution schemes. E-journals that are published, distributed electronically, and subsidized by universities, government agencies, and volunteer organizations are the most common. In addition, collections of separate articles or research reports could fit the definition, including e-print servers such as arXiv.org, institutional repositories, and author web pages” (p. 33). Crawford (2005b) categorized access to scholarly content as “green” model and “gold” model. In green model access is allowed in a restricted manner and only through certain channels while in gold model immediate and unrestricted access is permitted to all the published content.

An increasing number of publications are now seeking to provide free and open access to all the content they have published (Kamei-Hannan, 2008). Tomasevski (2001) proposed “4-A Framework of the Human Rights Obligations” which emphasize rights to as well as rights in education and include ‘availability,’ ‘accessibility,’ ‘acceptability,’ and ‘adaptability.’ Under the ‘Right to Education,’ access can be defined in terms of the availability of schools and teachers. Based on the “right to education” accesses is referenced as a administration barrier, legal and administration elimination that includes obstacle to access like fees, schedule and distance and in addition the discriminatory means as denial of service. This means that for one to get education right there should be availability of major infrastructures and free of accessibility obstacles. It means they are not enough to maintain on the obligation of a human right hence education should be based on the adaptable and acceptable community and individual perceptions.

Under ‘Rights in Education,’ Burgstahler, Corrigan & McCarter (2005), helps us define access in terms of acceptability by parents and their children, as well as adults, of education characteristics including: meeting minimum standards for quality, safety and environmental health; using an acceptable language of instruction; educating in a matter that is free of censorship; and educating in ways that respect the rights of learners of all ages. In addition to this right of education is the adaptability of the 4th A, from this perspective one is able to define the access based on the obligation terms of adaptability to the unique culture and needs within a wide range of constituents like indigenous people, minorities, workers, migrants and people with disabilities.

Burgstahler, Corrigan & McCarter (2005) suggests some critical actions for improving accessibility as is through administration and legal barriers, obstacles, financial obstacles and discriminatory denial of services.

**Research Methodology**

Accessibility in e-learning is an essential aspect in success of e-learning. However, it has not been defined clearly or the existing definitions are too restricted in context of a particular user group. For this reason, this research aims to bring together the concept of accessibility in other e-services with the limited definitions of accessibility in e-learning in order to provide a useful definition of the term ‘accessibility’ in context of e-learning.

This research is primarily a secondary research which involves a review of the existing literature on the subject of accessibility in e-services. The methodology involved an extensive literature review on
the content derived by others which included the idea of accessibility as an important feature in e-learning.

In order to cover the methodological approach provided it adopted few technical parameters for the performance of the study. For extensive analysis of the literature review various information sources were looked at to provide complimentary information.

The desk research was very important in this paper for it contributed in search of information that was necessary in developing the research insight. Generally the whole of desk research was done through detailed analysis of the main bibliographical resources, news, specialized blogs, information, news and online opinion that were relevant within then topic of study.

Existing papers were used to identify the critical aspects of the term. The aim was to compile the papers together so as to identify salient aspects of the term and bring those together in one definition.

**Results**

The review of existing literature revealed several aspects which could be included in e-learning accessibility.

Need to define accessibility: A lot of money is being invested in e-learning initiatives around the world. E-learning has several benefits over classroom learning especially in regard to amount of information available as well as cost of accessing this information. E-learning puts users in control – they can choose what to access and how to access it. The problem is that large proportions of users, especially in the developing nations, are new to the idea of e-learning and hence are not able access this content.

When we talk about making online information more accessible, the focus is mostly on technical aspects and on physically disabled users such as visually impaired individuals. However, a large proportion of individuals are those who are intellectually disabled i.e. they do not know how to access the wide range of resources available online. In developed nations such as UK and US, e-learning is adopted as a parallel mode of teaching from very early stages and hence individuals are intellectually capable to using online content. However, in developing nations, this remains a challenge as classroom instruction method is a dominant method while e-learning is being used only at higher education institutions.

The key benefit of e-learning is developing the individuals into independent learner by making them capable of knowledge self-construction. Thus, instructor mode of e-learning is not suitable and individuals need to be able to access and utilize online content more independently. This can only be done by making online-content more accessible. This highlights several aspects of accessibility.

Diversity of learners: There are a strong diversity in the characteristics and preferences of e-learners. Different individuals may face different kinds of barriers in accessing online content. Physically disabled users may face inability to operate e-learning systems- for example; visually impaired individuals may find it difficult to view information online. Technologically disabled users are restricted by technological limitations. For example, many individuals in developing nations do not have access to computer systems or high speed internet connections. This is mainly linked with infrastructure and systems. A large proportion of individuals are intellectually disabled in terms of accessing online content. For example, they may not be able to use computer systems because of lack of knowledge or they may not be able to access relevant sources of information because of lack of knowledge of these sources. This segment is largely ignored in accessibility definition even though this is the largest segment and the most
challenging one. In a small survey conducted in 2013, with university students in first year in two very prestigious universities in Saudi Arabia, researcher found that 73 percent of the students were unaware of the high quality Journal sources and other relevant content which might help them immensely in their studies and further. In the same survey, 61 percent of second year students were found below par in terms of ability to identify and access high quality sources. This is quite alarming because these students had completed nearly half of their education and were still not active learners. E-learning is a skill in itself and should be taught separately just like that being done in several UK and US universities.

Defining accessibility: Learning is about ability to construct knowledge independently. The lowest level in the knowledge pyramid is the data. Internet contains vast amount of data. Knowledge construction firstly requires the ability to condense data. This requires filtering out irrelevant content and organizing the relevant content in the order of use. This is followed by summarizing the information simply because the amount of data is immense. This is followed by constructing knowledge through synthesizing information and using it to make decisions. Intellectually disabled users cannot make the transition from Data to information stage.

Moving people from data to information and knowledge stage is the aim of accessibility. Previous definitions of accessibility have focused simply on universal access to content which is also loosely defined as ability to view the information. However, merely viewing the information does not solve the purpose of e-learning which is actually aimed to transforming individuals into active learners. Towards this, through extensive literature review, the researcher has identified three aspects of accessibility: Content, interaction and technology.

Content is the first aspect of accessibility. Internet contains vast amount of information and ability to identify valuable information out of vast amount of information available in e-learning systems is a challenge. Furthermore, not many students are accustomed to utilizing different sources of information. For example, several university students surveyed tend to rely mostly on university websites for accessing online content. New technological developments make active exchange of information easy but most individuals surveyed did not identify other users as sources of information.

Furthermore, accessibility involves capability to collect, organize and synthesizes the vast amount of information. This proves the difference between data and information. Without the ability to synthesize data, users will not be able to move to information and consequently knowledge stage.

Technology is another aspect that forms a significant aspect of accessibility in e-learning. In certain cases it is a barrier that needs to be overcome in order to address accessibility and at the same time, it is also an enabler which enables content providers to interact more interactively with the users. Users may face different technological barriers such as inability to use internet, lack of technological infrastructure or inability to access online content. Compiling online content is also a challenge for several users especially in developing nations. These technological factors relate to time, effort and monetary costs of accessing online content.

Third and final aspect of accessibility identified in this research is interaction. Knowledge construction requires active exchange of information. The only form of active interaction that most users have is with their teachers or with people in their class. However, there is a vast number of online users who can prove to be valuable source of information. By learning how to tap into this global community of teachers
and learners, users can become active learners. It is this interaction which enhances the ability of individuals to construct knowledge.

Considering the content, technology and interactivity aspect accessibility can be defined as follows: Accessibility in e-learning is the ability to construct knowledge by accessing, compiling and synthesizing relevant information with reasonable investment of cost and effort.

**Implication for Future Research**

This paper aimed to propose a comprehensive definition of accessibility in e-learning. Accessibility is a broad concept which can be defined from both user as well as provider’s perspective. This paper aimed to combine the two perspectives and provide a definition which can be used universally to define accessibility in e-learning. This research finds that accessibility in context of e-learning can be defined as “user’s ability to construct knowledge by accessing, compiling and synthesizing relevant information with reasonable investment of cost and effort.”

This definition is based on the review of existing literature but with time as new literature emerges, this definition may require reviewing.

This paper helps to set foundation on how to improve the accessibility of e-learning, which, in turn, is expected to help improve effectiveness of e-learning and make it a universally utilizable channel of education. The aim of e-learning is to develop independent learners who can compile together information from a large database of diverse resources. It must, thus, remove all barriers and make knowledge construction as the sole objective of e-learning.

Finally, the research sets an overview of accessibility in e-learning targeting various features. It is a field that one cannot exhaust in a single research for it is made up of different fields. This is because the accessibility of e-learning involves; instruction design, content, platform, pedagogical strategies, models, communication and interaction and the virtual environment. Thus, the current and the future research should be able to work on these features to improve accessibility.
References


Beldarrain, Y. 2006. Distance Education Trends: Integrating new technologies to foster student interaction and collaboration, Distance Education, Vol 27 No.2, 139 – 153.


Disability, Vol. 20, pp. 54–75.


Engaging Learners Through Problem-Based Learning Activities

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Abstract

Nowadays countries are moving towards a knowledge based economy and this requires a workforce with key skills, such as self discipline, leadership, responsible attitude, critical thinking, quick at decision making and lifelong learning. The conventional teaching method, with the lecturer taking the role of the ‘Sage on the Stage’, it is difficult to train learners having such skills. The latest and growing developments in information technology have enable distance learning to develop rapidly. The internet has provided a vast amount of education materials freely available and learners have now easy and quick access to information and do not always have to rely on the lecturer only. The lecturer tends to take the role of a facilitator to guide students through the learning process. Engineering courses tend to be highly technical in nature and are based on the concept of problem based learning (PBL). PBL is an approach which is also well suited for online learning, through activity based learning. The success of online learning however, rests on the design of the online course. A well design course takes both the visual appealing aspect into consideration, the ease through which the student will be able to navigate through, the clarity of the instructions and the scaffolding structure of the learning activities. These concepts have been used to develop an online course for the module Geographical Information Systems. The learning process was evaluated in an assertive way through the participation in discussion and chat forums, individual and group activities and in a formative way through assessments which are submitted for marking. The activities were designed so as to ensure that at the end of the course the learning objectives are met.

Keywords: Online course development, activities, problem based learning, adult learning, scaffolding process

Introduction

Can online learning contribute to the required skills, such as creativity, self learning, leadership, team work, lifelong learning, decision making, in technically demanding courses, such as Geographical Information Systems (GIS)? This is a question that is raised when developing most of the technical courses either blended or online. Technical courses require that learners are fully engaged in the learning process and face to face interaction enables such interaction. With online courses, the challenge is to get the learners engage and to keep them engaged throughout the duration of the course. The success behind online courses is linked to a robust instructional design process. The key feature is to engage the learners throughout the course. In order to achieve this particular objective, it is important to well structure the activities which are the enabling environment through the process of engaging learners can be ensured. Activities have been designed based on a scaffolding process, with each activity contributing in a stepwise manner, towards achieving the learning objectives of the whole course.

Methodology

The methodology was based on the OTARA instruction design model (Hunt, 2005). There are a number of instructional design models (Instructional Design Models,
2013), and the OTARA has been chosen because it is flexible, it gives structure and meaning to a course structure, and ensures a well design course structure. OTARA can be used to design only one module in a programme or the whole programme, it is scalable. OTARA is not very much different from the ADDIE model, except that it links all the main components which ensure the success of a course (Nicols, 2010). In this course, the module Geographical Information Systems was designed based on the OTARA instructional design model. This model first puts much emphasis on the link between the objectives of the course and the learning outcomes, which is evaluated through both summative and formative assessments. The model, then emphasizes on what activities would have to be set by the facilitator, in order to ensure that the learning outcomes are eventually achieve. Having defined the activities required, the next stage would be to identify the resources that the facilitator would have to provide to the learners, in order to ensure that the learners would be able to conduct the individual and group activities, which will eventually help them meet the learning outcomes.

In order to engage learners and keep them engaged all throughout the course, several types of activities were included. Activities such as make a choice and test your own understanding with a quiz, were simple activities which the facilitator included in order to help the learners throughout the learning process. Learners were encouraged to post comments on their preferred definition of a term, on the best description of given concepts and these were monitored by the facilitator. The facilitator made use of the weaving approach in order to provide feedback on the learning process and in order to encourage learners.

The next set of activities was mostly problem based types. Given that the overall objective of the module was to get learning to create their own GIS database, populate it with relevant information, carry out spatial analysis and use these information to take decision. This objective was set at the very beginning of the course. The first problem based activity was to guide learners towards creating their own GIS database, georeference the digital map, and add in relevant information in the attribute table. Learners would then have to share their digital map with other classmates. The facilitator would then be able to confirm whether the learner had been able to carry out the activity and also help learners appreciate how to share digital GIS information.

The next problem based learning activities were about the spatial analysis. Here learners had to carry out a series of activities, from simple to complex, and post them on discussion forums for comments from peers. The facilitator made up of the weaving feedback process to encourage learners not only carries out the analysis but comment on the work from their peers.

The final activity was a group activity which involved sharing, peer learning and decision making. This particular activity not only help learners to apply the GIS analysis for decision making but enable the facilitator monitor whether the objectives of the course had been met.

**Results & Discussion**

First, clear and achievable objectives of the whole course were defined. In this study, the main objectives were for the learners to be able to create a GIS database and use it to perform detailed analysis for decision making. The next step of this design framework was to define how the learners would be assessed to ensure that the objectives of the course have been met. The learners were to be assessed in three stages for a course which would span over 10 sessions. In order to be able to prepare a GIS based analysis report, one will have to firstly create a database, then analyse this database using spatial analytical tools of the GIS. For the first assignment the learner was to submit copies of the information
making up their database. They were to be assessed in a formative way. This particular outcome formed the basis of the overall objective of the course. No marks were given, but students were provided individual feedback to ensure that they are able to develop the GIS database as required.

The second assignment was about the use of the GIS database to perform spatial analysis, such as location of commercial activities which fall within residential areas and which would be subjected to higher developmental taxes by the Planning Department. Here also the students were assessed in a formative way. This particular requirement is key to understanding how to work with a GIS database, how to perform simple to more complex spatial analysis. The third and last assignment was about using the findings of the analysis of the GIS database, to take decisions. For example, what type of commerce were located within the residential areas, are they big commercial activities, who are the owners, do they have a record of not being able to pay the current landuse development tax and from there, should the Planning Department differentiate between various activities and the associated landuse development tax, that the owners concerned would have to pay. These particular assignments would therefore build on the first two and ensure a complete picture of the creation of a GIS database, the potential spatial analysis and the use of the findings of the analyses for decision making. The third assignment was assessed in a formative way and would count towards the grading of the student in the module. As per the OTARA course planning framework, after defining the learning objectives and the assessment criteria, the next step was to list the resources that would be provided to the learners and the main topics under which these activities fell. The quality assurance policy adopted for the course was the same one as that of conventional learning, though it has been recognised that in addition it needs to take into account will take the elearning environment also (Grifoll et al., 2010).

The online course was conducted with a batch of 20 students, following the BSc Town & Country Planning course. These students had some prior learning as they had followed an introductory course on GIS prior to this slightly more advanced course. The course was conducted with the following resources: lecture notes, activities, discussion forums, chat forums, group activities, peer feedback, and role play. The activities were designed such that a scaffolding effect was ensured. During the first session of the course, the learners were given access to documents and links to appropriate web sites, for information about the topic.

They could then use asynchronous activities, in the form of a discussion forum, to post questions where it was not clear. The facilitator added an activity in the form of a quiz to help the students test their own understanding of the topic they were learning. The first session having given the basic theoretical information, the next session focused on getting learners to start developing their GIS database. This consisted of using a base map, georeference it and using it to create thematic layers in the form of shape files. This was a hands on activity, and for learners were able to use a discussion forum as well as a chat forum to send any queries, when they had difficulty in following the steps explained in the lecture notes for the hands on practicals. The students were assessed in a formative way based on the questions they posted and on the copies of the shape files they had created. The next important step was to use the GIS database created to carry out spatial analysis. Here also lecture notes were given to guide students in analyzing the database.

In addition, learners had access to case studies, which illustrate the application of GIS in the field of Planning. During this stage, the students had to submit the findings of their analysis on a discussion forum. Each learner would then be
expected to take 2 roles, the role of the Head of Section to evaluate the analysis and then the role of the Chief Executive officer of the organisation to take a decision on whether the organisation would benefit from implementing the GIS technology. The third and last step was the stage at which the learners were formally assessed on their work. The findings of the analysis together with the comments from their peers would have to be merged, to justify the need for implementing a GIS by the organisation. This report was then officially submitted individually to the facilitator for marking purposes. The facilitator had the responsibility at the beginning of each new session to first summarise the learning content of the previous session and highlight the objectives of the present session.

**Conclusion**

At tertiary level education is being relooked upon, with the objectives of providing skills that will support the global trend of knowledge economy. More than ever there is a need for high skilled personnel with skills such as creativity, critical thinking, leadership, lifelong learning and confidence to take quick but well informed decisions. Engaging learners with learning activities can help to achieve these objectives. Chen et al (2010) reported a general positive relationship between the use the learning technology and student engagement and learning outcomes. Online learning is well adapted to promote lifelong learning and help decision makers in taking informed decisions relatively quickly. The effectiveness of the engaging process is the results of interplay between content chunks (as opposed to book), interactivity and design (pedagogy and system), (Sadee et al, 2012). Studies have shown that the key success behind online courses is directly linked to the process of engaging students and ensuring that there is proper scaffolding effects to take the learners through the process until the learning outcomes are achieved.
Reference


Cultural Integration of National Teachers Institute’s Open Educational Resources

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Abstract
Advancement in Information and Communication Technology (ICT) has now made it possible for easy access to educational resources by community of users across the globe. These types of educational resources normally found through the internet and accessed by users for non-commercial purposes are known as Open Educational Resources (OERs). Globalisation has transformed the world into a boundless territory where boundary and distance inhibitions have been collapsed by technology. The knowledge industry cannot be an exception; hence, the evolution of OERs. However, despite the effect of globalisation, still the disparity in culture and traditions of people across the globe is yet to precipitate into the thin air. It still exerts a great influence in the life of the global population. Thus, the significance of culture in the 21st Century world cannot be underestimated; hence the need to integrate cultural relevance to Open Educational Resources (OERs) to maximise its perceived benefits to educational advancement. On the whole, this is aimed at enhancing access to learning materials easily to students and to appreciate diversity, particularly those studying through the Open and Distance mode of Education (ODE). This paper buttresses the cultural content of NTI materials and its significance. It however observed some challenges that need critical considerations.

Keywords: Cultural, Integration, OERs.

Introduction
Culture can be referred to the ideas, customs, and social behaviour of a people (ALO Cultural Foundation (online), In: www.alofounadation.org). According to Hoebel, culture can also be described as ‘an integrated system of learned behavior patterns which are characteristic of the members of a society and which are not a result of biological inheritance’ [Wikipedia (online)]. Thus, culture is a characteristic attributes of social behaviour of a people learned overtime through social interaction with their physical and social environment. Therefore, culture should be an integral part of the design of anything that affects a society for an enhanced positive result.

The emergence of the term open educational resources is traced to 2002 when UNESCO hosted the Forum on the Impact of Open Courseware for Higher Education in Developing Countries. Accordingly, the term was defined at that conference as:

The open provision of educational resources enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes.

Since then, the open educational resources movement has continued to grow and the concept has been further refined. (OECD & CERI, 2007) gives this definition:

Open Educational Resources are teaching, learning or research materials that reside in the public domain or released with an intellectual property license that allows for free use, adaptation, and distribution.

Atkins, Brown, & Hammond (2007) defines it this way:

OER are teaching, learning and research resources that reside in the public domain.
or have been released under an intellectual property license that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials or techniques used to support access to knowledge.

Recently, Neil Butcher in an interview published in the 2013 eLearningAfrica Report says:

OER is a simple legal concept: it describes any educational resources that are openly available for use by anyone, without an accompanying need to pay royalties or licence fees. Different options are emerging that can be used to define how OER are licensed for use, some of which simply allow copying and others that make provisions for users to adapt the resources that they use. The best known of these are the Creative Commons Licences (creativecommons.org)

From the definitions above, the main features of OERs include:

- They are digitised materials enabled by information and communication technologies for consultation, use and adaptation.
- They are to be used for educational purposes.
- They are offered freely and openly for educators, students and self-learners.
- They are to be used and re-used for teaching, learning and research.
- They reside in the public domain and have a license that permits their use or re-purposing by others.
- They may not require the payment of royalties or license fees or even permission from the copyright holder.
- They are any educational resources including: Curriculum maps, Modules, Textbooks, Streaming videos, Course materials, Podcasts, Tests, Multimedia applications, Software and other tools, materials or techniques used to support access to knowledge.

Opening up NTI Teacher Educational Resources

The NTI has produced various teacher education resources for the various certificate and CPD programmes. The resources are largely self instructional and modular. The Institute has produced quality learner-friendly teacher education materials through these various programmes. Each student gets a set of self instructional course books or manuals in these programmes. So far, over 449,456 trained in the TC II, 44,873 currently enrolled in the NCE and 172,902 that have graduated since inception, 39,546 trained in the PTTP, 42,520 trained in STUP, 21,492 that have graduated and 15,059 currently enrolled in PGDE, and the 825 that have graduated in ADE and 266 currently on roll have been given quality learner-friendly teacher education materials that they use with their colleagues in schools and other institutions. Even conventional colleges of education and universities use these materials without permission.

Since inception in 1976, the Institute has produced

- Students Handbooks for Teaching Practice, Practicals, Continuous Assessment, Monitoring and Evaluation, and Research Project Guidelines
- Exam Questions
- Sequencing Charts and Course Books for its DL programmes (NCE, PGDE, ADE, & STUP) and
- Training manuals for its CPDs
- NTI Teachers Radio programmes
- Course materials and manuals are in print, audio and video formats (CDs, videos, audio cassettes, etc.)
- NTI Audio-Visual Unit Productions- (videos, audio)

The Nigeria Certificate in Education (NCE) Course Books cover - Christian Religious Studies (30 Modules, 42 Credit Units), Cultural and Creative Arts (36 Modules, 39 Credit Units), English (65 Modules, 96 Credit Units), Integrated Science (41
Modules, 69 Credit Units), Islamic Religious Studies (33 Modules, 39 Credit Units), Maths (37 Modules, 46 Credit Units), Physical and Health Education (47 Modules, 53 Credit Units), Social Studies (37 Modules, 53 Credit Units), Primary Education Studies (41 Modules, 45 Credit Units), Education (38 Modules, 51 Credit Units), General Studies Education (11 Modules, 15 Credit Units).

The Post Graduate Diploma in Education (PGDE) Course Books cover- 21 Modules, 46 Credit Units, while the Advanced Diploma in Education (ADE) Course Books cover- Early Childhood Education (20 Modules, 48 Credit Units), School Supervision & Inspection (17 Modules, 34 Credit Units), Guidance and Counselling (22 Modules, 44 Credit Units).

There are: 12 CPD Manuals- Innovative techniques for Teaching in Prim and JSS; 9-Year Basic Education Curriculum, Early Child Care Education, Guidance & Counselling.

NTI/MDGs/TESSA Integrated Manuals on Innovative techniques for Teaching 4 Core Subjects (ENG, MTH, Basic Science & Technology, Social Studies) in Primary & Junior Secondary School and CDs (video recordings on classroom instructional strategies).

The various re-training workshops for primary and junior secondary school teachers have produced materials that focussed on innovative techniques of teaching four core subjects; on improvisation and utilization of instructional materials; on School Based Assessment; for JSS Principals, Head-teachers, Supervisors and Inspectors; for JSS teachers of the technical and vocational schools; orientation course for newly recruited JSS teachers. It has also retrained teachers in the implementation of the new Basic Education Curriculum (BEC); in the Use of TESSA materials; on the concept of school inspection and supervision.

These materials are licensed under the “all rights reserved” copyright. They need to be ‘unlocked’ and made more open. According to Hylen (2006):

**The two most important aspects of openness have to do with free availability over the Internet and as few restrictions as possible on the use of the resource. There should be no technical barriers (undisclosed source code), no price barriers (subscriptions, licensing fees, pay-per-view fees) and as few legal permission barriers as possible (copyright and licensing restrictions) for the end-user. The end-user should be able not only to use or read the resource but also to adapt it, build upon it and thereby reuse it, given that the original creator is attributed for her work. In broad terms this is what is meant with “open” in all three movements. It is also what is more or less covered in the definition used by The Open Knowledge Foundation when they say that knowledge should be legally, socially and technologically open. (http://www.okfn.org)**

**Cultural Content of NTI OER Materials**

National Teachers’ Institute, being a single mode teacher training ODE institution in Nigeria has a variety of course materials developed for the purpose of training teachers at basic and higher educational levels. Some of these materials, no doubt require cultural content to address the desired objective. At Nigeria Certificate of Education (NCE) level which is the minimum qualification required to teach at basic education level, courses like Cultural and Creative Arts, Religious Studies, Social Studies, etc, are taught. The objective of these courses is to enable the teachers inculcate the cultures and values of their respective communities and that of others to their pupils so that they can appreciate and respect diversities.

At the graduate and post-graduate levels, teachers are trained on Guidance and
Counselling, Early Child Care Education and Innovative Techniques for teaching primary and junior secondary schools among others. These courses involve social and environmental issues that relate to the culture of the people. Early child care education also has relation to the social and cultural peculiarities of a people. Guidance and counselling may involve the understanding of the socio-cultural and environmental needs as well as the capabilities of the child. All these point to the essential relevance of culture and tradition of a people to their educational system and the need to give it a special consideration in the design of educational resources which can be put to public domain (OERs).

However, educational resources placed as OERs are accessed by community of users across the globe cutting across diverse cultures and traditions. Still, those users are bound to compare the various resources and their uniqueness given the peculiar cultures of the developers to theirs and also benefit with what they import from therein. Again, some cultures and religions are common among many societies who are often distant apart. Such materials can serve useful purposes to such societies that share common cultures, problems, religion or environmental characteristics.

Significance of Integrating Culture in Transforming NTI Materials into OERs

The benefits of cultural integration in transforming NTI OERs cannot be overemphasised. For the National Teachers Institute, there are many benefits to be derived from that. These are summarised below:

- NTI culture-integrated OER materials will help actualise NTI Vision and the National Policy on Education
- With STUP over, nearly all the TCII teachers in in-service have been trained hence need to continue their training on the job
- Concern over the quality of primary school teachers nationwide (from conventional and ODL institutions) has heightened hence need to intensify in-service training
- There is need to transform the materials into OERs for the benefit of the NTI students and course facilitators on the one hand and the non-NTI public on the other.
- The Institute has plans to offer B. Ed degree in the foreseeable future. OERs will form an important component of this programme.
- The Institute is about to review its courses. This is an opportunity to embark on deepening culture in the NTI OER project.
- Joining the OER movement will place the Institute at advantage as a teacher education provider in the country
- The Institute is strategically placed to carry out this service- high visibility, good rapport with stakeholders (national and international), strong nation-wide network and presence
- Most of the materials are in electronic format, and copy right issues can be handled
- At national level, OER will enable NTI to achieve its mission and Nigeria’s national policy
- As an institution, it will place it at an advantaged position to receive teacher education materials from similar NCE awarding and teacher education institutions
- Its students and facilitators and users will have online access to quality materials and opportunity to share and contribute to knowledge and culture worldwide.
- Persons and institutions using NTI materials in unauthorized manner will begin to have free access
- NTI OERs will encourage students, facilitators and other users who would
not use OERs to do so and thereby enable users access to other OERs- a new culture would emerge

- School-based teacher professional development programmes could be built around these resources
- It will enable the teachers access and utilise on-line OERs in a sustainable manner
- OERs will advertise NTI to prospective students, to the nation and open up collaborations with national and international agencies

These benefits will serve as justification for the involvement in the OER movement. They will serve as the objectives to be targeted.

**Challenges and Recommendations**

However, a major challenge will be the transformation of the materials into OERs. No one model of scale, funding, production, staffing, and structure fits all as goals differ. Some the challenged envisaged are:

- NTI Materials currently exist in various formats and conditions. They are largely text–based materials. In design, it was assumed that face to face contact, tuition, support, and assessment, etc will go with the materials. There are little or no graphics. There will be need to source skills for production-editorial, technical.
- Dealing with IPR issues especially with non-NTI sources.
- Diverse and multiple cultures among the population.
- Choice between putting all materials available or a selection as OERs. NTI has a pool of self instructional course materials, manuals, sequencing charts, exam questions, handbooks, guides in print and in audio and video cassettes and CDs, radio broadcasts, newsletters and other publications from which selection can be made. Selection will need to be done.
- Guidelines/Criteria for selection and production need to be worked out bearing in mind: NTI mission :“to enhance the professional skills of serving teachers for high quality education delivery at primary and secondary education levels with a view to uplifting the standard of the education system of the country;” needs of potential users – NTI students, facilitators, and teachers, teacher educators, students in non-NTI institutions, parents, educational managers, and the public; availability of the materials and what format; copyright compliance; quality/currency of the materials; supplementary materials from other OERs
- Copyright issues- NTI owns the copyrights of her publications and the legal climate seem favourable but there is need to sensitise major stakeholders; the Creative Commons Licences have now become the most frequently used open licences for non-software resources- UNESCO 2010
- OER exposure could bring up unforeseen copyright issues; anxiety over quality can inhibit action whereas even poor quality materials can benefit from reviews
- Infrastructure- power, bandwidth, equipment
- Potential users face various challenges- awareness, access to appropriate technology, infrastructure, know-how, IT skills, affordability, connectivity, attitudes, formats of the OERs

Some of the strategic measures to be taken are:

- Advocating for the use of OERs by emphasising the benefits of the use of OERs, addressing the various myths and barriers to OERs use; promoting the culture of sharing; working out collaboration arrangements/MOUs; writing proposals for financial assistance; making linkages with international organisations
• Preparing, validating an NTI OER policy – policies that reward collaboration, OER sharing and OER development; collecting & customising the national ICT policies and plans
• Experimenting with the distribution of OERs with CDs & print; open formats and open licence.
• Piloting the development & use of OERs
• Integrating, identifying & existing OERs into NTI courses, manuals and resource materials; taking advantage of the current curricula in review
• Conducting needs assessment to identify areas that can benefit from or where OERs will be useful and relevant.
• Setting up task force to brainstorm and prepare a roadmap for transforming NTI blueprint guidelines DLS materials into OERs
• Sensitising stakeholders on the OER movement, development and use of OERs and the financial, technical/infrastructural & personnel requirements
• Conduct needs assessment of potential users and developers of NTI OERs and establish achievable goals that address the needs of the Institute, course facilitators and centre managers, students, and the community;
• Carry out an analysis of strengths, weaknesses, opportunities, and threats (SWOT analysis) associated with the use of OERs; ascertain barriers that need to be overcome and address them;
• Study and build on the work of AVU, TESSA, OER Africa, and similar OER initiatives;
• Obtain the support of the course writers and editors for the use of OERs and address their concerns, especially those related to intellectual property;
• Build consensus of stakeholders such as students, course facilitators, centre managers, students, parents, spouses, employers (LGEA, SUBEB, private proprietors), curriculum and accreditation agencies (NERDC, NCCE, NUC, UBEC, TRCN, etc.) about the merits of the NTI OER project
• Contact international development agencies and exploit the potentials of existing partnerships eg. TESSA, UNICEF, COL, UNESCO, JICA, etc.
• Develop action plans that specify activities, rationale/justification, timelines, expected outputs, expected outcomes, budget.
• Assign tasks, state accountabilities and deliverables, and specify resources to be provided;
• Provide support and training for the stakeholders;
• Organise OER workshops on the benefits and challenges of OERs as well as their effective implementation;
• Assign those with experience and passion for OERs, ICTs and ODL to champion and drive the process and project
• Funding will at the initial come from internal sources while looking out for external support especially technical expertise
• Creative Commons Licences highly recommended
• Need to address infrastructure- power, bandwidth, equipment
• Institutional commitment and stakeholders buy-in, politics
• Staff training

In summary, there is need to create awareness, access to appropriate technology, know-how, promote IT skills, affordability, connectivity, right attitudes, print, CD and other digital formats of the OERs.

In conclusion, integrating culture in transforming NTI teacher education resources into OER is a task that must done and has begun.

References

ALO Cultural Foundation (online), In: www.alofoundation.org


Integrated MOOC: A Case Study of HCT First MOOC

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Abstract

In semester one of Year 2012-2013, I have successfully delivered HCT’s and possibly regions first 7 week Massive Open Online Course (MOOC) titled ‘An Introduction to Project Management’ for more than 3700 students across the world. This program was delivered through Coursesites.com which runs on Blackboard Learn 9.1 and is also listed by Blackboard in their MOOC catalogue. Three of my BMGN N470 – Project Management section students have also immensely benefited by this initiative as I have flipped the classroom with the MOOC content. The program contains 68 self-created videos, 14 Quizzes and 13 Discussion Board topics. Technologies such as Camtasia, Microsoft One Note, Graphic Tablet, Professional Video Camera, and editing software’s were used to create the course learning resources. Dubai Economic Department has officially endorsed this course along with several other regional non-profit associations.

Keywords: MOOC, MOOC Design, MOOC Integration.

Introduction

A massive open online course (MOOC) is an online course targeted at large-scale student learning and participation with open free access via the web. 2012 was considered as the “Year of the MOOC”, organization such as Coursera, Udacity, and edX were emerged during this period and tied up with leading universities across the world to provide free open courses. Not to lag behind these phenomena, at HCT-Dubai, we have launched our own MOOC program titled “An Introduction to Project Management” delivered through coursesites.com which runs on Blackboard Learn 9.1 platform. This seven weeks course was facilitated by me from January 17 to February 28, 2013 and now it is in ongoing self-paced mode available for anyone to join in the MOOC Catalogue with a total enrollment of more than 3700 students across the world.

Opportunity

1. Integrated MOOC

The plan was not only to launch the MOOC, but also to integrate it with several other key areas to maximize true value to the HCT stakeholders. The following are our 8 key integrated objectives for the HCT’s first MOOC:

1. HCT student focus (World class learning resources and Flipped Classroom)
2. Teaching and Learning Innovation
3. Future Innovation
4. Learning By Doing
5. HCT’s presence in the MOOC community
6. To leverage the MOOC approach in the HCT system amongst the faculty members
7. Marketing of HCT in the local and international community
8. Strategic alignment with APET

A proposal was formulated to offer this course under HCT-Dubai, with the support of business department chair it was presented to the senior management team (Director and Associate Director) whose approval was obtained.
a) HCT Student Focus

One of the fundamental questions we asked ourselves throughout this initiative was: how this can help our students? This MOOC can be used as a main learning resource (or to Flip the classroom) for the following courses:

1. BMGN N470 Project Management
2. BMGN N490 Industry Project
3. BMGN 470 Project Management
4. COM 2313 Project Management for Media

The following courses shares some of the common course outlines with the MOOC, hence can take benefit of the MOOC learning resources.

1. BUS 2403 Innovation and Entrepreneurship
2. BUS 2103 Operations Management
3. BMGN N450 Management Strategy and Policy
4. EBMG N416 Managing Quality
5. EBMG N420 Strategic Management
6. BMGN N400 Total Quality Management
7. BMGN N460 Operations Management

b) Teaching and Learning Innovation

With massive scale of learners, and high student-teacher ratio, MOOC requires careful instructional design that facilitates seamless interaction and feedback to the students. The duration of the course is 7 weeks which was decided based on the amount of content to be delivered to cover the *PMBOK® Guide*. The instructional design was based on two approaches:

1. Crowd-sourced interaction and feedback by leveraging the MOOC network is done through discussion board topics and threads.
2. Automated feedback through objective, online assessments, is done through chapter wise quiz and final examination

The course has a total of 13 chapters, so it was decided to deliver 2 chapters each week with the following structured elements in each week to maintain standard.

1. Learning Outcomes – this section describes the chapter wise learning outcome.
2. Video Lectures – each chapter will have a collection of video’s covering the learning outcomes. These videos were produced using combination of hardware and software such as professional Video Camera, Camtasia Studio, Microsoft One Note, and Graphic Tablet.
3. Quiz – at the end of each chapter, there will be quiz to check whether the learning outcomes are met.
4. Discussion Board – Each chapter will have a discussion board topic set up the faculty and will be then moderated between students. In this tool students from across the world shared their knowledge.
5. Course Material – the relevant chapter materials is available for download.

c) Future Innovation

The MOOC is now loaded with all the important elements required for a course such lecture videos, quizzes, discussion boards, and learning materials, this will create opportunities for innovation for the next iteration of this course in the upcoming semesters. The amount of time required to prepare for the lectures can now be saved and in turn can be used for innovative ideas such as flipped classroom, introduction of project management software’s, conducting live industry projects to name few.

d) Learning by Doing

Learning by doing is a key theme in HCT. Implementing ‘learning by doing’, requires careful planning to keep it authentic and a true learning experience. With the help of MOOC where students are expected to learn the basics and theory independently in video lectures, the classroom time can be spent to simulate projects and perform project management activities. This was effectively done for all 3 of my project management section students. When the students had doubts in any of the subject matter, they just
need to refer to a particular video and get it clarified.

e) HCT presence in MOOC

Top tier universities across the world have established their presence in MOOC. With the experience, infrastructure, leadership and expertise of HCT, this MOOC could be possibly the first of many to come.

f) Sharing the best practice

Several HCT faculty members are in consultation with me to launch their own MOOC based on the presentation provided to them in 4 different occasions. This could possibility helps HCT to lead the MOOC initiative in the entire Middle East.

g) Marketing of HCT to local and International community

With more than 3700 students enrolled in the program, this MOOC would have definitely created brand awareness for HCT in UAE and across the world. Emirati student from leading UAE government institution have enrolled in this program. As a community outreach this program is also promoted to UAE community in large. This program is officially endorsed by Dubai Economic Department, Federal Authority for Human Resources, Indian Institute of Quantity Surveyors, Overseas Filipino Civil Engineers Association to name few. Members from these organizations and associations have enrolled for the online course. This could have not made possible without the effective team work and support from Dubai women’s college departments such as Careers, Business and Marketing.

h) Strategic alignment with APET

This initiative was aligned with our APET (Action Plan and Evaluation Tool) and it has satisfied several of our HCT-Dubai’s strategic goals, objectives and initiatives. For example:

- Strategic Goal
  1. Enhance HCT-Dubai Program offerings, enrollment and delivery, 4. Enhance the HCT-Dubai Brand and Market Share

- Strategic Objectives
  1.1 Innovative Pedagogical Methodologies, 1.2 Enhance Entrepreneurial attitudes to maximize glocal learning experience, 4.1 Strengthen marketing and outreach initiatives

- Strategic Initiatives
  1.1.x Produce high quality e-learning applications/materials, 1.1.x Expand and strengthen innovative Teaching & Learning practices benefiting students, 1.2.x Promote innovation through Local, Regional & International awards, 4.1.x Engage in activities that support community engagement

2. MOOC Development

With the expectation of massive student intake for the course, considerable amount of time and effort was invested to develop the course ‘An introduction to project management’. According to research conducted by Chronicles of Higher Education "Typically a professor spent over 100 hours in his MOOC development before it even started, by recording online lecture videos and doing other preparation and then spent 8–10 hours per week on the course."

The course is completely aligned with the Project Management Body of Knowledge (PMBOK®) Guide 5th edition, published on January 1, 2013 by Project Management Institute (PMI), USA. The decision to select this standard for our course is based on the overwhelming acceptance of this standard by the project management professional community, in addition to that it is an ANSI approved global standard to manage a project.

PMI® also offers the coveted “Project Management Professional – PMP®” certification. With more than 590000 certified PMP’s across the world this is the defacto certification for project managers and project management team members. To apply for PMP certification examination, attendance in project management training
program is required and also the certified PMP’s should recertify once in every 3 years through 60 professional development units (PDU). This course satisfies both the requirement.

a) Marketing

One of the challenges in offering MOOC with coursesites.com is unlike other popular websites like Coursera or edX, the instructor and his institution should promote this course. We had marketed this program through various channels. Listed below are few of our target customers.

✓ **Internal Stakeholders:** HCT-Dubai, Women’s Campus Alumni’s, Employers, BAS Final Year Students

✓ **External Stakeholders:** Indian Quantity Surveyors Association, Overseas Filipino Civil Engineering Association, Dubai Economic Department, PMI local chapter presidents across the world

We have also run campaigns in social media such as:

✓ YouTube promotional video, Facebook, Twitter, LinkedIn

**Marketing materials**

I have also created several marketing materials targeted for different customer base.

1. Custom made email marketing flyer for HCT Alumni’s, Employers and Final Year students
2. Custom made email marketing flyer for associations and Dubai Economic Department
3. General course brochure

**a. Monetization**

To capitalize this initiative monetarily, we have introduced a model in which the students can request for a participation certificate at the end of successful completion of the course. Successful completion of the course is defined by satisfying any one of the following criteria, 1. Take 13 chapter wise quiz along the course delivery period and score an overall average of 60%, 2. Participate in discussion board and publish a post for each of the 13 topics, 3. Take the final exam and score 60%.

Those who wish to apply for the participation certification will have to satisfy the criteria and then apply for the certificate. Upon receiving the request, I will audit whether the student have successfully satisfied the criteria. If the criteria are met, certificate is printed and couriered to their address.

This information is shared with the senior management and the finance department with this live Google Document link.

b) Workshop

As a follow up the MOOC, we have designed a 3 full day face-to-face workshop during the PD week at the HCT-Dubai, Women’s campus. The plan was to get 10 external and 10 HCT staff and faculty to this workshop for the academic-industry collaboration. The external participant will have to pay the workshop fee.

c) PMI Approval for PDU’s

HCT-Dubai, Men’s Campus was a PMI Registered Education Provider. We have successfully gained 25 PDU’s approval from PMI towards PMP® recertification and this course can also satisfy the PMP examination application requirement as well.

**Key Criteria Used to Measure Success**

1. **Quality**

The appreciation and recognition I have received from the students, associations, community and the blackboard is the testament of the product quality. I have received several appreciation emails and the social media comments on YouTube. Utmost care was taken to deliver this course on par with some of the leading courses delivered via popular MOOC platform. In
fact this course has surpassed the student expectations. This course has:

1. High quality learning resources which can be used by anyone in the world for free and obviously our students are included.
2. The quality is so high, Blackboard CourseSites director have emailed me requesting to include this course in the MOOC catalogue.
3. As the learning materials were developed for massive course delivery, the resources are very carefully vetted and archived. This will be an excellent learning resource to flip the classroom in my future project management courses.

2. Creativity and Timelessness

Even though there are several MOOC’s are in the market, this is the first MOOC in HCT and possibly the first in UAE and the Middle East Region. In fact the first MOOC for the entire Asia was delivered by Hong Kong University only in April 2013, where in our MOOC was launched in January 2013! While most of the MOOC’s are Free, I have also included the revenue model to increase cash inflow in our college ‘Associate Student Fund’.

2012 was the year of MOOC, and studies suggests that MOOC will be a major phenomenon in future supporting the theory of education is free and open to all and no one should be deprived of that. This MOOC course is open to everyone and it is timeless, as I have covered the basics of project management.

3. Efficiency and Cost Effectiveness

This course was delivered with NO cost to the HCT and in fact it had generated income. There were some very minor expenses to print certificates and courier charges. But those expenses were recovered from the revenue generated through this course.

The course was also planned, designed, delivered and maintained very efficiently.

For e.g., the course planning, design and content development (video recording) was done during the 2 weeks semester break with NO impact to the regular college activities. It is also done with minimum impact to the other departments, even though several departments were involved in this initiative the overall time they would have invested in assisting me in this activity is put together not more than 2 hours! With careful planning, with their minimum input, I have gained maximum output.

4. Sharability and Replication

The basic foundation of MOOC is its Sharability and openness to everyone in the world. It is not required for some on to request access for this course or to take permission from me to use this course. It is openly available for the world in this link www.bit.ly/hctdubai.

After this successful initiative, I have shared this model with HCT colleagues during different occasions such as:

1. HCT- Sharjah eLearning in Action, presented in the Conference 2013
2. HCT-Dubai, PD Week presentation 2013
3. HCT-Dubai, Women’s Campus, Business Department Meeting presentation
4. HCT-Dubai, Men’s Campus, IT Department Meeting presentation

I have also presented about this at the ACBSP annual conference in Salt Lake City, Utah, USA and Online Educa Berlin, Germany.

Few faculties from HCT-Dubai and Northern region are now in consultation with me to launch their own MOOC.

5. Sustainability

This course is robust and can be updated when there is a need. Once in every 4 years PMBOK® Guide standards will be revised by PMI, this will eventually trigger to update our course as it is based on the PMBOK standard. Majority of the course content will remain same; minor revision
will be done by me once in every four years. This is made possible because of the way the course is designed. It has more than 60 videos, whenever there is a change in the PMBOK®, I will need to update only those videos that are affected.

**Conclusion**

Launching HCT first MOOC was an exciting journey for me. Some of the key outcomes of this endeavor including but not limited to:

1. This initiative had bring out the best in me
2. Placed HCT in the global MOOC community
3. Initiated the need to network with all the departments and key people in HCT-Dubai
4. Learned several educational technology
5. Quality learning resources are available to flip the class for the project management course

**Appendix – Student’s Feedback**

Some of the unedited quotes from the students via email:

1. “I always had a desire to work on project management but due to its higher training cost, I never had a chance to pursue my passion. While I was browsing, I came across your wonderful videos and thanked God for this excellent opportunity. I have registered myself at Blackboard learn today and am looking forward to educate myself in the field of project management and soon be able to take the test.” – Raathi, USA

2. “Again, I wanted to thank you for putting together such a comprehensive class. I commend you for your ability to take very complex concepts that I struggled to understand, and make them easy to grasp by putting them into an everyday scenario. I also like the fact that if a topic was out of scope, you still pointed it out and told the students to search it on the web. I feel better prepared to take the exam because of this.” – David Hwaszcz, GE Energy, USA

3. “I was very pleased to come across the article below and learn about how you’ve been able to leverage CourseSites to educate students about Project Management. Thank you for choosing our platform for your initiative”.
   [http://www.ameinfo.com/1500-students-complete-7-week-project-management-334308](http://www.ameinfo.com/1500-students-complete-7-week-project-management-334308) - Jarl Jones, Director, Coursesites by Blackboard, USA

4. “I would like to thank you for your effort in preparing the training course on PMP 5th edition. I have gained immense knowledge on the subject learning from the course materials, videos, quizzes and discussion boards. You are an excellent trainer; your setting aside time and effort away from work at HCT in preparing the videos, mediating the discussion board, sharing your knowledge is commendable and highly appreciated.”
   – Jacob CK, UAE

5. “First, let me express how much I love your lectures and how happy I am that I randomly ran into them! Thank you very much for making them available for public and for passing such complicated material in simple and clear manner. While most of the lecturers making them look more complicated, you found genius way, right words and speed to get your students interested in them. I am very proud to be one of your lucky students. Thank you very much!” – Aelita Cher
Transforming Mathematics Learning: Challenges and Opportunities Offered in Undertaking to Fulfill the Vision of UAE-QF

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American University in the Emirates, Dubai, UAE

Bryn Holmes
Associate Professor, College of Media and Mass Communication
American University in the Emirates, Dubai, UAE

Abstract

A key part of any country’s higher educational strategy is to establish standards for attainment. For the UAE, the challenges and opportunities lie in developing and then maintaining a system that at once supports every individual’s learning and optimizes the access to education by all Emiratis, while at the same time allows for the transfer and recognition of qualifications internationally. As well as catering to its own nationals, the Emirates have also sought to be a regional hub for education thus supporting the acquisition of skills needed to compete globally (CAA, 2012).

In order to address both the challenges and opportunities of creating key standards, the UAE Qualification Framework (UAE-QF) or QF-Emirates was established on 23 August 2010 under the National Qualifications Authority (NQA) (NQA, 2012). The UAE-QF is divided into 10 vertical levels ranging from basic (high school - Level 1) to advanced (PhD - Level 10). Examining the framework horizontally one can see five separate strands of learning outcomes: namely knowledge, skill, and then separate aspects of competence. The UAE-QF describes aspects of competence in terms of autonomy and responsibility, self-development and the role of the individual student in specific contexts. The framework is valid for each and any academic program learning outcomes and for each specific level of attainment. The UAE-QF can be used for each individuals, employers and academics to recognize and contrast the qualifications levels of diverse academic and education systems.

This paper will map out a framework for the first year university mathematics course, common across most national and private universities accredited in the AUE.

Keywords: mathematics, UAE-QF, EQF, quality, course design

Introduction

Without appropriate education a nation’s socio-cultural and economic development suffers. The latter half of the 20th century and the early years of the 21st will be best remembered as a period of spectacular growth in higher education as student numbers have and continue to rise exponentially. In 1960, 13 million students were enrolled in higher education, by 1995 the number had reached 82 million students (UNESCO, 1998) and this population would then more than double to reach 178 million students enrolled in higher education by 2010. Goddard (2012) predicts a future university population of 262 million students by the year 2025. Higher education is, therefore, now more than ever before
essential to the creation of a skilled and educated workforce and no country can participate in the global economy without investing in the future of its people.

A key part of any country’s higher educational strategy is to establish standards for attainment. For the UAE, the challenges and opportunities lie in developing and then maintaining a system that at once supports every individual’s learning and optimizes the access to education by all Emiratis, while at the same time allows for the transfer and recognition of qualifications internationally. As well as catering to its own nationals, the Emirates have also sought to be a regional hub for education thus supporting the acquisition of skills needed to compete globally (CAA, 2012).

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The UAE-QF describes aspects of competence in terms of autonomy and responsibility, self-development and the role of the individual student in specific contexts. The framework is valid for each and any academic program learning outcomes and for each specific level of attainment. The UAE-FQ can be used for each individuals, employers and academics to recognize and contrast the qualifications levels of diverse academic and education systems.

The UAE-QF was developed so as to parallel the European Qualification Framework (EQF 2). The EQF, for example, is based on eight reference levels or learning outcomes which describe what a learner knows, understands and is able to do. The EQF is thus described as a ‘meta-framework’. The UAE-QF is also consistent with various American standards. Many academic research articles have reviewed the process in the USA, analyzing the learning outcomes strands in various ways and this work will be presented in the paper. We would argue that the QF-Emirates framework is directly aligned to international frameworks.

Literature Review

The World Science Forum in Budapest, held in November 2009 issued a call for UNESCO to take the lead in galvanizing the scientific community to undertake a combined effort across all countries to improve mathematical research, education and awareness. The members of the Forum argued that:

Mathematics plays a rapidly increasing role as a universal language for science. Without it, science and technology cannot address the complex issues facing the modern world. At the same time, mathematical illiteracy is growing and interest in the study of mathematics is declining.

Studies have shown a decline in the take up of university mathematics courses in India, the United States of America, the United Kingdom, and Australia (Hiebert, 2003; National Mathematics Advisory Panel, 2007). Can the UAE lead in insisting that all high school or university graduates achieve a specific measurable level of mathematical competence? We present a mathematics course that is measured here with respect to the consistency with UAE-QF. First, we will explore the way in which the newly formatted course enables both faculty members and students to make the whole process of learning mathematics lucid (articulate) and translucent. Next, the paper demonstrates the design and structure would argue that the new UAE-QF framework may aid in this respect.
Research Methods

Our research is based on the application of the principles of instructional design. We have re-engineered the MAT100 course to integrate the QF Emirates framework. This paper will explore, therefore, a case study of the rewriting the course of general mathematics (MAT100) learning outcome and learning objectives in the vision of QF-Emirates. In this paper we create a progression across each of the five strands of mathematic courses learning outcome in a course taught in the general education level at the American University in the Emirates (AUE). And finally, the paper will construct for any course, comprehensible and accessible objectives and learning outcome requirements as structured in the QF-Emirates.

Analysis

Classification of Mathematics Learning Outcome in the Format of UAE-QF

The revised course learning objectives have inherent and implicit within them much of the specific detail to be found in the QF Emirates but with a clearer and more precise identification of the core aspects of mathematical learning and a stronger sense of progression within each aspect of mathematics.

There are raised expectations in the revised learning objectives, within the designed program such as Mathematics for business, IT, engineering and bio programs, some having been grouped, condensed or clustered and some have been diluted such as design and media programs, and in some cases objectives have been moved to another year group.

The organization and range of objectives are designed to help both the instructor and students to plan across the entity course and to prepare learning for mixed ability classes. The level of the courses identifies aspects of mathematics that students taught, in order to expand and confront their learning. The objectives can be handy and accessible in each mathematic course, as structured in the AUE-QF and in response to make comprehensible progression, across each of the five strands of mathematics course learning outcome.

Knowledge

Knowledge strand can be dividing into knowledge’s with a minimal understanding, descriptive understanding, extended or comprehensive understanding and an integrative understanding. The strand of knowledge can be expressed in more details for mathematical learning as follows:

1. Knowledge with a minimal understanding of number system in mathematics including numbers sets such as natural, whole and integers sets, positive and negatives arithmetic topics, Irrational and rational set including fractions, decimals, and percentages, basic Algebra with brief review of signed number operations

2. Knowledge and an extended understanding for the relation of number line with linear equations and linear inequalities, absolute value. Knowledge and a descriptive understanding of graphing a points and lines, linear equations (straight lines) and linear inequalities. Knowledge and an extended understanding of matrices order with brief review of signed number operations, using matrices to solve linear equation system.

3. Knowledge and an integrative understanding of quadratic formula, completing squares and factoring method including a descriptive understanding of graphing circles, quadratic function and absolute value.

4. Knowledge and a comprehensive understanding for a variable expressions, polynomials, rational expressions and integer exponents, exponential and logarithmic functions Common and natural logarithms. Knowledge and a descriptive understanding of graphing exponential and logarithmic equations
Skills

Skills in the expressions of apprise and compare the key issues of number system in mathematics such as numbers sets for instance natural, whole and integers sets, positive and negatives arithmetic topics, irrational and rational set including fractions, decimals, and percentages, basic algebra with brief review of signed number operations

1. Skills in the term of synthesis such as creating a set of solutions by inequalities using those methods in linear programming (maximizing profit and minimizing the cost) and design business or engineering component that conforms to the following criteria

2. Skills in the stretch the ability of using exponential and logarithmic functions in growth and decay of populations or in the other way growth and decay prioritize squares in studying the numbers of microscopic structural of haemocytometers and cells.

3. Transferable skills such as the ability of manage the effective relationships of mathematical concepts in team and to communicate and report effectively both orally and in writing in any mathematical issue in taught topics.

Aspects of Competence

First: Autonomy and responsibility competence in the tenure of student self management, organization and solving problems such as:

1. Relating linear equations to linear inequalities, absolute value, graphing a points and lines, linear equations (straight lines) and linear inequalities.

2. Student responsibility acquired ability to understand, appreciate and interact with the each above concept and topic in one hand

3. Other hand solving problems in quadratic formula, completing squares and factoring method including graphing circles, quadratic function and absolute value

Second: Self-development competence in the phrase of each individual student to distinguish, recognize, identify and acknowledge the boundaries to deal with patterns, properties of relationships between locations and shapes. To recognize, identify and acknowledge similarities and differences such as in the transformation of functions,

1. Identification in the tenure of rules properties and mathematical formulas, basic facts including engagement to go beyond these limitations

2. Further learning beyond these limitations such as application and analysis.

3. Mathematics students will extent each concept, topic and solving problems in mathematics and manage own learning processes.

Third: Role in context, the mathematics group project, case study and team work put each learnt concept, topic and solving problems to effective use in different circumstance, situations and frame work

1. Apply real life learning into practice of essential, integrative and expressive understanding and communication, intellectual skills and competence.

Mapping the CLO with assessment methods in the format of UAE-QF

See the following pages for the mapping of the assessment methods and UAE-QF framework in detail.
<table>
<thead>
<tr>
<th><strong>CLO in the UAE-QF format – level 6</strong></th>
<th><strong>General Mathematics Learning Outcomes</strong></th>
<th><strong>Assessment Methods</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Specialized factual and theoretical knowledge and an understanding of the boundaries in a field of work or discipline, encompassing a broad and coherent body of knowledge and concepts, with substantive depth in the underlying principles and theoretical concepts</td>
<td>Knowledge and an understanding of number system in mathematics including numbers sets such as natural, whole and integers sets, positive and negatives arithmetic topics, Irrational and rational set including fractions, decimals, and percentages, basic Algebra with brief review of signed number operations</td>
<td>Multiple Choices</td>
</tr>
<tr>
<td>2 An understanding of allied knowledge and theories in related fields of work or disciplines and in the case of professional disciplines including related regulations, standards, codes, conventions</td>
<td>Knowledge and an understanding linear equations and linear inequalities, absolute value, graphing a points and lines linear equations (straight lines) and linear inequalities, knowledge and understanding of matrices order with brief review of signed number operations, using matrices to solve linear equation system</td>
<td>Multiple Choices questions</td>
</tr>
<tr>
<td>3 Understanding of critical approach to the creation and compilation of a systematic and coherent body of knowledge and concepts gained from a range of sources</td>
<td>Knowledge and understanding of quadratic formula, completing squares and factoring method including graphing circles, quadratic function and absolute value</td>
<td>Multiple Choices and/or True &amp; False questions</td>
</tr>
<tr>
<td>4 A comprehensive understanding of critical analysis, research systems and methods and evaluative problem-solving techniques</td>
<td>Knowledge and an understanding a variable expressions, polynomials, rational expressions and integer exponents, exponential and logarithmic functions</td>
<td>Multiple Choices and True &amp;False questions</td>
</tr>
<tr>
<td>5 familiarity with sources of current and new research and knowledge with integration of concepts from</td>
<td>Common and natural logarithms, graphing exponential and logarithmic equations</td>
<td></td>
</tr>
<tr>
<td><strong>Skills</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 technical, creative and analytical skills appropriate to solving specialized problems using evidentiary and procedural based processes in predictable and new contexts that include devising and sustaining arguments associated with a field of work or discipline</td>
<td>Skills in the expressions of apprise and compare the key issues of number system in mathematics such as numbers sets such as natural, whole and integers sets, positive and negatives arithmetic topics, irrational and rational set including fractions, decimals, and percentages, basic Algebra with brief review of signed number operations</td>
<td>Quizzes, in class assignments and Exams</td>
</tr>
<tr>
<td>2 evaluating, selecting and applying appropriate methods, procedures or techniques in processes of investigation towards identified solutions</td>
<td>Skills in the term of synthesis such as creating a set of solutions by inequalities using those methods in linear programming (maximizing profit and minimizing the cost) and design business or engineering component that conforms to the following criteria</td>
<td>Quizzes, in class assignments and Exams</td>
</tr>
<tr>
<td>3 evaluating and implementing appropriate research tools and strategies associated with the field of work or discipline</td>
<td>Skills in the stretch the ability of using exponential and logarithmic functions in growth and decay of populations or in the other way growth and decay prioritize squares in studying the numbers of microscopic structural of hemocytometer and cells.</td>
<td></td>
</tr>
<tr>
<td>4 highly developed advanced communication and information technology skills to present, explain and/or critique complex and unpredictable matters</td>
<td>Transferable skills such as the ability of manage the effective relationships of mathematical concepts in team and to communicate and report effectively both orally and in writing in any mathematical issue in taught topics.</td>
<td>Projects, exams and assignments</td>
</tr>
<tr>
<td>CLO in the UAE-QF format – level 6</td>
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</tr>
<tr>
<td>------------------------------------</td>
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</tr>
<tr>
<td><strong>Autonomy and Responsibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Can take responsibility for developing new and advanced approaches to managing or evaluating complex and unpredictable work procedures and processes, resources or learning, including leading teams within a technical or professional activity</td>
<td>solving problems in the tenure of student self management, organization and analysis</td>
<td>Projects, case study and assignments</td>
</tr>
<tr>
<td>2 Can manage technical, supervisory or design processes in unpredictable contexts</td>
<td>Relating and comparing such as linear equations and linear inequalities, absolute value, graphing a points and lines linear equations (straight lines) and linear inequalities.</td>
<td></td>
</tr>
<tr>
<td>3 Can work creatively and/or efficiently as an individual or in team leadership or managing contexts</td>
<td>Solving problems such as in quadratic formula, completing squares and factoring method including graphing Circles, Quadratic function and absolute value</td>
<td>Projects, case study and in class assignments</td>
</tr>
<tr>
<td>4 Can express an internalized, personal view, and accept responsibility to society at large and to socio-cultural norms and relationships</td>
<td>Student responsibility acquired ability to understand, appreciate and interact with the each concept, topic such as an exponential and logarithmic functions in application</td>
<td>Projects, case study and in class assignments</td>
</tr>
<tr>
<td><strong>Self-development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 can self-evaluate and take responsibility for contributing to professional practice and further learning</td>
<td>Identification in the phrase of rules properties and mathematical formulas, basic facts including engagement to go beyond these limitations</td>
<td>Projects, case study and in class assignments</td>
</tr>
<tr>
<td>2 can manage learning tasks independently and professionally, in complex and sometimes unfamiliar learning context</td>
<td>Further learning beyond these limitations.</td>
<td>Projects, case study and in class assignments</td>
</tr>
<tr>
<td>3 can contribute to and observe ethical standards</td>
<td>Mathematics students will extent each concept, topic and solving problems in mathematics and manage own learning processes.</td>
<td>Projects, case study and in class assignments</td>
</tr>
<tr>
<td><strong>Role in context</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Can function with full autonomy in technical and supervisory contexts and adopt professional roles with little guidance</td>
<td>the mathematics group project, each learnt concept, topic and solving problems to effective use in different circumstance</td>
<td>Projects, case study and in class assignments and Exams</td>
</tr>
<tr>
<td>2 can take responsibility for the setting and achievement of group or individual outcomes and for the management and supervision of the work of others or self</td>
<td>the mathematics case studies team work will relate each learnt concept, topic and solving problems to effective use in different situations and frame work</td>
<td>Projects, case study and in class assignments and Exams</td>
</tr>
<tr>
<td>3 In the case of a specialization in field of work or learning can take responsibility for managing the professional development of individuals and groups</td>
<td>Designed assignments with integrative and expressive concept and solving problems to effective use in different frame work</td>
<td>Projects, case study and in class assignments and Exams</td>
</tr>
<tr>
<td>4 can participate in peer relationships with qualified practitioners and lead multiple, complex groups.</td>
<td>Apply real life learning into practice of essential, integrative and expressive understanding and communication (knowledge), intellectual skills and competence.</td>
<td>Projects, case study and in class assignments and Exams</td>
</tr>
</tbody>
</table>
Results

Initial results show that redesigning the course allows for a clearer and more precise view of mathematics as well as positioning local courses in the international frameworks. The aim of compiling CLO to assessments is to investigate the role of the visualization approach on student’s achievement. The method details are presented in the following figure:

Mapping the CLO with assessment methods in the format of UAE-QF

Conclusions

The results indicated positive learning outcomes, with the most significant gains occurring in skills and lesser gains being made in knowledge and values. The achievement of ten sections meets the objectives of case study and projects questions to measure the aspect of competences. The various forms of assessment are effective in endorsing superior academic accomplishment, reduced test-anxiety, more constructive approaches toward course learning outcomes, and increased determination through learned topics.
References


Learning and Teaching with iPads in the UAE: The Case of the Secondary Technical Schools (STS)

Hanadi Al Suwaidi
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Abstract
The study highlights the different pedagogies used at STS and compare STS approach to traditional school environment. It is among the first studies in the UAE to highlight the use of iPads in high schools, giving an indication on the effect of these new mobile technologies in the learning process, a vital issue for alternative schools like STS. At the main objective is to study and evaluate the effect of the use of iPads on the performance of students in Secondary Technical Schools (STS). Providing insights on different pedagogical approaches used in STS schools that can enhance these performances, the study explores the use of iPads in STS schools, how iPads are actually part of the classroom environments and their impact on teaching and learning. The study compares their results before and after using iPads and provides some insights about students’ and teachers’ perceptions of the use of tablets, using a combination of qualitative and quantitative analysis with the same sample of students. We reach the conclusion that the high achievers group is less affected by the introduction of iPads than medium achievers or low achievers whose marks are really different when using tablets. It also appears that student’s marks improved nearly in all the subjects when using iPads, whether they are high, medium, or low achievers. The study was conducted on a small sample only, which should be seen as a clear limitation. However, it is part of our plans to conduct on bigger sample for the whole grade 10s of all STS schools in UAE. For future studies the result should be compared in different stages of the year 10 such as the beginning of the academic year and the end of it.

Keywords: iPads, STS, Apps, ipedagogy.

Introduction
New mobile technologies, iPads tablets or Android Mobiles, are increasingly used by students and teachers, and advertised around the world as ‘revolutionary’ devices that can transform the nature of the learning and teaching process (Webb, 2012). Those devices use dedicated application software that will be referred to as Apps in the rest of this text. Tablet computing requires specific, dedicated Apps – different than software used on laptops - as it uses different storage procedures, and have less processing power than laptops. Many Apps are now available, with embedded facilities for classroom management and all levels of learning and teaching from K12 to universities. There is emerging evidence that these Apps have a significant potential to support the learning process (Shuler, 2012) (Goodwin, et al., 2012). It is widely recognized that the introduction of tablets as a new generation of educational tools has major implications on pedagogies, allowing direct access to lots of online resources, more focus on students’ creativity, autonomy, and responsibility on one’s own learning. iPads provides educators with access to large sources of learning materials not offered in normal classroom settings. As an example, over five hundred thousand Apps are available for teachers to download from the App Stores such as Apple stores some apps are free, while others must be bought (Siegler, 2008) they are available to every one. These Apps should be directly relevant to be used by teachers as learning resources for their
students in class and can be also used by the students out of the class room for more learning.

While the use of classroom technology in the United Arab Emirates (UAE) colleges and universities is already well advanced, most government schools as well as some private ones are still not really using these technologies. To create a momentum, and foster this change, the UAE government supports the massive deployment of these technologies in the context of several generations of projects. Among such projects, we can mention the Smart Learning initiative (Shahbandari, 2012) or other large scale initiatives of the Abu Dhabi government school system to create across UAE cities a network of Secondary Technical School (STS) making an extensive usage of new technologies for their students.

This paper is about the related pedagogies used in STS classroom, and the impact of these new student-centered pedagogical approaches on different categories of STS students, whether high or low achievers. The study evaluates the effect of the use of iPads on the performance of students in STS schools, providing insights on different pedagogical approaches used in STS schools that can enhance these performances. The study will compare the results for these students before and after using iPads. Different styles and approaches of pedagogy based on iPads and ipedagogy. The study will explore the use of iPads in STS schools system and how iPads are implemented in classroom environments and their impact on teaching and learning. In addition, it explores students’ and teachers’ perceptions and use of tablets and provides an analysis on these results.

The study is important because it will highlights the different pedagogies used in STS and compared with normal school environment. It will give an indication on the effect of these new technologies such as iPads and different Apps in the learning process. Also it could be the first study in the UAE to highlight the use of iPads in high schools.

1) The Secondary Technical Schools (STS)

The Secondary Technical Schools (STS) have been established to provide young Emiratis with a senior high school education system focusing on technology and technical education. The launch of technical high schools as a main branch of the Abu Dhabi Vocational Education and Training Institute (ADVETI) reflects the real interest of the wise leadership of the United Arab Emirates in education of its citizens. It also reflects that the obligation for the UAE government to train national youth in the technical, vocational and technological fields. According to ADVETI's decree, the vision of STS is to be the leading provider of skilled UAE nationals for the local market (ADVETI, 2013). STS’s mission is to empower the UAE youth with the competencies needed for employability and life-long learning. These vision and mission reflect a priority of the UAE government to create institutions that offer students from government or private schools a technical alternative at Grades 10, 11 and 12 (STS, 2013). It is important to mention that this policy targets UAE nationals who had a tendency to consider technical education as a second choice, not very attractive for ambitious and skilled students. In this context, the creation of STS represents a unique opportunity for young UAE nationals, male and female, to complete their education and professional training in technical areas. This will qualify them to take part in the development of vocational and technological plans embedded in the UAE government vision 2021 (UAE Vision 2021 , 2010). This is also an important chance for the students to get a job after graduation. The first STS school was established in Abu Dhabi in 2010 as a pilot for male students. The following academic year, three new male schools opened in the
emirates of Al Ain, Ras Al Khaimah and Fujairah.

At the start of the academic year 2012-13 two additional boys’ schools were opened in Ajman and Dubai and three girls’ schools in Ajman, Al Ain and Abu Dhabi. The growing demand for vocational education has led to further plans to open more schools in Sharjah and Dalma Island at the beginning of the Academic year 2013-2014. (STS, 2013)

STS has now twelve campuses and schools around the UAE and they are planning to open four more by 2015: Baynounah Boys & Girls and Umm Al Quwain Boys & Girls. The STS schools take students who successfully completed the Ministry of Education (MoE) Grade 9 Certificate and put them through Grades 10, 11 and 12. Enrolment in STS schools is conditional on passing an entrance test in English and Mathematics. Students can enter STS schools from government, private or other schools as long as they meet the entry requirements. Access to STS is limited to UAE National who are required to have completed a Grade 9 school certificate, be aged between fourteen and sixteen years, and pass the STS Entrance Exams and Interviews and go through a medical health fitness. The curriculum is designed as a combination of core subjects as for other regular schools, and technical ones, specific to STS and labeled VET for Vocational Education and Training, as illustrated in Figure 1.

STS prides itself on standardizing teaching and learning practice throughout its schools, using a central Curriculum Development Unit (CDU) that establishes a standardized curriculum for all schools, providing stability and maintaining academic consistency through close development program within its subject specialists and teaching staff (CDU, 2013).

STS CDU specialist also works closely with local industries to make sure that STS student education is highly relevant to national employment needs. STS offers all students industrial sponsorship associated with their selected academic pathway, during their three years of study.

Figure 3: STS Curriculum
STS provides a “hands-on” approach to teaching and learning that emphasizes the application of knowledge and the development of skills, the promotion of important core values of professionalism, excellence and integrity, articulation into ADVETI’s post-secondary Institutes of Science and Technology and entry into UAE universities. STS education allows for continuous integration into either higher education or employment that prepares students for the world of work, while at the same time satisfying the Ministry of Education’s (MoE) school exit requirements.

STS have designed it curriculum to focus on English language development, the use of technology, learning of mathematics and science. A range of vocational subjects that make up three broad “clusters” of Engineering Maintenance, Aviation Maintenance and Business with a number of “specializations” within those clusters. STS secured the international recognition of the vocational component of the program through the awarding of Vocational Education and Training (VET) qualifications by leading overseas educational institutions. (CDU, 2013)

2) iPedagogy at STS

As explained previously, STS uses non-traditional methods and strategies for teaching and learning and uses iPads in classroom across the board. In this section, we describe some of these pedagogical approaches, and explain how they help students and teachers to improve the learning process. To analyze the progress and improvement of the learning process, we will make some reference to the theoretical framework provided by Boom’s taxonomy of learning objectives.

2.1. Bloom's Digital Taxonomy

Bloom's Taxonomy was defined in 1956 by the Dr Benjamin Bloom, an educational psychologist interested in promoting higher forms of thinking in education (e.g. analyzing and evaluating) rather than just remembering facts (rote learning) (Bloom, et al, 1956) (Bloom's Taxonomy, 2013)(Krathwohl, 2002). Advocating a mastery approach to learning based on his taxonomy of intellectual behaviors, Bloom endorsed instructional techniques that combined instruction with time according to learner requirements (Edutechwiki, 2012). Bloom's original taxonomy describes traditional classroom practices, behaviors and actions, rather accounting for the new processes and actions associated with technologies.

To cater for emerging processes related to the introduction of technology, many researchers revisited Boom’s taxonomy, and provided customized versions such as the Pedagogy Wheel (Dunn, 2013) (Carrington, 2001) introduced by Allan Carrington as a digital avatar of the original Bloom’s taxonomy (Krathwohl, 2002). The Pedagogy Wheel The Pedagogy Wheel is a useful tool for teachers who need to associate specific technologies to related learning objectives, showing how iPad and different Apps can be used for activities ranging from lower to higher order thinking. Providing explicit links between learning objectives and technologies to achieve them, the Pedagogy Wheel actually helps learning design interested in supporting brainstorming, collaboration, research, and creation of new knowledge.

The Substitution Augmentation Modification Redefinition (SAMR) Model offers another method of seeing how computer technology might impact teaching and learning (PuenteDura, 2011). It also shows a progression that adopters of educational technology often follow as they progress through teaching and learning with technology. The model is based on Bloom's Revised Taxonomy, attempting to account for the new behaviors and actions emerging from the use of new technology.
Bloom's Digital Taxonomy isn't about the tools or technologies, but rather about using these to facilitate learning. Outcomes on rubrics are measured by competence of use and most importantly the quality of the process or product. For example bookmarking a resource is of no value if the resource is inappropriate, invalid, out of date or inaccurate. Bloom’s Digital Taxonomy lends itself to problem and project based learning where the student must work through the entire process of development and evaluation.

Another important aspect of learning design is students’ engagement, explored in depth by Laurillard (2012) who explains that students may have a strong sense of self-efficacy born of their internet capabilities, and may bring this to bear on their approach to study. Laurillard also clarifies how student’s perceived efficacy for self-regulated learning has to be developed through their successive encounters with a formal learning environment in which they are encouraged to be and agent for their own learning.

2.2. The Flipped Classroom Model

STS adopted the flipped classroom model, a method in which students are expected to gain necessary knowledge before they start the class. In the flipped classroom, the teacher’s role is mainly to guide the students during class time through activities in which they need to apply some knowledge acquired before the class, teacher need to prepare learning opportunities based on collected students’ questions. These opportunities are offered through Apps, such as YouTube. For instance, a teacher sends a video to the students about a given subject of study, and then at the beginning of the class, he/she will ask the students if they have specific questions in mind to guide their learning or about the material that was sent to them. With this kind of questions, the teacher can identify and anticipate where students need help. During class students practice, using the skills they are expected to learn. What happens after class is important: students are expected to continue applying their knowledge, and refine their skills after clarification and feedback by the teacher who usually posts additional explanations and resources as necessary, and grades higher quality work (Tucker, 2012).

In this model, teachers email links to students to watch relevant podcasts prior to a lesson and facilitate students’ engagement in discussions about the topics, thus enabling far more meaningful learning than the traditional teacher centered approach. The teaching and learning strategy encourages teachers to produce innovative, interactive and engaging lesson plans that take into account the individual needs of our students. The sessions contain a mixture of
modern education pedagogies based on the use of the latest relevant technology. In general, these sessions include cooperative learning, experiential learning differentiation, e-learning, assessment for learning. Students are able to improve research, retrieval, collaborative and writing skills as they use their iPads to complete tasks (Educause, 2012).

3) Why Chose iPads as a Tool of Choice

During the last two years, iPads emerged as a standard choice for Smart Learning” across the UAE in general and STS in particular. They are light, small and user friendly. More and Apps are now available, making targeted learning and classroom management easier. With iPads, teachers and students use a range of creative tools, interactive textbooks, and dedicated apps, although this was already the case with laptops. But the attraction of iPads comes mainly from the availability of content in the form of iBooks whose creation and authoring became part of STS signature. With the creation of STS’s own iBooks and Apps, iPads emerged as the prefect model to be used in the class rooms. Tablets enable learning anywhere, anytime. Students can not only study, they can also walk, they can move with it, they can choose to seat in the garden while having their math’s class. For teenagers full of energy and life, this might be an important factor of choice. The classroom is no longer the central place of learning, driven by the teacher and limited to instruction within the school day. The teacher is no longer at the center of the learning process, and the instructional time can transcend the school day. As students are guided through the knowledge and skills they need to learn for the day, they can learn ahead by simply opening the Apps. Through the iPad device, they also keep in touch in real time with the teacher and their peers so that all the students are given the opportunity to focus a common topic despite being in different locations.

3.1. A Digital Curriculum Available on iBooks

STS e-learning strategy is based on a digital curriculum using the iBooks whose software can be found in the library embedded by default in any iPad. This new kind of dynamic online textbook include up to date, interactive features, multi-touch textbooks, interactive images and galleries, 3D images, highlighting and note taking facilities, and also interactive drill and practice exercises. Therefore, iPads become the basic tool used by the students in and out of the class. The iBooks are cleverly integrated into the curriculum with a range of interactive activities that encourage and engage students into the subject material so that they continue learning even when they might not be aware that they are still doing so. Some activities are delivered in class and students can revisit these resources in their own time (outside of class), and some are designed for students to undertake when out of class (e.g. as a piece of homework).

3.2. Collaborative Authoring of iBooks

The iBooks’ authors and the curriculum development specialists in STS use student and staff feedback and comments to improve and polish their ideas, and improve these resources, in a continuous improvement effort to make sure that finished product becomes more polished. The types, format and variety of interactive activities within these iBooks have naturally increased and emerging technologies allow for better interactive experiences for students. iBooks have evolved, becoming more and more culturally customized, giving students more of a national feel, and involving STS students in the preparation of audio and video resources. (CDU, 2013)

Each semester has different courses and all courses have some form of e-resources associated with delivery or supplementary material. iPads are used for nearly all courses as some of the practical workshop simulations, come with their own iBook teaching resources. Some of the technical
drawing software come with its own set of e-resources and even internationally recognized certification, so in these cases there are already sufficient teaching resources that do not necessarily require additional iBook material to be made. Similarly, workshop practical simulations (e.g. welding simulators, etc) may also come with a complete training curriculum when the kit is bought, so for these subjects it may not be required to produce that courses iBook. Nearly all other subjects within the STS curriculum do have their own specific iBook for each course each semester.

In the beginning of each academic year, the STS IT department along with the CDU starts distributing iPads to students and teaching staff. In each campus, IT staff take care of iPad configuration, students emails and network connection, and they also support students in downloading the iBook’s and apps that will be taught in the term or grade. They also support the day to day use of iPads by fixing any issue that the students may face.

3.3. Some examples of Apps used at STS

STS uses different Apps in all subjects as part of the learning process, in addition to the iBooks used as textbooks. Among those Apps, Sketch Free allows teachers to annotate and share photos either from their camera or from screen capture. This App also provides just-in-time feedback and help about written work to students and teachers. Puppet Pal allows student to create animated shows on iPad that can eventually be shared on the web. Socrative Quiz Maker, Socrative Teacher and Socrative Student Creative Book Builder, Socrative provide smart response system that empowers teachers to engage their classrooms through a series of educational exercises and games via smartphones, laptops, and tablets. While these Apps are used in all STS schools, teachers can also choose other Apps for their own classroom. Schoology, Edmodo, Pinterest are among the most popular ones, but many more are available such as GoodReader, TeacherKit, Notes Plus, Popplet, Nearpod.

4) Research Questions and Methodology

4.1. Previous Studies About the Impact of iPads on Low Achievers

The literature shows that iPads have an important impact on performance and achievement, particularly on those who add difficulties with the traditional methods of learning (Garcia, 2011) (Chou, 2012) (Bjered et al., 2012).

Garcia (2011) conducted a study with five sections in a US history class, with:
- two standard groups and one honors group using iPads in the lesson
- One standard and one honors group instructed with paper-based methods.

The study occurred over a series of two 50-minute class periods. Every section completed a brief informal writing exercise and shared personal stories about 9/11 in a whole class discussion. All sections then viewed a CNN news clip from September 11, 2001 and a discussion followed.

For the same writing exercise, the average performance of standard students (6.6/10) was much lower than for honor students (9.25/10) when using the traditional paper based methods, while these performances seem to become much closer to each other when using iPads, with an average of 8.1/10 for the standards, compared to 8.8/10 for the honor group. In addition, the use of iPad stimulated collaboration and cooperation among the students that was not present in the class periods that used paper primary sources. Students working with the paper readings all read independently and did not discuss the material with their peers. On the contrary, the iPads facilitated and encouraged group collaboration which ultimately positively impacted student achievement.

Another study by Chou (2012) revealed many promising opportunities and technical
challenges for both teachers and students. The positive impact of iPads integration on student learning includes active engagement, increased time for projects, improved digital literacy, and digital citizenship. The only challenge for student learning is distraction that may occur because of the multitude of irrelevant Apps and Websites. With regard to instructional activities, the positive impact includes the implementation of student-centered activities and enhanced teaching practices with updated information. The challenges include a lack of teacher-selected Apps and the need for more time to preparation and to actually conduct training.

4.2. Our Working Hypothesis and Research Questions

Our research questions are about the impact of new student-centered pedagogical approaches using tablets on different categories of STS students whether high, medium, or low achievers. The answer to these questions is based mainly on the comparison of the results of different groups at mid-semester and their results in the same disciplines (Math, English, ICT) at the end of the previous year, while still in a traditional classroom situation. This part of the study is purely quantitative, and provides a few hints on the impact of iPads on a relatively small sample of students with different levels of achievement (three groups of ten, representing low, medium and high achievers).

In parallel, a qualitative survey was also conducted to cover the subjective perception of the same sample with regard to different dimensions of learning, motivation, content, pedagogy, engagement, parental involvement and understanding of complex ideas.

The questions in this survey are inspired by three studies on similar topics:

- The first one is published by the NSW Curriculum and Learning Innovation Centre, Department of Education and Communities, State of New South Wales, in Australia (Goodwin, et al., 2012).
- The second source of inspiration is a case study from Scotland about mobile technology adoption, from eight individual educational locations that differ significantly in terms of demographics, infrastructure, and readiness. This study looks into the use of tablet technology for learning and teaching (Burden, K. et al, 2012) with special attention to motivation, engagement, parental involvement and understanding of complex ideas.
- Another aspect of student’s perspective is found in the results of a third survey of 126 students published by (Gliksman, 2012) who introduces mainly questions about the use of iPads.

Based on the assumptions found in those three surveys, we wanted to investigate whether it is possible that iPad may have a stronger impact on students’ performance especially when they are low achievers. We were therefore looking at the correlation between the introduction of iPads and the performance of groups of students at different initial levels, high, medium, or low achievers.

4.3. The Sample

The whole study was contacted with a total sample of thirty students in one single STS school that is ten students from each group category (high, medium, and low achievers). The study looked at the previous marks, before students had any contact or learning with iPads, and compared them with the results of the same students after using the iPads. The quantitative analysis looked at the marks of the three groups of students in three different subjects (Math, English and ICT).

5) Result

A quick look at the dispersion of results between the marks before and after introducing iPads, shows that the dispersion increases significantly when one goes from
high, to medium, then to low achievers (Figure 3, 4, and 5).

The high achievers group remains stable, with or without iPad. In all subjects, their marks at the end of Grade 9 are very close to their marks after half a semester of iPad usage.

Medium achievers’ marks show a small change after iPads, but the most significant change is clearly with the low achievers marks, that increase dramatically when iPads are used.

These quantitative results are also confirmed by the answers to the qualitative survey whose questions focus on:

- **Pedagogy** (autonomy and responsibility on one’s own learning, assessment of one’s own learning progress, new opportunities for learning)
- **Device ergonomics** (ease of use of iPad, typing on an iPad, iPad helps to learn, iPads or laptops, usefulness of iBooks)
- **Student Learning** (iPad factor of motivation, improvement of knowledge and skills, support to collaboration, personalized learning, supports of content-creation and creativity)
- **Curriculum** (relevant and engaging content of iBooks, iBooks well aligned to STS syllabus)

All students were unanimous to agree on almost all the questions, including the impact of the pedagogy (flipped classroom model) to give them autonomy and responsibility on their own learning, assessment of their learning progress, as well as new opportunities for learning and creativity.
Some of their remarks deserve to be highlighted:

“It helped us to understand what we are actually working on, and it helps weak students get help from students who are a bit know”.

“The flipped classroom model encourages teamwork and cooperative work between me and my peers”.

As for the device ergonomics, all agreed that they can manage to type on the iPad as they would use “Keynotes and Pages” although iPad keyboard is much smaller to PC. iBooks and Apps were also rated very useful.

iPads were perceived as a major factor of motivation helping the students to improve their knowledge and skills, support collaboration with their peers, personalize learning and help control one’s own learning and creativity:

“It can help me improve my skills and how to research and find information.” Also the they said that “iPads are much interesting to read with than books, we can read a book make notes and find a meaning of a work all in one”.

Apps and iBooks were perceived as relevant, accurate, up-to-date and engaging, well aligned with STS syllabus, and closely linked to the curriculum:

“The iBooks are very difficult and doesn’t know how to study from it”. On the other hand another student said “Apps are very useful and all the iBooks and Apps help us a lot in our studying and curriculum”.

The three teachers involved in the survey agreed to all statements and questions:

“Students can be creative about their learning by researching, interacting, and engaging in interesting Apps content and martial”.

**Conclusion**

The study was conducted on a small sample only. Although this should be seen as a clear limitation, it is part of our plans to conduct a similar study on a bigger sample involving the whole grade 10 of all STS schools in UAE. For future studies the result should be compared in different stages of the year 10 such as the beginning of the academic year and the end of it. The study confirms our hypothesis about a stronger impact of iPads on the low achievers students while high achievers are less affected by the introduction of iPads. Beyond the distinction between high, medium, and low achievers, it also appears that students’ marks slightly improve in nearly all the subjects when using iPads. We did not find any clear correlation between the use of iPads and the performance of high achievers, while the correlation for medium achievers performance seems weak, as iPad had little impact on this group.
References


Bjerded, M et al. (2012). Learning is Personal, Stories of Android Tablet Use in the 5th Grade. USA: Learning Untethered.


Educause. (2012). Things you should know about flipped classrooms. Retrieved from educause.edu/eli


Disruptive Innovation or Constructive Evolution

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Can Dubai schools leverage Change Project Management techniques and cultivate CoP’s to help them make reform an ongoing practice?

This Paper reviews the challenges facing the reform and modernization initiatives in the private school sector in the Emirate of Dubai. We will look at methods of supporting the change management aspects of the reform to enable the schools face the challenges caused by continuous educational reform we expect to happen in the coming decades.

Background

Throughout history, the world saw a transition from millennia of agricultural economy to centuries of industrial economy to decades of services sector led economy to the nascent knowledge economy (Drucker, 1992). At the core of this transformation is the conversion of information processing and diffusion media to digital media. The quantum leap of information thus generated and propagated, at a pace faster than any era in human history, is challenging the human mind capacity to adapt and grasp the quantity of new information as well as its capacity to cope with rapid changes taking place in the society.

The Internet today is now widely considered a fundamental ubiquitous infrastructure supporting many facets of national economies, in much the same way as electricity, water and transportation networks. (OECD, 2013)

To become successful knowledge economies, countries have to rethink and act simultaneously on their education base, their innovation systems, and their information and communication technology infrastructure, while also building a high-quality economic and institutional regime. (World Bank Institute, 2007)
The numbers in Figure 8 above could explain the sense of urgency. In just 5 years, Internet users increased from 18% of a population of 6.5 Billion to 35% of a population of 7 Billion, a net increase of 1.28 Billion Internet users, almost 1 Million users per working day. Worth noting also the increase in China, the largest developing economy in the world (from 28% to 37%), followed by India (from 6% to 10%). These two emerging economies racing towards world economic leadership are putting pressure on all other economies of the world in the race towards Knowledge Economy.

In order to adapt to these transformations, the quantum leap needed in human thinking and behavior puts pressure on the education system. Changes in what we need to learn, how, when and where we learn it is becoming the topic of the hour. As an illustration for the key role of learning we note that the ITU ICT Development Index, an annual report to monitor and benchmark information-society developments worldwide bases 20% of the indicators on data collected by the UNESCO Institute for Statistics (UIS) on adult literacy rates, gross secondary and tertiary enrolment ratios.

The United Nations University sets the differential between:

- **Industrial economy** where innovation depends on discovery, and
- **Knowledge economy** where innovation depends on learning, collaboration and generating new knowledge as non-depleting resource

Learning therefore is the key challenge in the transformations of the coming decades. These technology driven transformations affect all aspects of human life. A new mindset for the new era requires the education sector to produce technology aware workforce of knowledge generators.

**Modern innovation theory sees knowledge creation in a much more diffuse way. Firstly, innovation rests not on discovery but on learning. Learning need not necessarily imply discovery of new technical or scientific principles, and can equally be based on activities that recombine or adapt existing forms of knowledge (United Nations University, 2002)**

**Global Perspective**

We can note that the accelerating changes are challenging International organizations to standardize nomenclature and key indicators to describe and measure the profound changes driven by digital technology transformations and its uses.

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<th>Organization</th>
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<th>Measure</th>
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<tr>
<td>OECD</td>
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<tr>
<td>ITU</td>
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<td>Knowledge Assessment Methodology</td>
<td>Knowledge Economy index (KEI)</td>
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<td>Knowledge index (KI)</td>
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Economists and intellectuals have the same predicament. Drucker attributes the phrase ‘knowledge economy’ to economist Fritz Machlup and its origins to the idea of "scientific management" developed by Frederick Winslow Taylor (Drucker, 1992). The term 'Digital Economy' was coined in Don Tapscott's 1995 best-seller The Digital Economy: Promise and Peril in the Age of Networked Intelligence (Tapscott, 1997).

While the ‘Internet economy’ is defined as covering "the full range of our economic, social and cultural activities supported by the Internet and related information and communications technologies" (OECD 2008a). The competition on economic leadership in the new era is probably a factor for lack of international cohesion in defining parameters, nomenclatures and standards.
Regional Perspective

The World Bank report on Education in the Middle East states: “Education is at the crossroads for the future of the Middle East and North Africa (MENA). It plays a crucial role in promoting poverty alleviation and economic growth, both at national and household levels. It reflects the aspirations of the people for a successful integration into the global economy in an ever changing world”. (The Road Not Traveled: Education Reform in the Middle East and North Africa, World Bank, Washington, 2007).

The MENA Region

The total population of the MENA countries is approximately 350 million inhabitants of which about 10% are located in the Gulf. Population growth averages less than 2.5%, and females are about 50% of the total population. The total population of all Arab countries (excluding Djibouti and Somalia) was estimated by the UNDP Human Development Report (2004) to be around 286 million. The percentage of Arab population in the age group of 15 – 64 is approximately 60% of the total population. Figure 10 illustrates the distribution of population in Arab countries in this age group. The total population in the GCC countries is of the order of 33 million inhabitants of which just over 20 million are within the 15-64 years age group, again about 60% of the total population. Within the Arab countries, the literacy rate for the age group of 15 plus varies from a high of 91% in Jordan to a low of 40% in Iraq (UNDP Human Development Report). The percentage among males is generally higher than for females. It is estimated that the total number of learners at universities in these countries exceeds 3 million (United Nations Statistics). Demand for education has shown an increasing trend over the past few years, especially in the GCC States in particular in the UAE. This is evident from all statistical sources (Ministry of Planning, UA, GCC Demographic Report, Arab League Statistics and United Nations Statistics). The increase in the number of private academic institutions in the UAE is part of the response to the increased demand for post-secondary education in the region. International agencies such as the IMF show that the GDP for all Arab countries was US $1,600 billion of which US $900 billion was for the GCC States. The average GDP per capita was $ 12,242 for all Arab countries while it was US$35,583 for the GCC countries, and US$4,000 for the remaining Arab countries (excluding the GCC). In the rankings of GDP per capita, the six GCC countries are at the top. In the case of the non-GCC countries, there is a wide disparity in GDP per capita with countries such as Libya relatively high while Comoros has a GDP per capita of about US$500. It is important to point out that both the GDP and GDP per capita fell substantially in 2009 as a result of the international financial crisis.

The GCC Economies

Over the past three decades, the member countries of the Gulf Cooperation Council (GCC) namely Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates have witnessed an unprecedented economic and social transformation. Oil export has enabled these countries to modernize, create employment, and improve social indicators, while the countries have been able to collect official reserves and maintain low external debt. Life expectancy in the GCC area increased by almost 10 years to 74 during 1980–2000, and literacy rates increased by 20 percentage points to about 80 percent over the same period.
The economies of the GCC countries have recovered rapidly after a period of decline caused by wars in Iraq and overall world economy stagnation, experiencing recently unusual GDP growth as shown in table below. Although, all the GCC economies have contracted as a result of the international financial crisis, it is expected that they will rebound in 2010-2015. One reason for their renewed growth is that these economies have substantial reserves of oil and gas that bring in constant revenues. In addition, these economies have substantial sovereign wealth funds that can be used to boost the local economy.

Error! Reference source not found. illustrates the real GDP for the six GCC countries from the turn of the millennium to date with forecasts for 2010.

![Figure 10: GCC States – Real GDP](image)

Recent statistics indicates that by the end of 2010, the total spending on e-Learning in UAE is expected to achieve a compounded average growth rate of 26% to reach US $72.6 million (Madar Research Group, Arabia Business.com, and January 2008). In UAE, there is the strong focus on computer literacy and on English language. Moreover, the Ministry of Education is constantly refining its educational strategy to ensure that the programs developed for its schools comply with in international standards. For instance, one goal is to provide one computer per learner in the universities and one computer for every two learners in preparatory school. The compound growth of expenditure on e-Learning in the UAE is predicted to exceed 32% by the end of 2008. Hamdan bin Mohamed e-University specializes in the delivery of its programs by blending the varying aspects of e-Learning with the most effective elements of traditional instruction.

![Figure 11: Internet Users in the Arab Countries](image)
Table 1: Internet Users in Arab World

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<td>Bahrain</td>
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<td>6,426,679</td>
<td>1,270,000</td>
<td>3,700,000</td>
<td>57.6 %</td>
<td>11.0 %</td>
</tr>
<tr>
<td>Jordan</td>
<td>6,053,193</td>
<td>127,300</td>
<td>796,900</td>
<td>13.2 %</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Kuwait</td>
<td>2,505,559</td>
<td>150,000</td>
<td>816,700</td>
<td>32.6 %</td>
<td>2.4 %</td>
</tr>
<tr>
<td>Lebanon</td>
<td>3,925,502</td>
<td>300,000</td>
<td>950,000</td>
<td>24.2 %</td>
<td>2.8 %</td>
</tr>
<tr>
<td>Oman</td>
<td>3,204,897</td>
<td>90,000</td>
<td>319,200</td>
<td>10.0 %</td>
<td>1.0 %</td>
</tr>
<tr>
<td>Palestine (West Bank)</td>
<td>2,535,927</td>
<td>35,000</td>
<td>266,000</td>
<td>10.5 %</td>
<td>0.8 %</td>
</tr>
<tr>
<td>Qatar</td>
<td>907,229</td>
<td>30,000</td>
<td>289,900</td>
<td>32.0 %</td>
<td>0.9 %</td>
</tr>
<tr>
<td>KSA</td>
<td>27,601,038</td>
<td>200,000</td>
<td>4,700,000</td>
<td>17.0 %</td>
<td>14.0 %</td>
</tr>
<tr>
<td>Syria</td>
<td>19,314,747</td>
<td>30,000</td>
<td>1,500,000</td>
<td>7.8 %</td>
<td>4.5 %</td>
</tr>
<tr>
<td>UAE</td>
<td>4,444,011</td>
<td>735,000</td>
<td>1,708,500</td>
<td>38.4 %</td>
<td>5.1 %</td>
</tr>
<tr>
<td>Yemen</td>
<td>22,230,531</td>
<td>15,000</td>
<td>270,000</td>
<td>1.2 %</td>
<td>0.8 %</td>
</tr>
<tr>
<td><strong>TOTAL (MENA)</strong></td>
<td><strong>192,755,045</strong></td>
<td><strong>3,284,800</strong></td>
<td><strong>33,510,500</strong></td>
<td><strong>17.4 %</strong></td>
<td><strong>100.0 %</strong></td>
</tr>
</tbody>
</table>

Notes: (1) The Middle East Statistics were updated as of December 31, 2007. (2) The demographic (population) numbers are based on data from the Census Bureau. (3) Internet usage numbers come from various sources and are compiled here, see the site surfing guide. (4) The most recent usage information comes mainly from the data published by Nielsen//Net Ratings, ITU, and other reliable sources. (5) For growth comparison purposes, the usage data published by ITU for the year 2000 is furnished. (6) Data may be cited, giving due credit and establishing an active link back to Internet World Stats. Copyright © 2008, Miniwatts Marketing Group. All rights reserved.

**UAE National Perspective**

In the UAE, the sense of urgency of educational reform was highlighted when the President, HH Sheikh Khalifa bin Zayed Al Nahyan announced an award for Education. It recognizes the interaction between the main elements of the UAE society, namely local, Arab and international contributors to the field of Education. The objectives are clearly stated:

*The enrichment of the process of character development and engendering a patriotic sense of national belonging while rewarding successful learning and effective creativity such that every student is able to deliver his or her contribution to his or her community and country.*

(Khalifa_Award_for_Education, 2012)

In 2007 the UAE Ministry of Education (MoE) five strategies on reform and modernization aimed to prepare students for an active role in a modern knowledge society in an international benchmarked performance, as well as launching a 10 year facilities reconstruction plan while restructuring educational management and consolidation of small schools (Macpherson, Kachelhoffer, & El Nemr, 2007)

In 2012 UAE MoE announced that preparations of 100 new schools taking part in the Mohammad Bin Rashid Al Maktoum
Smart Learning initiative for the academic year 2013-14 were completed.

The preparations include providing schools with the latest electronic technology, high speed networks and classroom smart boards which allows the teacher to explain the lesson through the presentation of electronic content.

The initiative aims to shape a new learning environment in public schools through the launch of ‘smart classes’ that will provide every student with an electronic tablet and access to high-speed 4G networks by 2017.

The Emirate of Abu Dhabi, UAE’s largest and most affluent oil producer launched its own Education Council (ADEC) to deploy the strategic directions of the Emirate in becoming one of the top five governments worldwide by 2030.

ADEC objectives are to build competent human capital and effective governmental capacities to help the emirate achieve its goals. (Abu Dhabi Education council)

The Government of Dubai established in 2006 its Knowledge and Human Development Authority (KHDA) as the educational quality assurance and regulatory authority overseeing the private education sector.

KHDA coordinates with many different partners; students, parents, teachers, the private sector and other Government bodies, as all play a role in Dubai’s education community. KHDA vision is stated as Lifelong learning to fulfill Dubai’s aspirations

School Reform

On a global scale, we notice a drive of reforms in the educational sector in response to the deep changes imposed by the accelerated pace towards the information society and knowledge economy.

The United States of America has been the global innovation leader in Information and Communication Technology since the second half of the 20th Century. In the past 20 years, it has gone through two policy reviews and four policy reforms on the use of technology in education.

- **Transforming American Education: Learning Powered by Technology (2010)**
- **Toward A New Golden Age In American Education—How the Internet, the Law and Today’s Students Are Revolutionizing Expectations (2004)**
- **Getting America’s Students Ready for the 21st Century: Meeting the Technology Literacy Challenge (1996)**

*(Office of Educational Technology, 2010)*

A new educational reform policy every four to six years in an era of tight budgets and a global economic downturn reflects both the task difficulty as well as the sense of urgency in response to the acceleration in technology innovations.

In 2008, Booz & Company Inc. conducted a study titled ‘How to Succeed at Education Reform: The Case for Saudi Arabia and the Broader GCC Region’. In the study a direct link is set between adequate education and the resolution of the unemployment problem, challenges to adequate school reform are listed (Maroun, Samman, Moujaes, & Abouchakra, 2008).

**The Challenges**

UAE Schools are investing in Information and Communications Technology (ICT) infrastructure and teacher training, yet not able to foster the goal set out for QFEmirates:
Promoting the concept of lifelong learning as the means to enable individuals to plan and access learning in order to fulfill their potential and to contribute to the future growth and prosperity of the UAE. (NQA, 2013)

This experience mimics to a certain degree what the US DoE faced in its series of reforms. The targets start by providing the ICT Infrastructure, then encouraging both students and teachers to embrace it only to find that teachers have a hard time catching up with modern trends as their students do. In its “How Children and Teachers Use Technology in the Classroom” publication, KHDA notes:

Dubai has 13 curricula taught in its schools, and the “Good” inspection evaluations of curriculum quality usually showed moves towards a varied approach to developing pupils’ skills, including the use of ICT. However, inspectors found that the skills of research, enquiry and critical thinking and their direct link to the use of ICT were generally underdeveloped. In fact, although teachers now use ICT more regularly, we noticed that many students still have insufficient access to ICT to support their education across all subjects. A significant majority of students use ICT regularly in an ICT suite or at home, rather than as routine across subjects. This does little to help their progress and independence in learning.

These findings go along the international consensus that training teachers on the use of technology while making ICT available to schoolchildren does not necessarily lead to the integration of ICT in the learning process nor does it encourage self-learning as a first step towards lifelong learning. (Schieb, 2011)

This paper presents that the challenges in Dubai school reforms are essentially in three Dimensions:

1. **Human:**
   a. Diversity by ethnic component of an expat population of almost 1 Million.
   b. Resistance to change

2. **Procedural:**
   a. Private school systems were inherited from colonial school concepts: schooling systems distributed around the world needed to conform to a central system, replicate it globally.
   b. A high degree of authority to the teachers over the students with no room for localization.

3. **Approach:** School reform is treated as a onetime exercise driven by management instructions to a community of teachers who are used to be the Masters of their classrooms

**Proposed Approach**

The classical approach to change management project rests on the following pillars, namely:

a. World Class Change Management practices to manage the human angle
b. Best Practices in Project Management to improve the overall control and performance
c. Kaplan work on Balanced Score Card will help focus on key areas and measure results

To address the challenge of Ethnic diversity, the Change Management process is to take into account the work on Ethnomethodology as an approach to sociological inquiry, introduced by the American sociologist Harold Garfinkel. Ethnomethodology's research interest is the study of the everyday methods that people use for the production of social order. Ethnomethodology's goal is to document the methods and practices through which society's members make sense of their world. (Garfinkel, 1967). The Change Management cycle should also take into consideration the work of Gregory
Bateson identifying 3 stages of Learning Reform:
1. Conformity Learning
2. Reformation Learning
3. Transformation Learning (which can be related to QFemirates)

Change Management process handles resistance to change mainly by inclusion and improved lateral and vertical communications. Inclusion is ensured by active participation of stakeholders in preparing the new Vision, Mission and Values to accommodate the new school vision. Middle management role in planning using the Balanced Score Card techniques ensures the ideas and objectives are clearly communicated, expected results identified and key indicators measure success. Suchman (1988), inspired by Garfinkel's (1967) ethnomethodology, studied the ways writing and drawing activities interact with conversation and the people grasp of communicating ideas. Helping stakeholders understand the reasons for educational reform motivates them to embrace the upcoming changes and become actors in the process. (Schieb, 2011) discusses how reforms in curriculum and instruction affect teacher motivation for professional development and recommends further study into how teachers’ views affect the sustainability of change and thus affect daily behavior in classroom. Helping Management understand and appreciate the project at hand and its success criteria reduces the risks of resistance and rejection.

Best practices in project management go a long way to provide controls on the project execution within the planned resources and communicating change to target audiences at every phase. As such, the needs for global central control will diminish in favor of a higher degree of autonomy needed to deploy localized school reform. By breaking down the execution cycle into manageable and measurable steps, transformation becomes more understandable and accessible to all concerned.

A well-documented Project Charter serves as an excellent medium to document the process as well as project execution. Elements of a model Charter are listed in Appendix A.

**Sustainable Reform**

School reform is affected by factors of various dimensions and multiple sources, acting as vectors of varying directions and changing intensity at ever speeding rates:
- Globalization trends and Internet Evolution in reach and content as a source of information
- Global economic crisis putting pressure on available funds to finance educational reform
- Change Management Considerations and Public Awareness
- Legal and Constitutional frameworks and Socio Political systems
- The Digital Gap : Generation e

Sustainable change in the school reform process is thus more of a cyclic exercise that accumulates the knowledge and capacity development of the involved team than an individual event managed by individuals. Involving the school team members in the exercise of defining mission, vision and strategy, using Kaplan’s Balanced Score Card techniques to identify the project KPI’s ensures the stakeholders are aware of progress and aligned behind the reform sought by the school leadership. The exercise also helps identify the change agents that will support the project and subsequently evolve into a Community of Practice along with their team mates in the school and colleagues in other schools and the knowledge generated becomes the key asset in the community.
By sharing these concepts in constructivist mode with the project team members, a strong motivation to support the present reform project. Furthermore, it generates support for building the core capacity to yield a continuous change / knowledge cycle at their schools and be able to continuously update the learning techniques and approaches with an ICT savvy student body whose expectations will keep evolving.

Knowledge Management

All knowledge acquired through the execution of the project, experience in resolving issues and analysis of risks and remedies and post project review as documented in the project charter shall constitute an input for the next project. By documenting all this acquired knowledge in a repository, a Community of Practice (CoP) can start and be cultivated. CoP Domain would be Change Management for school reform. CoP Community would be the professionals working on these projects, among teachers, administrators and vendors. The practice itself would be the set of projects and their associated activities and follow up for sustainability. Economic benefit yield from this CoP both in the optimal use of resources in the next project, as well as additional revenue generated from knowledge proliferation and dissemination.

The group can evolve naturally because of the members' common interest in a particular domain or area, or it can be created specifically with the goal of gaining knowledge related to their field. It is through the process of sharing information and experiences with the group that the members learn from each other, and have an opportunity to develop themselves personally and professionally

(Lave & Wenger, 1991)

Conclusion

The proposed approach shall require further study and pilot fieldwork as to assess its validity in Dubai private schools. A final reevaluation of the theoretical framework established will be needed before further assessment and recommendations can be made.
References


The Introduction

Intended mostly for the use of administrators and management reviewers of the project, usually not professionally aware of the project and its implications yet mostly concerned with the audit perspectives. They get to know who approved what and where for what purpose, the delivery and payment schedules. The registration section of the project Charter provides a bird's eye view of the project, the change activity being sought and the key players of the project.

Project Goals

The desirable measurable outcome(s) of the project

Project Dependencies and Constraints

Dependencies on external factors and constraints of internal factors that could potentially affect the execution of the project or its resources

Key Assumptions and Agreements

Having highlighted the project dependencies and respective constraints, the project manager looks at the key assumptions made, mostly for intangible factors and unpredictable dimensions. The team then proceeds to clearly document these assumptions and the agreements between the actors in this project concerning these assumptions in case they do not materialize as Expected

Critical Success Factors

Critical success factors represent a list of those practices and occurrences that must be done well for the project to be successful, or obstacles to be avoided.

Deliverables

A list of actual deliverables in products and services, itemized, and for each deliverable identify the successful delivery / completion criteria and associated payments.

Project Communications

1- Project reviews weekly
2- Steering Committee Project meetings once a month, Minutes to be distributed to all parties involved and to Project Sponsors.
3- Progress Reporting consists of schedule review, change management, issues review, risk management, quality management.
4- Status reports issued weekly consist of schedule tracking, issues, risks and other important project issues. This will form one of the inputs for the review meeting
5- Escalation Procedure where resolution of key issues or changes to the project are likely to impact upon budget, quality or scheduling conflicts.
**Issues Register**

A list of all issues that have major impact upon the delivery of the project will be recorded. A list of all assumptions underpinning the project scope and cost are recorded.

**Risks**

New project risks identified will be recorded in Risk Matrix and assessed by the team for impact on the project. Re-assessment of the risks will be done by the project team at agreed intervals at the project progress meeting. The intention of the exercise is to bring qualitative focus to action. The risk factor is calculated for each risk using the formula: Probability x Impact = Risk Factor. Where factors are 40 or higher, action plans are required to reduce the probability of the risk occurring and or its impact on the project.

**Project Change Requests**

Most change notifications are the result of:
- An external event
- A manifested risk
- A failing assumption
- An error or omission in defining the scope of the project
- An error or omission in the scheduling of the project
- A value-adding change

In all cases, the change request must be documented, raised to management review along with cost and time and resource implications. If approved, the requested change is then reflected in all aspects of the project under execution.

**Stakeholder Awareness Plan**

At each milestone of pre-planning, planning and execution of the project, appropriate medium of communication is selected for the target audience and imbedded in the project charter and execution plan.

**Project Closure and Lessons Learnt**

After project completion, a review and evaluation of the project implementation and documentation of the lessons learnt is the prerequisite for project signoff by the project sponsors and marks the formal project closure.
Social Video Learning and Social Change in German Sports Trainer Education

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Ghostthinker Company, Germany
Gabi Reinmann
Zeppelin University, Germany

Abstract

The Deutsche Tischtennis Bund e.V. (DTTB) is one of the 60 professional sports associations with approximately 600,000 members and approximately 12,000 licensed coaches a “medium-sized” association. Up to now, 2014, more than 50 per cent of the 16 state associations have implemented Blended Learning offers. In the online phases of the new competence-oriented, web-based coach training and further training the focus is on “Social Video Learning”, i.e. teaching and learning with timestamp-based video annotations (edubreak®CAMPUS), which was also at the centre of the present case study. The case study will show how Social Video Learning can trigger social change and what measures have been successful in this context in combination with the use of video technologies. The article wants to give an overview about the “orchestration” of didactical, technical, cultural, organizational and financial aspects at different levels (micro-, meso- and macro-level) to tip the scales in favour of triggering and consolidating a social change. The DTTB is well on its way to implementing a “system change”, which turns it into the flagship of German (and international) sports as far as the implementation of digital media in coach training is concerned.

Keywords: video annotation, sports trainer education, blended learning, social change

Introduction

The Deutscher Olympischer Sportbund e.V. (DOSB)\(^8\) is the umbrella organization for all 60 German professional sports associations, and with its approximately 27 million members in 91,000 sports clubs the largest association of individuals in Germany. In the sports clubs, people not only practice a huge variety of types of sports – both at the general and the top level –; the DOSB with its “Overall Guidelines for Qualification” also provides a binding orientation framework as to how the approximately 580,000 coaches (including youth leaders, association executives, and sports physiotherapists) can achieve and/or renew their coaching licences at the different licence levels every year.

\(^8\) http://www.dosb.de/en/organisation/philosophie/dosb-profile/
2007 the DTTB has been gradually converting the “classical”, i.e. exclusively face-to-face-oriented, coach training and further training into a Blended Learning offer (Reinmann, Lames & Kamper, 2010).

Up to now, 2014, more than 50 per cent of the 16 state associations have implemented Blended Learning offers. In the online phases of the “new” competence-oriented, web-based coach training and further training the focus is on “Social Video Learning”, i.e. teaching and learning with timestamp-based video annotations. The technical basis is an online campus (edubreak®CAMPUS) with the focus on video learning, which was developed, starting in 2007, for coach training and further training. In 2011 the overall concept won the eureleA – a European award for “best project impact”, first and foremost in recognition of having achieved some social change.

The following case of the DTTB will show how Social Video Learning can trigger social change and what measures have been successful in this context in combination with the use of video technologies.

**Problem Statement**

Until 2007 the DTTB executed its coach training and further training in the classical face-to-face format, i.e. training took place at its headquarters in Frankfurt or at the locations of the respective state associations all over federal territory. During a workshop at the state association of Lower Saxony (TTVN) some challenges were identified that are essential to state-of-the-art sports organizations from the point of view of those concerned: (a) organizational challenges, (b) didactical challenges, and (c) challenges in implementation.

**Challenges in the organizational requirements**

One of the big disadvantages in pure face-to-face teaching is the lack of flexibility for participants regarding time and space. The extra-occupational and honorary coach training and further training in sports in particular relies on participants being given room so that they can organize their own balance between the different family-, occupational- and leisure-time requirements. “Room” in this case means that attendance times are as short as possible and that there is the possibility to also study outside mandatory attendance times. In the sports system there is the additional challenge of opening the relatively isolated activities within the state associations, of facilitating an exchange of experiences among tutors also beyond their own locations, thus laying the foundations for coordination processes, quality-assurance measures and organizational coherence.

**Challenges in the didactical embedding**

Classical face-to-face teaching within the DTTB, at least in the field of “theory”, used to follow models of input control and knowledge transfer. As a consequence, chalk-and-talk teaching prevails, and learning phase and examination period are dissociated. The “idea” of output orientation (European Qualification Framework) however is all about basing the entire training structure on the participants’ carefully considered skills, dovetailing theory and practice qualitatively in a new way, and implementing a process-linked way of examining, all of which, taken together, are supposed to lead to sustainable learning processes.

**Challenges in the implementation within the sports context**

The introduction of learning innovations with digital media meets with opposition from the “sports” system. The reasons for this are manifold: within the sports system there are a lot of interest groups (e.g. voluntary/full-time), which hampers fast decisions. First of all, sports are associated with “body movement”. Therefore, at first glance the benefits of electronically imparted knowledge (E-Learning) may be deemed questionable also in coach training. The public-interest-oriented and honorary
The sports system is not financially strong, which makes higher investments in novelties difficult. All this contributes to the generation of challenges as regards the implementation of “suitable” media-supported teaching/learning formats.

The Implementation Concept

The following implementation concept distinguishes between three levels: a) micro-level: technical-didactical measures that refer directly to the participants’ interactions with one another and with the teaching/learning content, (b) meso-level: technical-didactical measures that mainly refer to the organization of learning in terms of time and space and the organization of educational support provided by moderators, and (c) macro-level: measures of participation.

Micro-level

An analysis of topics and methods in coach training quickly shows one thing: an essential key medium in sports is video (Kretschmann, Hebbel-Seeger & Vohle, 2011; cf. Krammer & Reusser, 2005). Video as a medium can look back on a long-standing tradition, primarily because of the vividness of dynamic scenes for analytic, reflective and impartation purposes. The Internet has expanded these learning opportunities: on the one hand, nothing stands in the way of world-wide distribution, on the other hand “the web” facilitates a social and simultaneous exchange about video contents. Special learning opportunities for reflection and collaboration will arise in case of video comments in the form of timestamp-based video annotations (cf. Rich & Hannafin, 2009; Pea, Lindgren & Rosen 2008) and the possibility of sharing video annotations with other participants in a protected environment. By “timestamp-based video annotation” we mean that, at certain instants in the video that are marked exactly to the millisecond, learners can integrate comments in text form (or audio) and/or in the form of symbols (traffic light colours) or drawings (circles, indicator arrows, etc.) in the video (rich video annotation). Precisely this has been made possible on a special online campus for coach training (edubreak® CAMPUS). Moreover, learners can share their comments with one another and re-comment on other learners’ comments. That is what we call Social Video Learning, SVL for short (Vohle & Reinmann, 2012). Illustration no. 2 shows an example of a video annotation with related visual keywords on the timeline. Filter mechanisms enable targeted search for colours, authors and so-called “timeline neighbours” in order to promote social exchange.

Ill. 2: Video annotations (text, drawing, visual keywords)

Besides video annotation there are other learning tools from the Web 2.0 environment (blog and e-portfolio) that are not considered here in greater detail for lack of space (Vohle & Reinmann, 2011). Crucial to learning success in SVL is the use of tasks that contain observation- and annotation criteria, namely adapted to the possibility of timestamp-based video annotations. Without such observation tasks the use of SVL remains suboptimal (Vohle, 2013). If however participants complete special observation- and annotation tasks and create their own video annotations, they will also require individual feedback on these artefacts. Accordingly, a lot of space is devoted to educational support for participants within the DTTB context, the more so as sports take the question of personal “excellence” very seriously. To sum up, the following measures at micro-
level will assure the quality of Social Video Learning: observation- and annotation tasks, individual video reflection by means of timestamp-based video annotations, collaborative video dialogue by means of re-comments as well as specialist feedback.

**Meso-level**

The customized technology “mix” for coach training (edubreak® CAMPUS) derives its coherence from being integrated in a Blended Learning concept (Vohle, 2011). Depending on the licence level (C, B, A) different varieties or combinations of online - and face-to-face phases are implemented within the DTTB: ranging from short training courses of three days (one face-to-face day and one online day each before and after) to a one-year programme (several workshop phases with assisted and self-organized online phases). In a typical Blended Learning settings in sports, video artefacts (e.g. scenes of the match or instructions to players) are produced in the face-to-face sessions, which will then be used for video annotations in the subsequent online phase. On the one hand there is the benefit that participants can use their actions from the face-to-face session for self reflection; on the other hand, the combination of different learning phases by “video work” will promote learning and motivation.

Besides the transition to a more flexible training through a Blended Learning structure, intensive educational support provided by moderators has proven its worth. This assistance is supported by a special Feedback Cockpit that helps tutors give their feedback in an efficient way. The restructuring of the training with, among other things, upstream and downstream online phases has made it possible to integrate participants in a continuous task completion process. Each participant is “forced” to perform tasks by making video annotations, contributing to blogs, etc., which will then be checked by the tutor in the spirit of an “assessment for learning”. In brief: together with E-Learning also in-process verification has found its way into training. There are no more final exams like multiple-choice tests and such in the DTTB. Classical closed-book examinations have given way to “minor” proofs of competence. The tutors aim to improve the performance level of all participants by giving individual feedback.

An increased coherence in coach training and further training is achieved by (a) connecting the learning phases in a content-coherent way through video work, (b) tutors providing intensive support, and (c) in-process verification. This means that participants experience the learning process within the (flexible) Blended Learning format as “coherent”, “intensive” and “continuous”, which will have a substantial effect on the output quality.

**Macro-level**

Besides sports-specific technology and didactics, the DTTB implementation concept also comprises participation measures. In this context, involving tutors and learners in the progressive development of technology and the formulation of the didactical concepts has proven beneficial. Between 2007 and 2014 the implementation concept has been optimized further and tailored to the requirements in coach training, going through hundreds of design-, test-, and redesign loops. This strategic evaluation process has been structured, reflected and documented in publications in cooperation with university specialists in learning research (Reinmann & Vohle, 2013). Another form of participation includes those concerned in the narrow sense: the decision-makers in association management. Together with them a “strategic concept” was created, so that also those not directly involved in the teaching/learning process are integrated in the change process and can communicate the reforms to the organization effectively. After several state associations had joined the new form of training, the need arose for an exchange among tutors across the different locations. They wanted to share
their experiences with regard to the way of course supervision, task creation, feedback processes, sanctions, etc. In the time that followed, a virtual community of tutors developed, which is engaged to the present day in an exchange across locations about their Blended Learning courses. Since the middle of 2012 this exchange has been intensified and systemized through a project\(^9\) funded by the Federal Ministry of Education and Research and European Union (total 1,73 Mio. €). They are looking for educational success patterns for Blended Learning scenarios at the different licence levels. In addition to these didactical-organizational implementation conditions, a financial concept has been developed together with the DTTB: For the day-to-day operation the association is using the edubreak®CAMPUS within the framework of a “Software as a Service” (SaaS) approach, i.e. the technology including service and technical support is made available by a third-party provider. This way, the association can concentrate fully on primarily didactical innovations and further developments.

To sum up, the following forms of participation at macro-level will contribute to a sustainable development: (a) participation of direct users in technical-didactical developments, (b) cooperation with decision-makers regarding strategy and finance, (c) promotion of the cooperation among different stakeholders in the practice of training and further training.

**Ill. 3: Intervention level in the case of the DTTB**

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\(^9\) [http://www.salto-dosb.de/](http://www.salto-dosb.de/)

**Discussion of Alternative Solutions**

The problem in the case at hand, which includes organizational and didactical challenges as well as challenges with regard to implementation, is complex and naturally allows for more than one approach to solution. In the following, alternative approaches at micro-, meso- and macro-level are outlined as representative, which may also illustrate what advantages are inherent to the actual implementation concept chosen.

**Micro-level: text-picture combination offline versus video online**

Plenty of explanations in sports, especially in motion analysis, are presented in the form of text-picture combinations (Schnotz, Baadte, Johnson & Mengelkamp, 2012). Particularly continuous-advance motion images, in which the motion has been captured in a series of single images, play an important part here. Although this approach is still being used in textbooks as well as in digital learning resources, a number of reasons speak in favour of the use of video in combination with the possibility of commenting videos online (and timestamp-based) (Zhai, Fox, Pierce, Wu & Bulut, 2005): (a) In comparison to the text-picture combination, the medium of video has the advantage of picturing the motion in its dynamics and its context, which is beneficial not only under cognitive, but also under motivational-emotional aspects. By using slow-motion and single-frame advance modes one can also analyse details. (b) By means of online video annotations learners can analyse and reflect motion videos, and exchange their views on them too. Unlike summary video annotations or comments on text-picture combinations, the timestamp-based video annotation allows for an analysis precisely at those points in the video where the comment can be assigned to an instance (e.g. turning points or phase transitions, which is essential for learning motions). Finally, the verbalization in annotations is an important means for practising
terminology and also for visualizing mistakes and being able to correct them subsequently.

**Meso-level: pure online learning versus Blended Learning**

In the course of first-generation Massive Open Online Courses (MOOC) (Yuan & Powell, 2013) pure online learning has again become popular: without any restrictions as regards time and space learners attend courses in huge numbers. Particularly in sports and coach training, however, face-to-face learning with practical application of what was learned is essential. How to promote learning new movements, how to give suitable instructions, how to use body language, etc.: all this requires experiencing it in a real situation, in a situational context. For this reason, also within the framework of state-of-the-art web-based coach training, a minimum of face-to-face teaching in the gymnasium, in the playing field or the sports complex is required, despite the associated loss in flexibility. A Blended Learning concept though can combine the various benefits: firstly, one can save on travelling and accommodation costs; secondly, valuable face-to-face sessions are released from the burden of mediating processes that are transferred to the online phases. Then face-to-face sessions will be used for the practical implementation of the athletic activities. These sessions are also important for producing video contents to be used in subsequent online phases. This facilitates self-reflection (of one’s own way of doing things) (versus learning with taped videos), which particularly promotes individual excellence.

**Macro-level: top-down versus participative**

E-Learning projects often follow a strict implementation plan in order to introduce reforms in a fast and efficient way: a learning technology is selected, content and learning scenarios are developed, pilot projects are initiated, and finally the roll-out is done. If it is just about implementing a technical system or a tool that won’t affect the actions of those concerned much, such a way of proceeding may be reasonable. Implementing new learning technologies though often requires changes in the routines of tutors and learners. In case of bigger reforms sometimes a change in the learning culture is striven for. This is the case in the context of sports. Moreover the organizational structure of sports itself makes a top-down approach difficult. Generally, new learning technologies have to be implemented in the associations using one’s own funds. All this makes it necessary for the stakeholders to share and second the didactical conviction underlying the solution proposed, to independently take up the associated concept and to promote and operate it with small funds. This can only work if the people concerned become participants, from the consultants in charge of organizing the Blended Learning courses to the participants that attend those courses on a voluntary basis to the full-time and honorary executives responsible. Planning: the first phase of Extreme Programming life cycle, where ‘user stories’ or requirements are created – aspects of this stage are described in details in the next section (Analysis & Design).

**Recommendations**

The implementation concept has been adapted to the sports context, customized methodologically and institutionalized over a long period of time (2007 to 2014). On these grounds one can reasonably call this an educational innovation because the “new” has not only been accepted within the framework of a little pilot project. On the contrary, didactics, web technology and organizational networking have spread in the educational practice of the DTTB (cf. Fullan, 1996). “Going back is not an option”, says an educational expert of the DTTB. Against the background of this success we would like to formulate some recommendations in the form of design
principles and give some advice on scientific support under the heading of “Educational Design Research”.

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Recommendations in the form of design principles

Against the background of the implementation concept and the discussion of alternative approaches, the following recommendations can be given for the design of Blended Learning scenarios with a focus on Social Video Learning (SVL) in sports:

Recommendations at micro-level

- SVL should be combined with observation tasks. As a rule, these tasks will be completed successfully if they include information about the context, comprise concrete instructions and define the period allowed for completion as well as completion criteria.
- SVL should be combined with an exchange of views among the participants. As a rule, this will work if a special task is formulated in this context, and if the video player allows for re-comments and offers filter options.
- If learning success is to be verified, an e-portfolio for video annotations should be implemented in addition to SVL.
- Work on the e-portfolio has to be accompanied by instructions though and is only worthwhile if the training goes over several months and competence development shall be visualized.

Recommendations at meso-level

- SVL should be organized in such a way that learners receive feedback on their work results – if possible also specialist feedback as this has proven to be particularly motivating.
- Feedback processes in SVL should be supported technically in such a way that tutors are able to react to work results in a timely manner, thus getting an overview. The “Cockpit for Tutors and Moderators” provided by the online campus used has proven to be helpful.
- If also exams shall be altered using SVL, a new design of the examination process is required: away from summative and towards formative exams. The artefacts created in SVL can be used as indicators of competence for a new exam situation in which learners explain their work and receive qualitative feedback from experts.
- SVL can commence with an online phase if there is already video material available to activate and sensitize participants before they come to the face-to-face session.
- With downstream online phases SVL can above all promote self-reflection processes if video material of the participants “in action” has been produced in the course of the face-to-face phase.

Recommendations at macro-level

- In the implementation of SVL tutors should be involved from the beginning: participation is possible in the conceptualization and adaptation to one’s own context, in the creation of content, in the allocation of contents to online phases and face-to-face phases etc. It is recommended to continuously
obtain feedback from the tutors during the implementation.

- In the implementation of SVL stakeholders should be involved: such involvement is particularly recommendable when the implementation of Blended Learning events is being communicated, and in the support of communication measures going into the organization.

- In the implementation of SVL also the learners should play an active part, especially by providing feedback: learners can give feedback regarding all technical-didactical measures and make suggestions for improvement – also in phases of failure.

- For the implementation of SVL a “Software as a Service” model can be applied: this has proven itself in the context of sports because of its good cost-benefit ratio and because the training provider is released from the burden of technological support.

Recommendations in the form of development- and evaluation principles

The constellation of the partners in the DTTB project displays a number of particular features: the project was initiated by a scientific edu-startup (Ghostthinker Company) and accompanied scientifically in close cooperation with a university partner. This constellation allowed for an intensive dialogue between science and practice, i.e. between the practice partner DTTB, the science-affine edu-startup and the university with a focus on media didactics. On the basis of this partner- and communication situation the project was developed following the principles of the Educational Design Research approach.

In the context of technology-enhanced teaching and learning, educational design (based) research is a new type of research and methodology that promises both practical benefits and scientific insights. Since 2000, the idea of organizing and describing the “act of development” from a scientific perspective has been promoted, mainly in the Anglo-American countries. In this process, initial and rather general structural characteristics have developed, e.g. the fact that development takes place in several cycles: theory-based design, testing under real-life conditions, evaluation using a variety of methods, and specific redesign (McKenney & Reeves, 2012; Reinmann, 2005). It is precisely this design- and methodology strategy that helped develop the Social Video Learning approach in sports and optimize its implementation continuously by means of evaluation und redesign (Reinmann & Vohle, 2013).

As regards the DTTB, between 2009 and 2013 approximately 30 official Blended Learning courses took place at all licence levels with a total of approx. 500 participants. Any one DTTB course is attended by 15 to 20 learners with one to three tutors. In a three-week Blended Learning course (2½ days face-to-face, upstream and downstream online phases) the participants produce approx. 1,500 artefacts, i.e. video annotations, contributions to blogs, and C-maps (Novak & Cañas, 2006). In such a course the moderators give approx. 200 short feedbacks.

The primary purpose of the evaluation in the case of the DTTB is to improve the different technical and didactical measures and to stabilize the innovation. As a rule, the evaluation is based on a written survey using short questionnaires (online). The questionnaire items deal with three question groups: acceptance of the new Blended Learning format, use and usability of the different learning tools, subjective learning benefit and quality of the whole package with recommendation. The survey results, which remained constantly positive to very positive over the entire survey period from 2009 to 2013, have been presented at conferences and also in scientific and practice-oriented journals in order to reach a wider public and to facilitate (critical) discussion (Vohle, 2009).
Conclusion

The project in the DTTB shows impressively what opportunities digital media can offer for educational innovations in sports. The overall picture emerging from looking at the potentials at micro-, meso- and macro-level is that:

At the micro-level of teaching and learning mostly learning tools from the Web 2.0 environment support active participation form the learners’ side. On the basis of construction-oriented tasks participants can above all analyse videos (SVL), but also verbalize experiences (weblog), visualize knowledge (C-Map) and collect and reflect their work results (e-portfolio). Particular potential in the field of coach training and further training in sports has to be attributed to SVL, which was also at the centre of the present case study. By means of timestamp-based video annotations, for instance sophisticated motion analyses can be carried out online – individually or collaboratively. Intensive support by means of expert feedback will not only secure participant motivation but also keep the promise of “excellence” and an assessment for learning.

At meso-level it is above all the new time/space structuration in the form of Blended Learning formats that gives coaches more flexibility. The German sports system in particular, with its primarily honorary (versus full-time) staffing structure, relies on a flexible and hence attractive structure that leaves enough room for combining work- and family requirements. Another part of the reorganization of the training is the alteration of the exam in the direction of in-process verification. Every video annotation and a moderator’s feedback is in principle a micro-cycle of learning and feedback (with exam character). Implementing this exam culture also at operational level requires special support measures from the tutors’ side, such as a moderator cockpit: this will ensure favourable support economics without foregoing high support quality.

At macro-level above all participation measures make it possible for long-term development of Blended Learning courses to satisfy the essential needs and requirements of the sports association (which are also bound to change over the years). Besides the involvement of tutors and learners in concept development and concept adaptation, the exchange between tutors across locations by means of a virtual community has proven to be promising, in particular with increasing course numbers. After all, an educational innovation such as in the DTTB has to be financed. “Software as a Service” is the keyword for a business model that seems to work in sports and entails a good cost-benefit ratio for the associations.

In the end it will be the “orchestration” of didactical, technical, cultural, organizational and financial aspects at different levels (micro-, meso- and macro-level) to tip the scales in favour of triggering and consolidating a social change. This social change will alter two things: the concrete training practice of coaches and moderators, and the structures that stabilize and “protect” such new practices. The DTTB is well on its way to implementing a “system change”, which turns it into the flagship of German (and international) sports as far as the implementation of digital media in coach training is concerned.
References


content/uploads/2013/03/MOOCs-and-
Open-Education.pdf

Educating Teachers about Open Educational Practices: Firefighting Tactic or Long-term strategy?

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Abstract
Most research pertaining to Open Educational Resources (OER) in developing countries (Mauritius, Nigeria, India, etc) show that OER awareness is minimal. The countries where OER were seen as most needed, are actually those that are not even aware, let alone understand about OER. Thus, putting content out in the public does not ensure appreciation, nor does it provide additional opportunities for learning. The parallels can be drawn with the internet that allows much wider access to higher education, but it has been proved that simply making content more easily available does not result in higher quality learning (Butcher, 2007). The relevance of this work is to hear the teachers’ voices about Opening up education. In most developing world cultures, the teachers are the main mediators of knowledge and thus have a great impact on their student’s propensity for learning. Teachers either inspire, tire, or worse - make no difference to their learners and the linchpin of this outcome lies in the epistemological beliefs of teachers and how they perceive their influence on their students. The question that arises relates to whether teaching a module on Open Educational Resources will simply provide teachers with didactic knowledge for simply passing the module or whether there will be perceptible changes in mindset and more professional teaching cultures. This paper aims at looking at Open Educational Practices and whether it can be an appropriate framework to encourage a “culture of sharing and collaborative practices” and enhance the reflexive practices of teachers for more innovative teaching practices.

Keywords: Professionalisation of teachers; Open educational Practices; Bildung, Mezirow’s Transformative learning Theory.

Introduction
The ILT 3400 Open Educational Resources and Technologies module has been offered since the past 5 years to fee-paying mature students mainly from the teaching sector. Beyond teaching about the affordances and “mashability” of Open educational resources, the tacit objectives of the OER module are about nurturing a culture of sharing, co-creation and respect for others creations- more so their own pupils’ creations. While the module objectives relate explicitly to the design and development processes of OER, the aim of this study is to find out whether the module design has been of any influence on my students’ beliefs about teaching and in turn, this will help me to re-engineer and enhance the module to be able to embed “appreciation of” and “engagement in” collaborative and reflexive cultures to be able to sustain the OER movement in Mauritius.

Background and Aims
Open Educational Resources (OER) are defined by the William and Flora Hewlett Foundation as “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full
courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge”. Geser et al. (2007) highlight that OER existence “draws upon open technologies that facilitate collaborative, flexible learning and the open sharing of teaching practices that empower educators to benefit from the best ideas of their colleagues.” The importance of including practices in the various definitions of OER was pointed out by Hodgkinson-Williams (2010) and has its significance for this assignment since it is essential to learn more about teaching practices and to what extent, whether at all, these are transformed through Open educational practices. The benefits of OER to higher education teachers have been listed by Masterman, Wild, White, Manton, (2011) and include providing inspiration and ideas for ways of teaching; providing access to a wider pool of resources to draw from; ability to fill gaps in teachers’ expertise; enhancing personal reputation building; allowing for feedback from peers and learners and for comparing work with others; providing more opportunities for collaborating with others across institutions, sectors and subject disciplines and eventually creating greater awareness of issues related to OER and Intellectual property. While most of these advantages are more relevant to Higher Education, there are increasingly more OER targeted at primary and secondary schools such as Oercommons, Khan Academy, Rice’s Connexions, UK’s Openlearn initiatives to mention a few. This entails that OER movements are not only the concern of the higher education sector, but is also largely and perhaps more importantly, more relevant to the primary and secondary education sector. However, very few studies mention how primary and secondary teachers perceive and use these OER and whether there was a transformative effect in their teaching. To be able to estimate the impact of OER, the concept of Open Educational Practices (OEP) emerges as an important step towards mainstreaming OER in the educational practice. OEP are thus defined by the International Council for Open and Distance Education (ICDE) as “practices which support the production, use and reuse of high quality Open Educational Resources (OER) through institutional policies, which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path”. The realities of primary and secondary schools are quite different from Higher education, and also vary from country to country. However, in terms of visions for the 21st century, teaching and learning sectors consistently espouse similar values and objectives. In Mauritius, OER has been mentioned in the Education and Human Resources Strategy Plan 2008-2020 (EHRSP 2008-2020) as part of the first strategic objective of Increasing and Widening Access and Ensuring Equity. Section 1.3 of the EHRSP mentions the setting up of an Online Learner Support System to Promote eLearning and Open Educational Resources (OER) be in place by 2010 (EHRSP (2008), p119). Whilst the setting up of an online system or repository of OER can help to increase awareness of teachers to resort to open digital resources for enhancing their teaching, there is neither guarantee of sustained interest nor of enhancement in teaching practices. Hattaka (2009, p1) mentions that “OER initiatives are very commendable and needed but open content is not being used by educational organizations in developing countries (or rather the usage of the free resources is low). The phrase “Build it and they will come” (from the movie “Field of dreams”) clearly does not relate to repositories for open content. Larson and Murray (2008) more appropriately rephrased it to “Build it and they will not come unless you design a system to promote and encourage access”. One such system that exists in Mauritius is the module on Open educational resources and Technologies within the BSc (Hons) Top-up Educational and Instructional Technologies program at the University of
Mauritius. This programme targets holders of a Diploma in education and provides them with an accelerated route to earning an innovative educational technology degree. The modules taught are delivered online through the Moodle Learning Management System consist of mainly Educational Technology-related topics and enable the learners to design curriculum, learning strategies and educational websites using contemporary Instructional design models. The ILT 3400 module is offered in the first semester of the second year and has three main Open Educational Practice –related goals:

1. Providing the learner with a steady grounding in the current state of the field of open educational resources, including related topics like copyright, licensing, and sustainability.
2. Guiding learners to situate open education in the context of mainstream instructional technologies (e-learning, blended learning, learning objects, MOOCs, and so on)
3. Provide learners with opportunities to reflect, write, and communicate creatively and critically about current practices and possible alternative practices in open education.

The OER module outcomes consisted of designing and creating a new open module on 21st Century Skills using a mash-up of existing OER. The class is divided into teams of four or five and each team would be responsible for the creation of one chapter of the 21st century module. Through the creation of this collaborative module and reflection on the designing processes, the students are expected to be more sensitive to cultural concepts of inclusivity (differentiated instructions, building communities in the classroom, encouraging collaboration) and openness (sharing, autonomous thinking, accountability and transparency). Eventually, I would like to find out more about whether the design process set up has been of any influence on my learners’ beliefs about teaching because this will help me to re-engineer and enhance the module to be able to embed appreciation of and engagement in collaborative cultures.

**Theoretical Background**

**Philosophy of Bildung and Mezirow’s ten Phases of transformative learning**

Stenhouse (1975, p144) lists the critical characteristics that extended professionalism essential for curriculum research and development as:

- The commitment to a systematic questioning of one's own teaching as a basis for development;
- The commitment and skills to study one's own teaching;
- The concern to question and test theory in practice by the use of those skills.

He mentions that "It is difficult to advance 'beyond the stable state' Schon (1971) and our capacity to do so probably depends on our developing routines for change and development and experiment which are themselves well-known and therefore reassuring. It is this that a research tradition offers. (Stenhouse,1975, p214). This constant need for questioning and inquisitiveness is also seen to be a central feature of the concept of Bildung. Bildung, is literally translated German for Education and Formation and also corresponds to the ideal of education in the work of Wilhelm von Humboldt (in Sorkin, 1983). Humboldt outlined the notion of Bildung as being related to the world to enable the individual to have all the experiences that contribute to becoming a fully developed human being. Thus, in this context, the concept of education becomes a lifelong process of human development, rather than mere training in gaining certain external knowledge or skills. In other words, Bildung goes beyond the vocational goal of providing students with knowledge and skills which match the demands of employers. There is greater emphasis on the non-vocational goal of “formation or cultivation, in education or otherwise, of
human moral virtues and other capacities”. (Herder 2002, Humboldt 1791-1792/1993, Gadamer 1960/1989.) Humboldt emphasized the “unrestrained interplay between the individual and the world, an exchange through which the individual relates to the world in the most comprehensive, vital, and freest way possible.” Self-development is not an adaptation to an external order but rather a cultivation of the inner life: a reflective, creative form of self-realization or self-cultivation which, crucially, is achieved in and through relations with others.

In the process of Bildung, Gadamer (1960) views the student or participant in the process as (i) made to reflect on a certain problem, (ii) presented with more than one possible solution without being told that this solution or the other is the right one, and thereby (iii) provoked or stimulated to think independently on the problem.

Diemann and Farrow (2013), describe the parallels between concepts of Bildung and open source Mozilla Foundation’s four basic web literacies (2013):

1) Exploring - I navigate the Web while learning, questioning and evaluating what it has to offer.
2) Creating - I create things with the Web and solve problems while respecting the work of others.
3) Connecting - I communicate and participate appropriately in one or more Web communities.
4) Protecting - I protect the Web as a public resource for free expression.

The principles that are presented by the Mozilla Foundation are also represented through the philosophical stance of Bildung as learners:

1. Are confronted with learning concepts that they need to assimilate and accommodate into their previous schemas
2. Adapt their new-found knowledge to current knowledge structures so as to add value to society
3. Disseminate or enact this new found knowledge for the benefit of the community and
4. Ensure that their work has resulted in the formation or cultivation of human moral virtues and other capacities.

Eventually, the idea is to be able to evaluate the transformative potential of applying the Bildung philosophy to teaching practices. In this light, Mezirow’s Ten Phases of Transformative learning as listed below provides a useful framework for gathering evidence of how OEP will lead to transformation of teachers:

1) Disorienting dilemma – Mezirow posited the importance of facing events which were different from usual experience – “As long as our experiences fit, or can be fit, into our existing meaning structures we tend to not engage in transformative learning.”
2) Self-examination with feelings of fear, anger, guilt, or shame- As learners, we are subject to criticism from our peers and MKOs “more knowledgable others” (Vygotsky, 1978) and also need to fit within a particular cultural framework, thus bringing forward moments of anguish and painful experiences.
3) Critical assessment of assumptions and relationships- These emotionally-charged moments become then opportunities for reflection and self-analysis.
4) Recognition of one’s discontent
5) Exploration of options for new roles, relationships, and actions
6) Provisional trying of new roles – During these phases, Mezirow’s theory recalls the concepts of rational discourse, whereby the learners recognise that their discontent and the process of transformation are shared and that others have negotiated a similar change and that they need to explore options for new roles, relationships, and actions as in the next phases.
7) Building competence/confidence in new roles and relationships.
8) Planning a course of action, Acquiring knowledge and skills for implementing one’s plans.
9) Acquire knowledge and skills for implementing one's plan.
10) A reintegration into one’s life on the basis of conditions dictated by one’s new perspective.

The ILT 3400 OER Case Study

In the context of the ILT3400 Open Educational Resources module, the main learning activity consisted of collaboratively creating a module on 21st Century Skills. The first step of this assignment aimed at students reading about 21st Century skills and posting their understanding on a discussion forum to reach a common set of skills which they would work on. They then would form teams to design the chapters relating to the 21st Century Skill of their choice. It was made clear to these students that this module would be an Open Educational Resource that they would host on an open platform and that eventually the next cohort would continue working on their first draft, thus espousing the whole culture and processes of Open Educational Practices. It was observed that this immersion into an open educational culture was at first quite an intimidating experience and set the learners in a “disorienting dilemma” balancing their initial fears of putting their ignorance of 21st Century skills out in the open with the need to learn more and master the concepts they would be presenting. There was also the challenge of integrating a pedagogical learning strategy based on a learning theory into their chapters to cater for the quality assurance aspect of their contents. Gagne’s nine events of instruction was a popular choice and provided a sound framework for designing and developing the learning content and activities for the chapters on 21st Century skills (based on the Assessment and Teaching of 21st Century Skills organisation http://atc21s.org/) in the Mauritian context namely:

Ways of Thinking
1. Creativity and innovation
2. Critical thinking, problem solving, decision making
3. Learning to learn, Metacognition

Ways of Working
4. Communication
5. Collaboration (teamwork)

Tools for Working
6. Information literacy
7. ICT literacy

Living in the World
8. Citizenship – local and global
9. Life and career
10. Personal & social responsibility – including cultural awareness and competence

![Image of CORRE Framework](image-url)
The choice of 21st Century skills was strategically two-pronged in that it enabled firstly the teachers to be “learning by doing” about 21st century Skills and secondly situating the content in the Mauritian context, thus adding value to existing subjects pertaining to 21C skills. As this was the first cohort to be assigned this activity, the focus was less on the content developed but rather on the processes that coordinating, designing and developing the 21st Century Skills module entailed.

We based and adapted our design process on the CORRE (Content, Openness, Reuse-Repurpose, Evaluation) framework which was developed by the University of Leicester OTTER project as a workflow framework that shows the process of turning learning material into publicly usable OERs. Since this was to be a work-in-progress, and the focus was less on the contents per se, the tasks halted at the internal validation stage on the CORRE framework, and were posted on the Schoology website for the next cohort to work on eventually.

**Methodology**

The aim of this research was to study the impact of a module on OER on the beliefs of teachers and whether awareness of OER can lead to Open Educational Practices – whether teachers can actually integrate a culture of collaboration, sharing and reflection about their practices. Through the case study approach, an intensity purposive sampling allowed for selecting interviewees as “information-rich cases that manifest the phenomenon intensely, but not extremely” (Patton, 1990), opting for good students/ fair students, those researching into OER and those with other research interests for their final year project. Evidence of transformation was collected throughout the module duration and assessed based on how their beliefs and mindsets had changed over the different learning activities set. At the beginning of each activity, all students were supposed to read about various topics related to OER such as Creative Commons licensing or Openness in education and post their thoughts and opinions on a discussion forum. They also had to write a reflective article based on the creation and repurposing of OER as they had experienced it during activity 2. Questions pertained to: What were the disruptions they had felt in their beliefs about creating a chapter? What were the challenges they felt about taking someone else’s contents and reworking them? To what extent was the collaborative aspect difficult/easy?

These discourses were coded and categorised based on concepts from Mezirow’s transformative learning theory. The table 1 below shows coded concepts that emerged from excerpts from the students’ forum posts and their occurrences during the different activities that were set for the module.

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<tr>
<th>Mezirow’s Transformative Phases</th>
<th>Excerpts from Students’ views as Evidence</th>
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<td>1. Disorienting dilemma</td>
<td>I’ve always been asking myself about how useful the learning to develop web resources would be to me. <strong>If ever I created something, how would I protect my creation while publishing it on the web?</strong> Till now I’ve been using the resources in class, for a small audience in order to avoid contravening with the copyright laws which I still feel the need to work on. I’ve been downloading pictures and videos from the internet and embedding them on my resources.</td>
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| 2. Self-examination with feelings of fear, anger, guilt, or shame | Let’s face it, here in Mauritius we have a piracy culture. People find it quite normal to download pirated films and sell them on the road or in registered shops in front of the Police headquarters. **Our purse speaks louder than our morale, and I have the feeling that authorities don’t seem to care.**  
**Before studying at the VCILT, I was never aware that copyright issues could** |
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<td>also enclose materials found on the Internet. I assumed on my own, and may be for my convenience, that every material on the Web was free for use and reference. However, I was sensitized when I followed courses. Still, I am at times tempted to “take” materials from the internet when I need. Now that I am developing this course, I have had the chance to be in the shoes of the creators whose work I might have borrowed from. I can now feel that if someone would have used my work without attributing me, it would have been disrespectful. <strong>Thus, I take no glory for the times I have “stolen” authors’ works.</strong></td>
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| 3. Critical assessment of assumptions and relationships | There are particular issues in respect to materials created by a member a college or university, or a student. With regards to students, there are no special legislative provisions. This means that students will be the owners of their own work, unless they agree to transfer it. **The question concerned with releasing third party material as part of an OER may seem difficult, but it is a basic rule of copyright law that the world over that you cannot give away another person’s property including intellectual property without their permission.** |

| 4. Recognition of one’s discontent | First of all I will need to convince my Headmaster of the advantage of using OERs to be able to get his support. Since there is only one ICT lab in each school I will need to make arrangement to have access to the lab and this can be done if the Headmaster approves of what is being done. |

I will need the necessary software and hardware to be able to use OERs in my class. I will need internet connection to be able to access OERs and most importantly I will need release time to be able to search appropriate OERs or to adapt the OERs to the need of my lessons and pupils.  

I might need some technical support too as technical access to different OERs is differs.  

The collaborative works have not been and up to the result expected. There are many reasons that can explain the part on the low result of the collaborative work. unfortunately we have not get accustomed to a culture of group work and at the online group work seem to face a problem of organization ,objective ,getting the process working and evaluating and bringing the corrective measures when the application phase have been tested. Our group exchange a large number of messages on Skype and the draft of our work were constantly sent to each member for review and comment but it seems the idea of 21st century skill and the subtopic discipline and ethics was difficult as learning/research material for our group, we lost a large amount of time researching and creating working material that would be used in the future but unfortunately we seem to have completely missed the objective set and partly unable to conciliate the 21st century skills (ethics and discipline) with the idea of OER where the topic chosen will be used to repurpose a work from the repository.  

The inability to look at the objective as our main focused have been the major flaws in our project work despite our willingness to work, the result was our inability to gather momentum with the work as we were usually stuck how to proceed with work. The works repository, repurposing, open learning resources was very difficult to assemble as one puzzle with the topic we were working. Therefore lots of energy and time was lost in understanding and trying to connect all the parts together but this have had limited success. |

<p>| 5. Exploration of options for new roles, relationships, and actions | Nevertheless this showed our inability and need to invest in other form of collaborative tools and ability to share and build upon materials and resources available on the net. The concept of repurposing was another obstacle that was discussed but we had difficulties to create the coherent |</p>
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<tr>
<td>6. Provisional trying of new roles</td>
<td>As an educator, I have always wanted to experience the feeling of having my name written in a course book. I wanted to know the challenges and difficulties of identifying the skills to be taught and finding the appropriate theme and material to give life to the course. Creating the chapter 21st century skills in Creole: fete Poisson, has been a chance for me to experience it. It has been a chance for me to use all the skills that I have acquired in this course at the same time. I had to design the course, understand the legal aspects and choose the right technologies to make the student eager to learn. It is the challenge that I have so long been expecting to have.</td>
</tr>
<tr>
<td>7. Building competence/confidence in new roles and relationships</td>
<td>At times people can be selfish, but it’s human. We always want to be unique, to be the only one to own a shoe, a bag or a shirt. We dislike seeing another person wearing our shoe: we do not like to share. It is the same thing for our knowledge. We always feel that if we share an idea, we may lose it. At times, when exams are near, we do not want to revise together. There is the fear that our friend could become more intelligent or score more using our ideas.</td>
</tr>
<tr>
<td>8. Planning a course of action, Acquiring knowledge and skills for implementing one’s plans</td>
<td>To create an OER, we had to first fight that selfishness. We knew right from the start that the work we would create: though how good and efficient it could be, it would not be ours alone. This idea could have been too high a hurdle, but we put our selfishness aside and worked it out.</td>
</tr>
<tr>
<td>9. Acquire knowledge and skills for implementing one’s plan</td>
<td>“I have been using OER since long but without being aware of the origin of the resources I am using for my teaching. Due to the internet connection, Mauritians have access to lots of resources which we can use in our learning. As I work with Prevocational students very often I have to search for images and simple notes to enhance my teaching. We teachers we share resources which we find interesting through social networking like Facebook and Skype. I believe in-service courses must be given to educators to enable them to make maximum use of the resources available on line and to move from traditional teaching, teacher centered to child centered. Since I have started the BSc course my teaching has changed and now I’m using technology to create a new learning environment and arouse students’ interest in learning and schooling.”</td>
</tr>
<tr>
<td>10. A reintegration into one’s life on the basis of conditions dictated by one’s new perspective</td>
<td>I was surprised to observe that in 2011 Rasinn, a socio cultural group from Rodrigues had released its first book: ‘Nu ti liv poem’ under creative commons licenses. This book was sold at R150 at that time. I realised that only in 2013 though I had the book since 2011. The fact that I study a module about OER made me look closer at the words creative commons licenses. But I do not think that many of us here are aware of creative commons licenses or even know how to use it.</td>
</tr>
</tbody>
</table>

Table 11: Coded Values and Student Comments Pertaining to Mezirow’s Phases of Transformative Learning

**Results and Discussions**

This study was an attempt at improving my own practice and enhance the module on OER that I teach. I gathered evidences of transformation through discourses between my students and myself. A conceptual framework was devised based on Mezirow’s theory of Transformative Learning to learn more about the extent to which the module has been able to have a “Bildung effect” on my learners. Though far from being generalizable, the evidence points to an enhanced conscience of Open Educational Practices and its benefits. The students also show concern and the need to embed a more open culture in the Mauritian teaching practice. The limitations of this research is
that it considered a limited number of respondents for the results to be generalized. Ethically, there are bound to be power-relationships at play within the context of a module I teach and what my students will respond to “please me” or simply write without really espousing these values. However this has been minimized by looking at evolutions in thought processes from the beginning of the module to its end and which had no impact on the actual outcomes of the activities which were marked based on set tangible criteria.

**Implications for Future Research**

There needs to be further exploration into the concept of Bildung and how to apply it in practice. Mezirow’s transformative learning theory does present evident linkages to measure transformation, however the concepts of self-realisation and self-cultivation have not emerged convincingly. The concept of openness can be pushed further to get students to be more critical about their own teaching practices and their own aims of self-realisation. There is still the tendency to take a fallback position and let authorities take charge of managing changes and improvements in the educational sector as a contradiction to the Bildung philosophy. In terms of my own practice, I should engage my students in more dialogue and encourage reflectivity in them through more focused discussions around the concepts of Bildung. It is important to learn more about what teachers perceive as self-realization and self-cultivation and whether they are able to nurture lifelong learning cultures in their own students as a cascading effect.

**Conclusion**

Teaching educators about OER is an ongoing process in itself. As teachers gain maturity about sharing and collaborative processes, their ability to search for and sensitivity to appropriate the best resources will be enhanced and also their discernment for effective creation and repurposing of content. The shift in focus from content to process will then be achieved as teachers will become less concerned about the “what we teach” but rather focus on “how we teach”. This marks the transformation of teachers to be able to embed Open educational Practices and the Bildung philosophy in their teachings.
References


مدى نجاح التدريب الإلكتروني في المؤسسات الحكومية

دينيس

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مدير أول التطوير الأساسي والتعلم الإبداعي
معهد الإدارة العامة - مملكة البحرين

المستخلص:
تقع مسئولية تدريب وتطوير موظفي القطاع العام على معهد الإدارة العامة ونظراً للطاقة الاستيعابية المحدودة بالمعهد فإن نسبة التدريب السنوية لا تتجاوز 10% من مجموع موظفي الحكومة، بالرغم من أن رؤية مملكة البحرين 2030 قد أدرجت مبادرة إتاحة وتوفر فرص التدريب ضمن مهام المعهد التي يجب أن يبدأ عليها إلا أن رفع النسبة وفقاً للموج من خلا التدريب التقليدي تتطلب إ+vاثاً ملائمة بإضافة لمحورية البرامج والدورات التدريبية التي يطرحها المعهد والتي لا تعطي وفقاً للدراسات البحثية كافاً استجابات الوزارات من التدريب، إضافة إلى محدودية ميزانية التدريب في المؤسسات الحكومية التي تحدث دون إتاحة فرص التدريب للكافة الموظفين، ونتيجة لدراسة أحد إجراءاتها المعهد "دراسة تحديد الاحتياجات التدريبية لموظفي القطاع العام في 2010"، اكتشف أن أكثر من 50% من الوزارات الحكومية من الوزارات الحكومية تشكل من ضعف الميزانية المخصصة لتدريب الموظفين، في الدورة ذاتها اتظح أن التدريبات الداخلية والمكملة في جميع الوزارات الحكومية لا يغطي 40% من إجمالي المدة الفعلية سنويا. وقد أشارت الدراسة إلى أن معظم خطط التدريب في الوزارات الحكومية غير متممة في التدريب الداخلي والخارجي، مما يحقق تحقيق طموح الموظفين بناءً على احتياجاتهم ورضا كل من في نفسها أو التي توجهها طبيعة عمل الموظف في القطاع العام، ورد المتدرب على الرضا.

المصطلحات:
- الرضا: هو موصلة الشعور الذي يدركه الفرد من خلال عمله بالمؤسسة، والذي يكون من مجموعة من الاتجاهات التي يكون له عن طبيعة الوظيفة التي يشغلها، والأجر الذي يحصل عليه، وعن فرص الترقية المتاحة، وعن علاقاته مع مجموع العمل التي ينتهجها، وعن الخدمات التي تقدمها المؤسسة للمتدرب. (Nestern, 1994)، وعرفه الباحث إجراياً: "إنه تأثير المستخدم على النظام التاريخي في مكان العمل، وعلاقته بالدورات التدريبية التي سيتوجب عليه في معهد الإدارة العامة ورضا محتواه وطريقة عرضه.
- فاعلية البرنامج: تعطي لنا صورة كاملة عن طريق أداء المتدرب وسرعته، للوصول إلى أكبر إنجازات والإنجازات، وآراءها عامة ودائماً، وتم ذلك من خلال إدارة الوقت والوسائط. (الصفر، 2001)، وعرفها الباحث إجراياً: "إنه القدرة على فتح الكتب والكتب العامل في التحليل والاستخدام من النسخة المختلفة للكتب في التحليل في التطبيق البعدي للنظام."
في هذا السياق قام معهد الإدارة العامة لمملكة البحرين بالاعتماد على دراسات الجدوى لعرض حالة وآيرادات وتجهيزات التدريب عبر الإنترنت. ومن خلال تحليل الدراسة المالية ومخاطر التدريب، انقرضت إمكانية التغذية الراجعة السريعة (وأحياناً الفورية). وهو ما يتطلب من جميع مسؤولي القطاع البحريني تطوير برامج التدريب عبر الإنترنت لتعزيز التخليص الأفقي والتحسين الاستدراكي. 

ووفقًا لدراسة أسلوب التعلم الإلكتروني للسيد (Bennett, 2001) أن استخدام الحاسب الآلي أصبح جزءًا من متطلبات الحياة وتعتبر هذه التقنية مصدراً للتطور والتحديث. حيث أن التعلم الإلكتروني يوفر إمكانية للأشخاص أن يتعلموا بمجرد احتمال طلبهم. وبناءً على ذلك، يمكن للمتلقين أن يناسبوا استعدادوا وتوجهوا إليه ببساطة. 

كما يمكن للمتدربين أن يتعاونوا على العمل من مواقع جغرافية مختلفة، وذلك يتطلب تطوير تقنيات تحديث وتطوير تدريبي يمكن للمتدربين أن يتحدثوا مع بعضهم البعض عن المبادرات التي تنبغي أن تتطلب في مجالات الإدارة المختلفة، مما يمكن من توفير الفرص للتعلم والاطلاع على الدراسات الحديثة من خلال الإنترنت. 

وعلى ذلك يشير (Pena, 2001) أن التعلم الإلكتروني يوفر إمكانية للأشخاص أن يتواصلوا بشكل فوري وتوثِّقوا التقدم والتحديث. حيث أن التعلم عبر الإنترنت يتيح للأفراد إمكانية التحليل والمتابعة عن المبادرات التي يتطلبونها. وبناءً على ذلك، يمكن للمتدربين أن يتعاونوا على الدراسة والتحديث بالطريقة الجديدة، والتي يُمكن تطويرها من خلال الإنترنت.
أولاً: الدراسة التطبيقية

"مقارنة مخرجات التدريب الإلكتروني والتدريب النظامي ومستوى الرضا"

في مدة الإدارة العامة بمملكة البحرين أجريت دراسة لمقارنة مخرجات التدريب الإلكتروني مع التدريب النظامي والتدريب التقليدي ومدى رضا المتدربين. تمت مقارنة مخرجات التدريب الرقمي مع مخرجات التدريب التقليدي ضمن عام 2013 م. أدانت المقارنة عدد 200 متدرب في مندوبية الادارة العامة ومتعلمين متدربين على التدريب الإلكتروني. تم استخدام أسلوب الاستبان وهيكلة التدريب الرقمي والتدريب التقليدي. أدانت التدريبات على النصف العام للدورة الدراسية. استخدمت الاستبان الاستبيان لإعادة التدريب في الدورات الدراسية، والدورة الدراسية. واجتازت مدة الدورات الدراسية 5 أشهر.

منهج الدراسة:

وتضمنت الدراسة الحالية المنهج التجريبي بتخصيص شبه تجريبي للاجابة على أسئلة الدراسة التي اهتمت بمقدار مخرجات التدريب الإلكتروني مع التدريب التقليدي، والمراقبة على رضا المتدربين عن التدريب لدى موظفي الفئات العامة والمملكة المحررة. واستخدمت الاستبان الاستبيان لقياس تأثير التدريب على مخرجات التدريب. وتضمن الاستبان الاستبان الاستبيان عن رضا المتدربين عن الدورات الدراسية.

متغيرات الدراسة:

- المتغير المسرور: تضمنت المتغيرات المسرورة بعملية التدريب الرقمي، والتعرف على رضا المتدربين عن التدريب في القطاع العام بمملكة البحرين. استخدمت الاستبان الاستبيان لقياس نسبة المتدربين الذين تولوا معرفة التدريبات في الدورات الدراسية، ومتغيرات الدراسة.

- المتغيرات التابع: تضمنت المتغيرات المسرورة بعملية التدريب الرقمي، والتعرف على رضا المتدربين عن التدريب في القطاع العام بمملكة البحرين. استخدمت الاستبان الاستبيان لقياس نسبة المتدربين الذين تولوا معرفة التدريبات في الدورات الدراسية، ومتغيرات الدراسة.

مجمع ومجموعة الدراسة:

شمل مجموع الدراسة موظفي القطاع العام في مختلف الوزارات والمؤسسات الحكومية. وقد تم توزيع المجموعات على النصف العام للدورة الدراسية، حيث تضمنت المجموعات من المتغيرات المسرورة بعملية التدريب الرقمي، والتعرف على رضا المتدربين عن التدريب في القطاع العام بمملكة البحرين. استخدمت الاستبان الاستبيان لقياس نسبة المتدربين الذين تولوا معرفة التدريبات في الدورات الدراسية، ومتغيرات الدراسة.
أدوات الدراسة:

للحصول على البيانات الخاصة بالدراسة أعد الباحث الأدوات التالية:

1. مقياس تطبيق مخرجات التدريب
2. مقياس الرضا عن التدريب

الدراسات السابقة:

رغم محدودية الدراسات التي تناولت موضوع التدريب الإلكتروني إلا أن البعض استطاع تجريب بعض البرامج التدريبية الإلكترونية ودراسة فعاليتها منها دراسة فراج (1996)، عبر برنامج "برنامج مقترح" لتقنية بعض مهارات الأعمال المالية والملاحسبة باستخدام الحواسيب الإلكترونية لدى طلاب المعاهد الفنية التجارية. هدفت الدراسة إلى قياس تطبيق الكمبيوتر في تعليم المهارات المالية للطلاب المعاهد الفنية التجارية في تنفيذ المهام المالية والملاحسبة اللازمة للطلاب، وقام الباحث بإعداد قائمة بالمهارات الأساسية اللازمة للعمل في النواحي المالية والملاحسبة التنفيذية باستخدام الكمبيوتر، وشملت عينة الدراسة (20) طالباً وقد توصلت الدراسة إلى وضع قائمة بالمهمات التنفيذية باستخدام الكمبيوتر، وصفة الوحدة المقدرة في إكساء الطلاب المطلوبة باستخدام الكمبيوتر، أما دراسة شيبير سكوت (2001)، فقد هدفت إلى العلاقة بين المعايرة التي تتعلق باستخدام الوسائط المدمجة والملاحسبة التي تتعلق على الطرق التقليدية في كل من الدراسة والتحصيل والاستفادة بالتعليمات، كما هدفت الدراسة إلى التعرف على الفروق بين المجموعتين في التحسينات الدارسية، واعتمدت الدراسة على التقييم التجريبي تقييم، وتحديد التفاصيل، واعتماد التقييم على المناهج التربوية ورضا وأثرت نتائج الدراسة على عدم وجود فروق بين الطرق التقليدية والحديثة في التحسين، مما أن الطلاب الأكبر سناً أكثر تحصيلاً، وأن الرضا المترشح جاء نتيجة استخدام الوسائط المدمجة.
الكابوريوس في إعداد أنظمة التعليم حيث كشفت الدراسة أن التعليمية غير الإلكترونية لم تحقق أثرًا على الرضا في التعلم، وذلك بسبب قلة المتغيرات التي استخدمت المهرات الأساسية في كلية الحاسب الألي والكهرباء وشئون الدافعة الذاتية نحو التعليم. أما منهجية التدريس现代化ة من حيث استخدام الإنترنت والتدريب في استخدام الداعية الرقمي إلى جانب التدريس التقليدي، وتسهيل نتائج استمارة استمارة الرضا بالتدريب (2007) فقد قام بدراسة مصادر التعليم الإلكتروني والتدريب أثناء خدمة الرضا في برنامج الإنترنت على واعية من الرواد والمتدربين في السلكية الوطنية التركية، وتشير نتائج الاستمارة إلى أن البرامج التعليمية في برنامج الإنترنت أثراً أكبر للدعاية الرقمية حيث تمكن البرنامج من زيادة درجة الرضا للمتدربين بنسبة 80%، وهي قيمة عالية بينما لم يتمكن المتدربين كافياً على قليلاً 0.733. وقد توصلت النتائج إلى رضا المدربين والمتدربين في تحسين الاتصال والتدريب الإلكتروني والتدريب الشفهي والتدريب الشفهي والتدريب الشفهي

وباختصار: تشايرلي (2000) كما قام بدراسة قائمة بقاعدة بيانية رقمية للتدريب الشفهي وتدريب الشفهي وتدريب الشفهي


وقد أشار نتائج الدراسة إلى أن التدريس الإلكتروني أو التدريس الشفهي يحتوي على نقاط قوة ونقاط ضعف. وعند النظر إلى التدريس الشفهي، فإنه يحتوي على نقاط قوة مثل الاتصال الفعلي والتفاعل الشخصية، ولكنه يحتوي أيضًا على نقاط ضعف مثل الاعتماد على المعلمين، وقلة المشاركة والتفاعل الفعلي، وقلة التنافر والتفاعلات الصوتية والرموزية.

ومع ذلك، فإن التدريس الإلكتروني يحتوي على نقاط قوة مثل الاتصال الفعلي والتفاعل الشخصية، ولكنه يحتوي أيضًا على نقاط ضعف مثل الاعتماد على المعلمين، وقلة المشاركة والتفاعل الفعلي، وقلة التنافر والتفاعلات الصوتية والرموزية.

وفي دراسة مشابهة للدراسة الحالية قام جوليريفيرا (2002) بمقارنة بين الدورات التدريبية والدورات

وقد وجدت الأثر الكبير للتعليم والتدريب على الرضا، ومن منصتي أخرى استنتاج ليونتكس (2003) دراسة بعنوان: شبكة الإنترنت كوسيلة للتدريب على الاقتصاد، حيث دفع الدراسة إلى التعرف على العلاقات بين التدريس و общائيات التدريس التدريس التدريس التدريس التدريس التدريس
استخدام الوسائط المتعددة والمحاضرة وتستخدم الطرق التقليدية في كل من الرضا والتحصيل والاحتفاظ بالمعلومات، بينما الدراسة الحالية اهتمت بمهارات التطور الشخصي ورضا المتدربين. كما اختلفت معها حيث العينة فركزت الدراسة السابقة على الطلاب بينما الدراسة الحالية ركزت على الموظفين في القطاع الحكومي لدى مملكة البحرين.

تشابهت الدراسة الحالية مع دراسة ليتونين عام 20110 في استخدام شبكة الإنترنت كوسيلة للتعليم التي هي جزء من أهداف الدراسة الحالية ولكن الدراسة الحالية اختلفت عنها في التدريب المباشر وليس فقط شبكة الإنترنت كما اختلفت معها من حيث العينة فركزت الدراسة السابقة على الطلاب بينما الدراسة الحالية ركزت على الموظفين واختلفت من حيث هدف البرنامج التدريبي حيث عندما اهتمت الدراسات السابقة بتنمية بعض المهارات التعليمية وفق اختصاص الطلاب بينما الدراسة الحالية اهتمت بمهارات التطوير الشخصي ورضا المتدربين.

نتائج الدراسة الحالية تجدر الإشارة إلى أن الدراسة الحالية تقوم على سؤالين رئيسين حول مخرجات التدريب ودرجة الرضا تم دراستهم على النحو التالي:

1- النتائج المتعلقة بالسؤال الأول

ينص السؤال الأول على "هل مخرجات التدريب الإلكتروني تختلف عن مخرجات التدريب التقليدي؟" وقد بدأ التحليل بجمع بيانات درجات عبارات كل بعد من المخرجات الثلاثة ثم قسمة المجموع على عدد العبارات بحيث أصبحت عبارات كل بعد تتراوح بين 0 و 0.5، مثلها في ذلك مثل درجات كل عبارة، ومن ثم فإن مدلول الدرجات الذي ينطبق على العبارات ينطبق أيضا على متوسطات الأبعاد. وللتحقق من صحة الإجابة على هذا السؤال تم استخدام اختبار شابيرو-ويلك (Shapiro-Wilk) للتحقق من عدم انتهاك التوزيع الطبيعي لأبعاد المخرجات الثلاثة لدى مجموعتي الدراسة، ويبين الجدول 7 نتائج هذا التحليل، ومنه يتضح عدم وجود شواهد تدل على انتهاك التوزيع الطبيعي لأي من الأبعاد وفي أي من مجموعتي الدراسة. بهذه النتيجة أمكن استخدام تحليل التباين متعدد المتغيرات (MANOVA) لفحص الفروق بين متوسطات مجموعتي الدراسة في الأبعاد الثلاثة مجتمعة.

2- النتائج المتعلقة بالسؤال الثاني

يبين الجدول 5 قيم المتوسط الحسابي والانحراف المعياري لأبعاد المخرجات لدى مجموعتي الدراسة، وتضحى من هذا الجدول وجود تقارب بين متوسطي المجموعتين في كل بعد، وبخاصة بعدي تناسب التوقعات والارتباط بمتطلبات العمل. وقد بين تحليل التباين متعدد المتغيرات (MANOVA) عدم وجود فروق دالة بين متوسطات المجموعتين (F=1.500، دح 0=0، دح 0=06، الدلالة المشاهدة 1.055). وهذه النتيجة تعني أن المجموعتين كانتا متكافئتين قبل تطبيق المعالجة التجريبية.
تم تعلمهم من خلال التعلم الإلكتروني مقارنة بكفاءة الطلاب الذين تم تعلمهم بطريقة تقليدية. وقد أشارت بعض الدراسات التي اختلفت نتائجها مع الأبحاث الحالية (Skyler et al., 2005 ودراسة (Roxana, 2001 ودراسة (Roxana, 2004 ودراسة (Roxana, 2008) أن الطلاب الذين تعلموا من خلال التعلم الإلكتروني تمكنت فائئتهم مقارنة بالذين تعلموا بطريقة التقليدية.

وبالرغم من أن النتائج والدالة الإحصائية قد قدمت شواهد على فاعلية التدريب الإلكتروني في الدراسة الحالية فإن النتائج الختامية هي أن الفروقات بين المجموعتين كانت ضئيلة. ومن هذه الدراسات التي كانت في الأبحاث العملية كبيرة استخدم برنامج التعلم (الدبي، 2008)، والتي تعتبر من أقرب الدلالات العملية من حيث نوع المحتوى المستقل والمحتوى التفاعلي. من حيث الدراسة العملية بنيت الدراسة (الدبي، 2008) والدراسة (الدبي، 2008) على عامل منها: نوع المادة وتخصص أفراد العينة حيث جميع أفراد العينة كانوا من المتخصصين في مجال التدريس. في حال كان العينة تمثل نصف العينة في الدراسة الحالية، حيث أن أفراد العينة كانوا يتمثلون في أقسام مختلفة وتخصصات مختلفة.

- النتائج المتعلقة بالسؤال الثاني

ينص السؤال الثاني على الآتي "هل يختلف مستوى رضا المتدربين في الدورات الإلكترونية عن مستوى التدريب في الدورات التقليدية؟". وقد بدأ التحليل بجمع درجات عبارات كل بعد ثم قسمة المجموع على عدد عبارات الدراسة، وللحصول على نتائج احتمالية محتملة (زيمينغ-ويلك (Shapiro-Wilk) يتم استخدام اختبار شابيرو-وولك (Shapiro-Wilk) لتقدير الفروقات بين المجموعتين في الدراسة الحالية، وبين الدبلوم (10) نماذج هذا التحليل، ومنه يتضح عدم وجود شاهد على اختلاف التوزيع الطبيعي لأي من أبعاد الدراسة. وفقا لنتائج هذا التحليل يظهر أن الفروقات في الأبعاد الثلاثة متماثلة. لكن عند (MANOVA) لهذه النتيجة أمكن استخدام تحليل التباين متعدد المغيرات لفحص الفروقات بين مجموعتي الدراسة في الأبعاد الثلاثة متماثلة. وقد بين هذا التحليل عدم وجود فروق دالة بين مجموعتي الدراسة في جميع الأبعاد، كما يلاحظ تقارب القيم الإحصائية المعتبرة للمجموعتين، الأمر الذي يدل على تقارب القيم الإحصائية الفردية في المجموعتين. وقد اكتسب التباين متعدد المغيرات عدم وجود فروق دالة بين المجموعتين في مجموعتي الدراسة، وفقا لنتائج (MANOVA) هذه النتيجة تتمثل في التدريب التقليدي والتدريب الإلكتروني لا يختلفان في أثرهما على المخرجات المكتسبة للفرد.

ولعامة الحال هذه النتيجة تكون صحيحة في حدود ما تم ضبطه من متغيرات وظروف البحث. وعلى الرغم من تباين إجراءات الدراسة الحالية مع إجراءات الدراسات السابقة فإن بعضها نجا بنتائج مماثلة (Methrer, 1994) ودراسة (Schicians, 2001) حيث أظهرت نتائج تلك الدراسات إلى عدم وجود فرق دائم إحصائيا في النتائج للطلاب الذين تم تعلمهم من خلال الدراسة الالية.
المجموعتين (ف = 0.648، دح = 0.046، الدالة المشاهدة = 0.588). وفي الواقع فإن متوسطات المجموعتين كانت مترابطة إلى حد كبير كما بين ذلك الجدول (11).

التوصيات:
- القيام براسة الاحتياجات التدريبية والتعريف
  على المواد التعليمية ذات الأولوية واللغة
  المتضمنة قبل بدء تطوير دورات التدريب
  الإلكترونية.
- التدرج في تجربة التدريب الإلكتروني على
  الموظفين حتى يتلفح فرص دراسة كل تجربة
  وتحسينها قبل الشروع في تعميم التجربة على
  كافة الموظفين.
- الاهتمام بتوجيه واضح لعملية الترويج
  الزراعي وتشجيع أصحاب الخيارات المطلوبة
  والاضلاع المشتركة على العمل بتعاون مشروط
  في التدريب الإلكتروني.
- تجربة الدورات الإلكترونية ذات الطبيعة المحلية
  واللغة المحلية وخصم في بداية
  الترويج.
- القدرة في اختيار المواقع من المؤسسات
  المطلوبة للمؤسسات الإلكترونية وذلك وفقًا لمعايير
  ومعلومات واضحة تضمن الحصول على نتائج
  تدعم نجاح تجربة التدريب الإلكتروني.
- ضرورة تعزيز إدراك موظفي القطاع الحكومي
  لمفهوم التدريب الإلكتروني والتعليم الذاتي من
  خلال رفع مستوى التوعية.
- ضرورة تدريب البنية التحتية للاجتهزة
  التكنولوجية بما يتفوق على التطورات السريعة
  في هذا المجال وحاجات المتدربين وذلك من
  خلال توفير الكود الفنى المتخصص في هذا
  المجال والتقنيات الحديثة.
- تقديم أفضل قدر من الدعم وبصورة مستمرة
  للمتدربين؛ لضمان نجاح عملية التدريب
  الإلكتروني.
- توفير مختصرات في مجال التصميم التعليمي لمساعدة
  المتدربين في عملية تصميم، وتطوير المواد التدريبية، وفق
  نظريات التعلم والتعليم ونظريات التعليم عن بعد، وتوفيرها
  بطريقة صحيحة عند عملية التصميم.

مقترحات الدراسة:
- بناء على النتائج التي تم التوصل إليها في الدراسة الحالية،
  فإنه يمكن وضع تصوير بعض المقترحات والدراسات
  التي قد تكون مفيدة في ميدان البحث التربوي.

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وبالإضافة إلى التحليل السابق تم حساب فترة الثقة لمتوسط
كل بناء على بيانات العمليات الكبيرة بصفة عامة وحول
شفاء على اختلاف بين المجموعتين في مستوى الرضا،
وبيان الجدول (11) حدود هذه الفترات. وفقًا لفترات الثقة
المذكور فإن مستوى الرضا كان مرتفعًا لدى المتدربين في
جميع الجداول.

بناء على النتائج السابق ذكرها يمكن القول إن البيانات لم
تقدم شواهد على اختلاف بين التدريب الإلكتروني التدريب
وجها لوجه في مدى رضا المتدربين عن التدريب.
وبطبيعة الحال فإن هذه النتيجة قالك في حدود ما
تم ضبطه من متغيرات وظروف البحوث. وتتفق نتائج
دراسة (Schicians, 2001) ودراسة (Skylay, et al, 2005)
وبعد تلقي نتائج التدريب التجريبي في مستوى الرضا مع
دراسة (Passmore, 2000) من أن التعليم الإلكتروني يطلب الكثير من الوقت
والجهد من المتدربين حيث أن المتدربين في غالب
الأحيان بأن هذا النوع من التعليم يتطلب قيالًا أكثر
ويعتبر ذلك ضغطًا كبيرًا على وقت المتدربين، وربما
كان هذا هو ما أثر على رضا متدرب المجموعة التسويية.

تطلبت إجراءات الدراسة للمجموعة التسويية التربوية
وقتًا ومجهودًا أكثر للتعلم من خلال الأنشطة الإلكترونية
أو آثارها، الأمر الذي أثر بتوجه على رضا متدرب
المجموعة التسويية عن تجربتهم العاطفي. هذا ما أشار
إليها دراسة (الطيب 2004) ودراسة (ج.581)
رفع كفاءة البرامج التدريبية وزيادة فعاليتها، وخاصة في المجال المؤسسي.

- العمل على زيادة فاعلية شبكة الإنترنت الحكومية في مملكة البحرين من حيث الأمور الفنية والتقنية.
- تحصيص الوقت الكافي للموظفين للتدريب على هذه البرامج.
- العمل على توفير المساعدة اللازمة للمتدربين لفترات تمكنهم من الاستفادة من البرامج التدريبية المتاحة.
- ضرورة توفير الإنترنت لجميع الموظفين العاملين في القطاع الحكومي.
- ضرورة زيادة الدراسات التي تتناول مواضيع التدريب الإلكتروني بشكل خاص لاقتراب المكتبة العربية إلى هذا النوع من الدراسات.

- العمل على تحويل العديد من الدورات التي تقدم بالتدريب الاعتيادي إلى دورات إلكترونية واتاحتها لموظفي الوزارات والمؤسسات الحكومية.
- العمل على دراسة مدى جاهزية الوزارات والمؤسسات الحكومية لتعامل مع التدريب الإلكتروني من حيث التجهيزات التقنية والتعرف على مدى تقبل الموظفين لهذا النوع من التدريب.

- ضرورة زيادة فاعلية شبكة الإنترنت الحكومية في مملكة البحرين من حيث الأمور الفنية والتقنية.
- تحصيص الوقت الكافي للموظفين للتدريب على هذه البرامج.
- ضرورة توفير الإنترنت لجميع الموظفين العاملين في القطاع الحكومي.
- ضرورة زيادة الدراسات التي تتناول مواضيع التدريب الإلكتروني بشكل خاص لاقتراب المكتبة العربية إلى هذا النوع من الدراسات.
المراجع:


شباط، محمد فارس. (2005). فاعلية التدريب الافتراضي بالحاسب وكتاباته في التدريب على بعض التجارب المخبرية في علم الإحياء للصف الثاني الثانوي العلمي في محافظة درعا وأثره على تحصيل الطلبة في الصف الثاني الثانوي العلمي في مادة علم الإحياء واتجاهاتهم نحوها. رسالة تجريبية. رسالة ماجستير غير منشورة، جامعة دمشق، سوريا.


Marilyn, S. (1994). Traditional method versus proofreading and computer – assisted instruction in teaching editing skills to students enrolled in business communications and reports. *Diss. Abst. Inter., 54* (9), 212


المؤلفة التعليمية المفتوحة لتطوير نوعية التعليم العالي عن بعد: التحديات و الفرص من وجهة نظر الأكاديميين السعوديين

أريج عبد الله البسام
باحثة في تقنيات التعليم, المملكة العربية السعودية
هدى يحيى اليامي
محاضرة تقنيات التعليم بجامعة نجران, المملكة العربية السعودية

الأولى: تحديات تصميم واستخدام الموارد التعليمية المفتوحة لتطوير نوعية التعليم العالي عن بعد

الرسالة التعليمية المفتوحة اقترب منها عدد متزايد من الجهات. خلق الشمل والمكتبة الفئية للموارد التعليمية المفتوحة مصدراً للتحديات. من خلال النظرية التالية للمؤسسات التعليمية المفتوحة, وبناء في الممارسة المتقدمة لمشاركة الموارد التعليمية المفتوحة ودرجة المبادرات المطلقة في مجال الموارد التعليمية المفتوحة على المستوى المحلي وميل الأكاديميين في مشاركة التعليم العالي الاستنتاجية الذاتية, تم تقييم الموارد التعليمية المفتوحة في مجال التعليم العالي ممكناً إنتاج ونشر الموارد التعليمية المفتوحة.

الثاني: الفرص المتاحة للموارد التعليمية المفتوحة لتطوير نوعية التعليم العالي عن بعد

تحقيق تحسين جودة المدارات التعليمية العالي وتطوير التعليم المهني للأكاديميين ضروري. التعزيز في التعلم الذاتي المستمر مدى الحياة, توسيع نطاق الوصول إلى الموارد التعليمية المفتوحة وإتاحتها, والاستدامة للموارد التعليمية المفتوحة, والتماسك والتنوع والثراء المعرفي في الموارد التعليمية ودعم التعاون العلمي والبحثي والتعليمي بين مؤسسات التعليم العالي. ونتيجة لتفاني هذه الدراسة, ومن هنا زرعت الحالة الجيدة التي نشأتها الدوام على موضوع الموارد التعليمية المفتوحة في مؤسسات التعليم العالي عن بعد ودورها في تطوير التعليم العالي, حيث تتمثل أهمية هذه الدراسة في مساهمته في تطوير الأفادة من الموارد التعليمية المفتوحة في التعليم العالي. كما قد توجه هذه الدراسة اهتمام المختصين والباحثين بالتعليم العالي إلى مجال الموارد التعليمية المفتوحة, حيث تتيح لهم عدة فضاءات خاصة في مجال تنفيذ هذه الدراسة في البيئة العربية.

وقد وظفت الدراسة وجهة نظر التحليلي. نظرًا لكونه ينتمي مع طبيعة هذه الدراسة حيث أن تعتمد على دراسة الطابع كجزء من توقيع وبحثها وبحثها وبحثها وبحثها.

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الموارد التعليمية المفتوحة في تطوير التعليم في البلدان العربية والمتعلمين من ذوي القيمة الخاصة، وجاء في المرتبة العاشرة تعزيز الفئات الخاصة وإنتاج موارد تعليمية مفتوحة محلية ودعم البنية العربية. بينما جاء في المرتبة الأخيرة خفض تكلفة التعليم العالي ورفع جودته الاقتصادية.

وتحمل هذه الدراسة تأكيد على أهمية تصميم واعتماد موارد تعليمية مفتوحة مشتركة وفعالة في كل المجالات. على الرغم من فوائد التعليم العالي، فإن التكلفة الاقتصادية والبيئية والعقلية، قد تكون محدودة. ولكن، فإن موارد التعليم المفتوحة يمكن استخدامها بشكل فعال في حل هذه التحديات. من خلال هذه الدراسة، نريد أن نربط بين التكنولوجيا وتعلم الأشخاص على مدار الحياة، ونركز على الأدوار المناطة بالموارد التعليمية المفتوحة في مجال التعليم العالي، ونعمل على تطوير نوعية التعليم العالي في المملكة العربية السعودية.

أولًا: الإطار العام للدراسة

المقدمة:

يشهد العالم التعليم تحولات جوهرية حيث يتم التركيز على تكنولوجيا المعلومات والاتصالات، ونتيجةً، فإن التعليم العالي يتعين على تبني التكنولوجيا بكافة أدواتها وأساليبها، وعلى الأخص لمؤسسات التعليم العالي نتيجة للضغوط المتزايدة عليها. كما أكدت اليونسكو (0100) أن تعلم عن بعد يمكن أن يكون مصدر للتعلم والتطوير المستمر لجميع الأعمار. تشير هذه الدراسة إلى ضرورة إعداد موارد تعليمية مفتوحة استماع وتعليمية تتيح للطلاب التعلم والتعلم في أي وقت ومكان.

إن التكنولوجيا الحديثة، مثل الإنترنت، أصبحت جزءًا كاملاً من الحياة اليومية لمجتمعاتنا، وتساهم في تغيير نمط التعليم عن بعد. تقدم الموارد التعليمية المفتوحة فرصة للتعلم عن بعد للطلاب، مراعاة الحاجات الخاصة بهم والتحديات التي يواجهونها.

توالت وزارة التعليم العالي بالمملكة العربية السعودية جهودها في الترويج لتطوير التعليم عن بعد، حيث أصبح الاعتماد على التكنولوجيا جزءًا من استراتيجياتها. وتبلغ عدد منشآت التعليم العالي في المملكة العربية السعودية أكثر من 200 مدرسة وبرامج تعليمية مفتوحة عبر الإنترنت.

أبسندية الدراسة:

هذا البحث يهدف إلى تحليل مشكلة الدراسة، وذلك يتم من خلال تحليل عدد من الدراسات السابقة، وتحديد الأدوار المناطة بالموارد التعليمية المفتوحة في مجال التعليم العالي، ونعمل على تطوير نوعية التعليم العالي في المملكة العربية السعودية.

تتمثل مشكلة الدراسة في تعزيز الفئات الخاصة وإنتاج موارد تعليمية مفتوحة محلية ودعم البنية العربية. بينما يبحث الهدف هو تخفيض تكلفة التعليم العالي ورفع جودته الاقتصادية.

أهمية الدراسة:

1. كونها تسلط الضوء على الأدوار المناطة بالموارد التعليمية المفتوحة في مجال التعليم العالي بعد وأكثرها أهمية.
2. يهدف البحث إلى تحليل وتحديد الطرق المختلفة لتعزيز الفئات الخاصة وإنتاج موارد تعليمية مفتوحة محلية ودعم البنية العربية.
3. يهدف البحث إلى تحليل وتحديد الطرق المختلفة لتعزيز الفئات الخاصة وإنتاج موارد تعليمية مفتوحة محلية ودعم البنية العربية.

وقد نقل الباحثون في الدراسة إلى عدة إرشادات للتعليم في作り هذا النمط التعليمي، وتوثق الدراسات الأخرى المعروضة بصورة ماجية باستخدامها في الأنشطة الاجتماعية (الثلاثي، 2013).

وينبغي القول أنه توجد الدراسات التي تلمح إلى فوائد التعليم عن بعد، وتساهم في تطور هذا النمط التعليمي من مجرد اكتشافات كديم للفعالية للدروس التدريسية إلى محتوى جامعي هذا وتوند (2013) على أهمية
وتتمثل هذه الطرق وما تجويده من عناصر منظومة شاملة للتعميم العالي عن بعد تكامل داخلي، وتتمثل نسبيًا بتطبيق تحديث تقني قائم أو مكاومًا.

3. دور التعليم عن بعد في دعم مؤسسات التعليم العالي:

يعتبر هذا الصرح الذي يتضمن هذه المؤسسات للتعليم العالي عن بعد تكاملًا متكاملًا للمؤسسات التعليمية الأخرى، يتيح لهم عدة فضاءات بحثية خاصة فيما يتعلق بتطوير الموارد في البيئة العربية.

ثانياً: الإطار النظري والدراسات السابقة والمرتبطة

المحور الأول: التعليم العالي عن بعد

(1) مفهوم التعليم العالي عن بعد ورسالتها:

لعبت التكنولوجيا دورًا في تطور التعليم العالي، حيث تأثرت هذه التكنولوجيا في إنشاء وممارسة التعليم العالي عن بعد، والذي يشير إلى أن التعليم العالي عن بعد يعتبر نمطًا من أنماط التعليم تستخدم فيه وسائل وتقنيات إلكترونية في العملية التعليمية وترجع هذه التقنية إلى تعدد تحولات الطريقة في التعليم العالي علاجًا للأقدام في المؤسسات التعليمية بكافة جوانبها، بما في ذلك إعداد التدريس، وتبادل الخبرات التعليمية (كاستر وعطار، 2011).

(2) فاعلية التعليم العالي عن بعد:

يرى جامعات وأعضاء التدريس في مؤسسات التعليم العالي عن بعد أنه يمكن تحديد إمكانات التعليم العالي عن بعد كنظام في نظام التعليم العالي، حيث يعتبر التعليم العالي عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

3. دور التعليم عن بعد في دعم مؤسسات التعليم العالي:

هناك عدة إمكانات للتعليم العالي عن بعد في دعم مؤسسات التعليم العالي، حيث يمكن تحديد إمكانات التعليم عن بعد كنوع من أنواع التعليم العالي، حيث يعتبر التعليم عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

4. التطوير النوعي للتعليم العالي عن بعد:

تشهد جامعات التعليم العالي عن بعد تقدماً كبيراً في استحداث الجامعات، وقد أصبح تنامي إمكاناتها وسيلة مهمة لاستحداث جمهور جديد وفوق متنوعة، وذلك بطور تدريجي وتحقيق ذلك.

إلى جانب التعاون وتبادل الخبرات التعليمية (كلستر وعطار، 2011).

(3) فاعلية التعليم العالي عن بعد ورسالتها:

يتيح التعليم العالي عن بعد إمكانات تعليمية في نظام التعليم العالي، حيث يعتبر التعليم عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

2. أطر التعليم العالي عن بعد وعناصره:

(1) مفهوم التعليم العالي عن بعد ورسالتها:

التعليم العالي عن بعد يتيح إمكانات تعليمية في نظام التعليم العالي، حيث يعتبر التعليم عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

(2) فاعلية التعليم العالي عن بعد ورسالتها:

يتيح التعليم العالي عن بعد إمكانات تعليمية في نظام التعليم العالي، حيث يعتبر التعليم عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

(3) دور التعليم العالي عن بعد في دعم مؤسسات التعليم العالي:

هناك عدة إمكانات للتعليم العالي عن بعد في دعم مؤسسات التعليم العالي، حيث يمكن تحديد إمكانات التعليم عن بعد كنوع من أنواع التعليم العالي، حيث يعتبر التعليم عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

(4) تطوير نوعية التعليم العالي عن بعد:

تشهد جامعات التعليم العالي عن بعد تقدماً كبيراً في استحداث الجامعات، وقد أصبح تنامي إمكاناتها وسيلة مهمة لاستحدث جمهور جديد وفوق متنوعة، وذلك بطور تدريجي وتحقيق ذلك.

إلى جانب التعاون وتبادل الخبرات التعليمية (كلستر وعطار، 2011).

(5) دور التعليم العالي عن بعد في دعم مؤسسات التعليم العالي:

هناك عدة إمكانات للتعليم العالي عن بعد في دعم مؤسسات التعليم العالي، حيث يمكن تحديد إمكانات التعليم عن بعد كنوع من أنواع التعليم العالي، حيث يعتبر التعليم عن بعد نمطًا تربويًا يوفر فرصًا تعليمية لأفراد المجتمع في مختلف مراحلهم العمرية ومواقعهم المكانية وفي الأزمنة التي تناسبهم، وذلك عبر استخدام التكنولوجيا المتقدمة.

إلى جانب التعاون وتبادل الخبرات التعليمية (كلستر وعطار، 2011).

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ولاكي يرتقي التعليم العالي عن بعد وتتحسن نوعيته لا بد من الانتشار على إتباع الأساليب التقليدية، وقد أكد ذلك بنك "...".(العطا، 2011) في تطوير التعليم عن بعد في جامعات المملكة في ضوء الاتجاهات العالمية المعززة وتضمنت إلى أن هذه التحديات التي تواجه التعليم العالي عن بعد بالمملكة هو تطوير تعليم عال جامعي ذو جودة عالية.

ولكن تحقق الوعي المتزايد لجامعات التعليم عن بعد لابد أن تبني/تكيف الجامعات معاهد دولية مرجعية. تساهم نوعية برنامجها أو تطور معايير خاصة لتحقيق ذلك على أن تشمل تلك المعايير المجالات التالية: معايير الدعم المؤسسي، معايير تطوير مقررات التعليم، معايير التعليم والتعليم، معايير التعليم في التعليم عن بعد، معايير التعليم في التعليم عن بعد المتميز، معايير التعليم في التعليم عن بعد المتميز.

أما الموارد التعليمية المفتوحة: حيث تم صياغة هذا المصطلح في "...".(الصالح، 2013).

وأدت العديد من الدراسات إلى صرورة نقل المزيد من الجهد لتطوير نوعية التعليم العالي عن بعد كي يكون التأثير إيجابي، إذ أكدت دراسة "...".(أبو حلو، 2006) على ضرورة تطوير نوعية بيئة التعليم عن بعد المستوحاة من جامعة تقنية استثنائية في التعليم عن بعد والتي تتجاوز دراسة "...".(العطا، 2011) في تطوير التعليم عن بعد في جامعات المملكة في ضوء الاتجاهات العالمية المعززة وتضمنت إلى أن هذه التحديات التي تواجه التعليم العالي عن بعد بالمملكة هو تطوير تعليم عال جامعي ذو جودة عالية.

ولكن تحقق الوعي المتزايد لجامعات التعليم عن بعد لابد أن تبني/تكيف الجامعات معاهد دولية مرجعية. تساهم نوعية برنامجها أو تطور معايير خاصة لتحقيق ذلك على أن تشمل تلك المعايير المجالات التالية: معايير الدعم المؤسسي، معايير تطوير مقررات التعليم، معايير التعليم والتعليم، معايير التعليم في التعليم عن بعد، معايير التعليم في التعليم عن بعد المتميز، معايير التعليم في التعليم عن بعد المتميز.

أما الموارد التعليمية المفتوحة: حيث تم صياغة هذا المصطلح في "...".(الصالح، 2013).

كلمة "المؤسسات التعليمية المفتوحة" المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوحة المفتوح
المشاركة ضمن أجندة التعليم العالي، واستثمار الموارد التعليمية المفتوحة بشكل عام والتعليم المفتوح بشكل خاص.

لذا، فإن أهم المعايير التي يستند إليها التعليم المفتوح هو بناء ثقافة المشاركة، ومن خلال ثقافة المشاركة عبر التعليم المفتوح يمكن لأي فرد أن يصبح كاتب ومحرر وطالب، كما أن المرء يتعلم مهارات كثيرة من خلال التواصل والاتصال الافتراضي.

ب) الإصلاحات الفنية: 

1- زيادة عدد المواقع المفتوحة في المملكة العربية السعودية:

في هذا العصر المعرفي تسعى المملكة بخطى متسارعة لتعزيز التعليم المفتوح، وتم إدراج خمس مجلات سعودية، إضافة إلى خمس مستودع رقمي ضمن الأدلة العالمية للوصول الحر، إلى جانب مشاريع الوصول الحر بالمملكة العربية السعودية (KACST).

وينبغي أن تكون المواقع المفتوحة في المملكة العربية السعودية متاحة لجميع أعضاء هيئة التدريس والبحوث وطلبة الجامعة، وتعتبر لتحقيق هذه الأهداف من خلال توفير الاتصال الرقمي بين الطلاب المشتركون في المواقع المفتوحة، وتقديم الدعم في سبيل ذلك.

وتشمل حالات الراهنة للموارد التعليمية المفتوحة في المملكة العربية السعودية ضعف البنية التحتية، وانخفاض الاتصال عبر الإنترنت، وختلاف اللهجات.

ثالثا: منهجية الدراسة وإجراءاتها:

أقامت الدراسة المنهج الوصفي التحليلي، واتخذ مجتمع الدراسة الأكاديميين، والمسؤولين عن مراكز التعليم الإلكتروني والتعلم عن بعد في المملكة العربية السعودية، بينما تم إصدار عينة الدراسة (70) أكاديمياً من مختلف جامعات المملكة العربية السعودية، وتقاسم الخبرة والمعرفة اللازمة بالمواقع المفتوحة.

ووفقًا لما ذكر:

جدول (1)

| الجامعة | خالد | الحоф | الباحة | الخبران | الأمير | ولك | جازان | الجوف | حائل | الرياض | بريدة | الدمام | نجران | نيوم | الظهران |
|---------|------|------|-------|--------|--------|------|-------|-------|-------|--------|--------|--------|------|-------|
| عدد     | 2    | 2    | 2     | 3      | 6      | 6    | 8     | 6     | 6     | 12     | 17     | 9      | 10   | 7     |

جداول (2)

<table>
<thead>
<tr>
<th>المحاضر</th>
<th>إستاذ مساعد</th>
<th>إستاذ مشارك</th>
<th>إستاذ</th>
<th>lation</th>
<th>العلمية</th>
<th>العلمية</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>38</td>
<td>19</td>
<td>7</td>
<td>30</td>
<td>7</td>
<td>30</td>
</tr>
</tbody>
</table>

رابعا: النتائج والتوصيات:

إجابة السؤال الأول: 

ما هي تحديات تصميم واستخدام الموارد التعليمية المفتوحة والتي تطور دون تطوير نهجية التعليم العالي عن بعد بالمملكة العربية السعودية؟

وتم استخدام الاستبانة لتحقيق أهداف الدراسة، وتم بنائها وتحقيق من صدرها واتباعها وفقاً للمنهجية العلمية، وبمجهود إدارية، تم استخدام الاستبانة عبر استشارات، وتصورات، ومقابلات متعددة، و'à، وتم الوصول لإعداد بنك من النماذج والبيانات التي تمثل الفرص والتحديات.

وتم بعد ذلك تطبيق الأداة على عينة الدراسة.
بلااحظ من النتائج الاردة في محاور تحديات تصميم واستخدام الموارد التعليمية المفتوحة وتتجلى هذه تحديات في ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة بمتوسط 1.77 , وفي المرتبة الثانية فئة الموارد البشرية التي تبينها تصميم وإنتاج الموارد التعليمية المفتوحة بمتوسط 1.9 , وفي المرتبة السابعة جاء ألاً من ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة في تطوير نوعية التعليم عن بعد و تعدد اللغات والثقافات للموارد التعليمية المفتوحة بمتوسط 2.03 , وفي المرتبة الثالثة شئان تعتبر عملية مشابهة في إنتاج المعرفة والاتهاكية بمتوسط 2.14 , بينما جاء في المرتبة الأجرة التكلفة العالمية لإنتاج وترجمة المواد التعليمية المفتوحة بمتوسط 2.2.

ويشكل عدم فقد التبني الواضح في استراتيجيات وسياسات الموارد التعليمية المفتوحة إلى جانب عدم الوعي بحقوق النشر والملكية الفكرية للموارد التعليمية المفتوحة صدأ تأثير تلك التحديات بمتوسط 1.4 , وفي المرتبة الثانية غياب المحفزات الداعمة لمشاركة الموارد التعليمية المفتوحة وتوافر الموارد المالية في محاور الممارسات الثلاثة المذكورة في جدول 3 , وتحوي على 8 تحديات تصميم واستخدام المواد التعليمية المفتوحة والتي تتجلى في ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة بمتوسط 1.7, وفي المرتبة الخامسة ندرة البحث العلمي في مجال المواد التعليمية المفتوحة بمتوسط 1.77. وفي المرتبة الثانية فئة الموارد البشرية التي تبينها تصميم وإنتاج الموارد التعليمية المفتوحة بمتوسط 1.9 , وفي المرتبة السابعة جاء ألاً من ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة في تطوير نوعية التعليم عن بعد و تعدد اللغات والثقافات للموارد التعليمية المفتوحة بمتوسط 2.03 , وفي المرتبة الثالثة شيوع ضعف في استخدام الموارد التعليمية المفتوحة بمستوى 2.2.

وفي المرتبة الأجرة التكلفة العالمية لإنتاج وترجمة المواد التعليمية المفتوحة بمتوسط 2.2. ويشكل عدم فقد التبني الواضح في استراتيجيات وسياسات الموارد التعليمية المفتوحة إلى جانب عدم الوعي بحقوق النشر والملكية الفكرية للموارد التعليمية المفتوحة صدأ تأثير تلك التحديات بمتوسط 1.4 , وفي المرتبة الثانية غياب المحفزات الداعمة لمشاركة الموارد التعليمية المفتوحة وتوافر الموارد المالية في محاور الممارسات الثلاثة المذكورة في جدول 3 , وتحوي على 8 تحديات تصميم واستخدام المواد التعليمية المفتوحة والتي تتجلى في ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة بمتوسط 1.7, وفي المرتبة الخامسة ندرة البحث العلمي في مجال المواد التعليمية المفتوحة بمتوسط 1.77. وفي المرتبة الثانية فئة الموارد البشرية التي تبينها تصميم وإنتاج الموارد التعليمية المفتوحة بمتوسط 1.9 , وفي المرتبة السابعة جاء ألاً من ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة في تطوير نوعية التعليم عن بعد و تعدد اللغات والثقافات للموارد التعليمية المفتوحة بمتوسط 2.03 , وفي المرتبة الثالثة شيوع ضعف في استخدام الموارد التعليمية المفتوحة بمستوى 2.2.

وفي المرتبة الأجرة التكلفة العالمية لإنتاج وترجمة المواد التعليمية المفتوحة بمتوسط 2.2. ويشكل عدم فقد التبني الواضح في استراتيجيات وسياسات الموارد التعليمية المفتوحة إلى جانب عدم الوعي بحقوق النشر والملكية الفكرية للموارد التعليمية المفتوحة صدأ تأثير تلك التحديات بمتوسط 1.4 , وفي المرتبة الثانية غياب المحفزات الداعمة لمشاركة الموارد التعليمية المفتوحة وتوافر الموارد المالية في محاور الممارسات الثلاثة المذكورة في جدول 3 , وتحوي على 8 تحديات تصميم واستخدام المواد التعليمية المفتوحة والتي تتجلى في ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة بمتوسط 1.7, وفي المرتبة الخامسة ندرة البحث العلمي في مجال المواد التعليمية المفتوحة بمتوسط 1.77. وفي المرتبة الثانية فئة الموارد البشرية التي تبينها تصميم وإنتاج الموارد التعليمية المفتوحة بمتوسط 1.9 , وفي المرتبة السابعة جاء ألاً من ضعف البنية التحتية لاستثمار الموارد التعليمية المفتوحة في تطوير نوعية التعليم عن بعد و تعدد اللغات والثقافات للموارد التعليمية المفتوحة بمتوسط 2.03 , وفي المرتبة الثالثة شيوع ضعف في استخدام الموارد التعليمية المفتوحة بمستوى 2.2.
١٤. الاعتماد المنهجي لل_maximum_number_of_100000000 أكاديميين. اتفاق بشدة. 1.37. 4. 18 % 14. 48%
١٥. تطوير موارد تعليمية مفتوحة عالية الجودة. اتفاق بشدة. 1.43. 6. 18 % 15. 66%
١٦. المرونة والتغذع والثراء المعرفي في المواد التعليمية. اتفاق بشدة. 1.4. 4. 20 % 16. 28%
١٧. تحديث الموارد التعليمية المفتوحة بصورة مستمرة وتفوق مع التطورات التعليمية والتدريبية. اتفاق بشدة. 1.42. 2. 20 % 17. 28%
١٨. توسيع نطاق الوصول إلى الموارد التعليمية المفتوحة وإنتاجها. اتفاق بشدة. 1.34. 0. 6. 24 % 18. 34%
١٩. دعم التعليم العلمي وليست التعليم العالي بين مؤسسات التعليم العالي. اتفاق بشدة. 1.4. 2. 18 % 19. 28%
٢٠. تعزيز التعلم الذاتي المستمر لدى الطلاب. اتفاق بشدة. 1.46. 2. 26 % 20. 37%
٢١. المساهمة في تطوير المنهج للمهنيين. اتفاق بشدة. 1. 0. 26 % 21. 60%
٢٢. تعزيز التعليم الذاتي المستمر لدى الحياة. اتفاق بشدة. 1.26. 4. 10 % 22. 56%
٢٣. رفع جودة مخرجات التعليم العالي. اتفاق بشدة. 1. 0. 16 % 23. 58%
٢٤. خفض تكلفة التعليم العالي ورفع جودة التعليم العالي. اتفاق بشدة. 1.66. 12 % 24. 72%
٢٥. تعزيز الباحثات والباحثين والإمكانيات من أجل التعليم المفتوحة. اتفاق بشدة. 1.6. 4. 26 % 25. 57%
٢٦. تبادل الموارد التعليمية المفتوحة لإجازة اللغة العربية والمتعلمين من دول الثقافات المختلفة. اتفاق بشدة. 1.5. 6. 20 % 26. 62%

بالملاحظات من النتائج الواردة في موارد النموذج المتوفر، فإن مواد التعليم التعليمية المفتوحة تطوير نوعية التعليم العالي عن بعد بالمحافظة على المكتبة واللياقة على الفرق (14-26) والتي يتم استخدامها في النتائج. أقترح أن تقييم النتائج تكون من قبل الاكاديميين والمختصين.

_CAPACITY

قد اختبر فرضية مجارب التعلم العالي إلى جانب التعليم السائد في التدريس المهني للأكاديميين صداره تلك الموارد التعليمية المفتوحة لتغذع التعليم الذاتي المستمر في الحياة بمستوى 1.26. ورجاز في المبركة الأولية لتوسيع نطاق الوصول للمؤسسات التعليمية والمطابقة 1.34. في المبركة الإعدادية لتوسيع موارد التعلم المفتوحة 1.37. في المبركة الخاصة كلياً من المرونة والتمكين والثراء المعرفي في المواد التعليمية ودعم التعاون العلمي والبحتى التعليمي بين مؤسسات التعليم العالي بمستوى 1.4. في المبركة السابعة موارد التعليمية مفتوحة بصورة مستمرة وتفوق مع التطورات العلمية والأكاديمية بمستوى 1.42. وفي المبركة التاسعة تقييم موارد التعليم المفتوحة لإجازة اللغة العربية والمتعلمين من دول الثقافات المختلفة 1.43. في المبركة الثانية تقييم البحث والتأليف والإمكانيات من أجل النموذج المستدام للمؤسسات التعليمية المفتوحة بمستوى 1.46. وفي المبركة التاسعة تقييم موارد التعليم المفتوحة لإجازة اللغة العربية والمتعلمين من دول الثقافات المختلفة 1.43. ورجاز في المبركة العاشرة تقييم موارد التعليم المفتوحة لإجازة اللغة العربية والمتعلمين من دول الثقافات المختلفة 1.6. بينما جاء في المبركة الثالثة تقييم موارد التعليم العالي بمستوى 1.66. ورجاز في المبركة الثالثة تقييم موارد التعليم العالي بمستوى 1.68.
وبشكل عام فقد اتسمت آراء المختصين بالموافقة بشدة على جميع عبارات محور الفرص المتاحة للموارد التعليمية المفتوحة لتزويد نوعية التعليم العالي بالمملكة. لذا جاء الإنجاز العام لمحور الفرص المتاحة للموارد التعليمية المفتوحة بشدة. مما يدل على أهمية تلك الفرص بجميع المختصين وضرورة الاعتبار منها بمؤسسات التعليم العالي عن بعد تطوير نوعيته وزيادة فاعلية.

توصيات الدراسة:

على ضوء النتائج السابقة يمكن تقديم التوصيات التالية:
1. دعم جهود الجامعات المحلية والعربية لتصميم وإنتاج واستخدام الموارد التعليمية المفتوحة. 
2. تقديم جهود الجهات الحكومية والدينية نحو بناء مجتمع معرفي متمنى معلوماتيا. 
3. نشر ثقافة الموارد التعليمية المفتوحة في المملكة والوطن العربي، وتحقيق الأهداف والخليفي، وتوزيع الطالب وتشكيله في المدارس والجامعات على تصميمها واستخدامها ودعمها.
4. الاعتقاد على الجهود العالمية والمحاضرات والتجارب العربية المبنية في دعم المصادر المفتوحة وتعزيزها وتكيفها لتلبية عن كل مناطق البيئة العربية.
5. وضع أسس للتعاون بين المؤسسات الأكاديمية والتربوية لخلق البيئات المناسبة للإبداع والابتكار، والمشاركة في تطور الموارد التعليمية المفتوحة.
6. تشجيع البحث العلمي في مجالات الموارد التعليمية المفتوحة.
7. حيث الجامعات السعودية على إنتاج مواردها التعليمية والسعي فيما بينها نحو إنشاء إطار تعاوني.
8. إقامة الفرصة للمختصين والمتفوقين من المبرمجين والمصممين التعليميين لمناقشة قضايا الموارد التعليمية في ضوء تطويرها وتصميمها لأغراض المناهج في قطاع التعليم العالي عن بعد.
9. زيادة وعي المجتمع الأكاديمي والطلابي بأهمية قضايا حقوق الملكية الفكرية والحد من ظاهرة القرصنة واستخدام الموارد التعليمية غير المرخصة.

مقترحات الدراسة:

1. إطلاق مبادرة للموارد التعليمية المفتوحة على مستوى الجامعات السعودية.
2. إصدار دليل مرجعي عن الموارد التعليمية المفتوحة وقوائمها في الوطن العربي.
3. إجراء دراسات تقييمية للموارد التعليمية المفتوحة بالوطن العربي.
المراجع

أولاً: المراجع العربية:


الصالح، ب. 2013. قضايا حاسمة في نموذج التعليم الإلكتروني عن بعد: المؤتمر الثالث للمؤسسة الإلكترونية للتعليم عن بعد. الرياض.

عمري، ط. 2007. التعليم عن بعد والتعليم المفتوح: الأردن: دار اليازوري العلمية للنشر والتوزيع.

Keywords: مراجع، أولاً، المراجع العربية.

عبدالفتاح، م. 2011. متطلبات إدارة التعليم عن بعد لمواجهة تحديات تكنولوجيا المعلومات: دراسة تحليلية ورؤية مستقبلية. مؤتمر الأيبسسكو للجنة الوطنية لليونسكو. مصر.

الචائي، د. 2010. واقع استخدام الفصول الافتراضية في برنامج التدريس عن بعد من وجهة نظر أعضاء هيئة التدريس بجامعة الملك عبد العزيز بمدينة جدة، رسالة ماجستير غير منشورة، كلية التربية بجامعة أم القرى السعودية.


المقدمة:

يعتبر البحث العلمي من أهم وأعقد أوجه النشاط الفكري، ويتيح للجامعات جهداً جاداً في تدريب الطلاب على إتقانه أثناء دراستهم، مما يتيح لطلبتهم إمكانية بحثية تميزاً قادرين على إضافة معرفة جديدة إلى صناعة الفكر الإنساني. كما تعلم الجامعات على اظهار قدرة الطلاب في البحث العلمي عن طريق تقديم المعلومات وعرضها بطريقة علمية سليمة. وأيضًا يعتبر البحث العلمي يثير الفضول عن أتباع الأساليب الصحيحة للبحث وإصدار الأحكام النقدية التي تكشف عن مستوى العلمي ووضعه الفني، والتي تمثل الميزة الأساسية للدراسة الأكاديمية.

وقد أظهرت الدراسات أن الاهتمام بالبحث العلمي ونشاطاته المختلفة والمتنوعة مختلفة من دولة إلى أخرى، فنحن نجد أن هناك مرحلة بحثية تمتاز بوجهات النظر العلمية المتقدمة، وهناك بحوث علمية مصدرها طلبة الدراسات العليا وأعضاء هيئة التدريس، إلا هناك بحوث علمية مصدرها طلبة البكالوريوس تسمى أبحاث تحت التخرج (Undergraduate Research)، والتي يغطيها جهد خلاق يملؤها الطالب خلال مرحلة البحث العلمي، والتي تتيح له إدراك اهتمام جامعي بيئي وجغرافي، ويستخدم مثل هذه البحوث أحياناً في مجالات البحث العلمي والتعليم العالي.

الملخص:

قد سعت هذه الدراسة إلى التعرف على أبرز الفرص المتاحة أمام شبكات التواصل الاجتماعي لدعم البحوث العلمية ونشرها لطلبة المرحلة الجامعية، وكذلك أبرز التحديات التي تواجهها في هذا الصدد وذلك من وجهة نظر طلبة جامعة تبوك كأداة علمية عملية.

وتهدف هذه الدراسة لاستخدام المنهج الوصفي التحليلي، وتم اختيار عينة عشوائية من طلبة جامعة تبوك، وتم استخدام استبانة للعينة، وذلك بعد التأكد من صدقها وثباتها.

ومع خروج الدراسة إلى مجموعة من النتائج تم في ضوءها صياغة بعض التوصيات، منها:

1- ضرورة التركيز على تنمية مهارات النشر العلمي وتوظيفها التوظيف الأمثل لخدمة التعليم والتعلم وقضايا البحث.
2- الاهتمام بشبكات التواصل الاجتماعي و وغيرها من تكنولوجيات القرن الاجتماعي.
3- إيجاد دوريات علمية متخصصة لنشر بحوث طلبة المرحلة البكالوريوس.
4- إيجاد حوافز ودعم طلبة المرحلة البكالوريوس.
5- إعداد برامج تدريبية وتفقيبة لزيادة الوعي بأهمية شبكات التواصل الاجتماعي لدعم نشر البحوث العلمية.
6- ضرورة توجيه وتحفيز الطلبة للمشاركة في المؤتمرات العلمية المحلية والعالمية لتخليص أطرictions في البحوث العلمية.
7- البت الي إطار بيئة تواصل اجتماعي علمية عربية أو Gate.

الكلمات المفتاحية: شبكات التواصل الاجتماعي، البحوث العلمية.
أبحاث الأستاذ: يسعى الأستاذ الجامعي إلى إجراء أبحاث في مجال تخصصه بما في تطبيق تقنيات التعليم الإلكتروني أو التطور في مجال البحث العلمي. والدقة في البحث وتطوير البحث، وتتبع تطورات مهنية مثل هذه الأبحاث، بيد أن الباحثين هم الباحثين الذين يمكن أن يساهموا في تأسيس الأستاذ الجامعي. والاستعانة به، سيستفيد الأستاذ الجامعي في الغالب من هذه العلاقة. 

15. Jimenez, et al., 2002

وهذا ي الخارج عن إطار أساسي في تعزيز مكانة الجامعة ووجاهتها عالمياً، حيث أن الطالب الجامعي هو أساس العملية التعليمية، ومشاركته في البحث العلمي في وقت مبكر من دراسته الجامعية ستسمح بشكل كبيرً، وتعلم هذا في مجالات البحث العلمية، وكذلك ويرى باربيل (Berkeley) في كاليفورنيا (California) - جامعة (Michigan) - جامعة (Duke) - جامعتين مماثلان، هذه الجامعات تعطي فرصة طلاب البكالوريوس للعمل جنبًا إلى جنب مع الباحثين، ومن ثم، يمكنهم من تطوير مهاراتهم وتطوير مهاراتهم، مما يعطي طاقات بشرية يمكن استثمارها إذا ما تعرفت الفرص.

1. المؤتمر الوطني للأبحاث العامة (National Conferences on Undergraduate Research) وهو أكبر منظمة مهنية مكرسة للأبحاث الأكاديمية في جميع التخصصات، وتشمل جامعات مثل جامعة واشنطن الأمريكية (University of Washington) - جامعة ديترويت (DePaul University) - جامعة ولاية ديلاوير (University of Delaware) - جامعة رومان (Rutgers University) - جامعة بيركلي (California). 

2. جامعة ودمندز الإقليمية (University of Delaware): تعد سنوياً ندوة سنوية لأبحاث البكالوريوس في مختلف البحوث الكبيرة في مجالات البحث العلمي، وهو أثر مهم في ودمندز الإقليمية (University of Delaware).

3. مؤتمرات نشر الأبحاث العامة (Conference on Undergraduate Research) - تكريم المشرفين على الأبحاث (Research Symposium on Undergraduate Research) - وقد توصلت دراسة فيندلي (Findley) (2007) إلى أن الباحثين الطلاب الذين يواصلون الدراسة، فإنهم يستفيدون من هذه التجارب. وتعد هذه الأبحاث مساهمة كبيرة في توطين الطلاب التقدم في مجالات البحث العلمي.

بقطاع التعليم العالي لقد أصبح استخدام التعليم الإلكتروني بمنظومته المتكاملة وأدواته المختلفة في بيئة التعلم والبحث متطلبًا مهمًا وأمرًا ضرورياً امتهن الحاجة إلى التطور النوعي المطلوب الذي يبدأ بشكل علمي إلى مخرجات تعليمية ذات مستوى عالمي يوجز الطلبة الخريجين من خلالها بالدخول إلى معترك الحياة العملية، وإلى التطور المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي.
ومن هذا المنطلق وأهميته وحاجتنا الماسة لخلق بيئة تعليم وتعلم أفضل، تأتي الدراسة الحالية على الوقوف على الفرص والتحديات التي تحيط شبكات التواصل الاجتماعي لدعم البحث العلمي ونشرها لطلبة المرحلة الجامعية في جامعة تبوك، حيث أن رؤية هذه الجامعة بأن تكون صرحاً تعليمياً شاملاً يقدم خدمةً تعلميةً متميزةً تثريه شراكاتٌ جمعية مثمرةٌ وبحوثٌ ودراساتٌ أكاديميةٌ مبتكرةٌ تعود بالنفع على مستقبل منطقة تبوك والمملكة، وتعمل على توظيف التقنيات الحديثة في التعليم.

خلفية النظرية:
تعرف شبكات التواصل الاجتماعي في (مجاهد، 2008) بأنها أحد الأدوات التي شكلت فارقاً كبيراً في مجال التعليم الإلكتروني وفي مجال التواصل البشري بشكل عام فهي فتحت الباب على مساحة وحريات وفرص، حيث يمكن للمستخدمين المشاركة بحرية وتعاليمهم وتجاربهم بطريقة فعالة ومتواصلة.
ومع ذلك، يظل الشبكات الاجتماعية نوعًا من خدمات غير محددة في القانون، حيث يردده بعض المفاقم على أن الرسومات والتصورات وتبادل المعلومات عبر الشبكات الاجتماعية يمكن أن يكون بمثابة ظاهرة قانونية أو إعلامية أو اجتماعية أخرى. ومن هنا، فقد أطلق侉 على هذه الحالة "الشحذات".
ومع ذلك، فإن الشبكات الاجتماعية كأداة للتعلم والبحث تعتبر من أداة في التطور في العالم، حيث يتم استخدامها في العديد من التخصصات، بما في ذلك العلوم الطبية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم السياسية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية، العلوم الاجتماعية.

1- Research Gate: شبكة تواصل اجتماعي ولكن للمتخصصين والباحثين في جميع التخصصات، والهدف منها هو تسهيل التعاون بين الباحثين حول العالم، وتوفير خدمات تعاونية مشتركة، وتقديم معلومات طبية وإعلامية.

2- Academia.edu: منصة للأكاديميين لتبادل الأوراق البحثية وتستقطب أكثر من 5 مليار زائر في الشهر.

3- Slideshare: أكبر مجتمع في العالم لتبادل العروض والندوات والوثائق، مع 60 مليون زائر شهريًا و130 مليون الصفحات المشفرة على موقع http://www.slideshare.net.

4- ولقد أجريت دراسات عديدة تناولت شبكات التواصل الاجتماعي في البيئة الجامعية لفهم بعض المعضلات، حيث (Ghosh et al, 2012) يهدف إلى تحليل الاتجاهات وتوصيات شبكات التواصل الاجتماعي وتقديم قراءة عامة عن النتائج، وتشير إلى أن هذه التوصيات يمكن أن تكون مفيدة للبحث في مجال التعليم والتعلم.

5- ويتضمن هذا البحث أيضًا نتائج دراسة أخرى، حيث (Zawawi & Al-Turki, 2012) يهدف إلى تحليل التأثيرات والمتغيرات تتعلق بالتعلم الاجتماعي في البيئة الجامعية، وتأكيد على أهمية تطوير التكنولوجيا في هذا المجال.

وفي النهاية، فإن استخدام التعليم الإلكتروني بمنظومته المتكاملة وأدواته المختلفة في بيئة التعلم والبحث متطلبًا مهمًا وأمرًا ضرورياً امتهن الحاجة إلى التطور النوعي المطلوب الذي يبدأ بشكل علمي إلى مخرجات تعليمية ذات مستوى عالمي يوجز الطلبة الخريجين من خلالها بالدخول إلى معترك الحياة العملية، وإلى التطور المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية لبناء بيئة تعلمية تامه وفعالة وتتم تنشئتها على الجودة والدقة، تدرج الرغبة العلمية وتكون نشأت محصلة جيدة للتطور العلمي المستقبلي، بكل دقة ودقة وتحت المجازمة المالية L.
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الに向روف الباحثة برازيل توك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة

ومن خلال عمل الباحثة برازيل توك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة

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الに向روف الباحثة برازيل توك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة استاتوناكية لهدف تحديد مدى استخدام توك عامة في بوك قامت بإجراء دراسة مست

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وعلى هذا الأساس ترى الباحثة أنه من المفيد القيام بالدراسة الحالية للوقوف على الفرص والتحديات التي تحيط شبكات التواصل الاجتماعي لدعم البحث العلمي، ونشرها في المجلات الجامعية وما تم تفكيك هذه الشبكات من خبرات، وتشكل طرق نشر الحلول على المعلومات أكثر متعة وعمق. ومن هذا يمكن تحديد متشابهات الدورة المتميزة في: 

1. توظيف شبكات التواصل الاجتماعي في دعم البحث العلمي لطلبة المرحلة الجامعية.

2. التعرف على آبرز الفرص المتاحة أمام شبكات التواصل الاجتماعي عند توظيفها لدعم البحوث العلمية ونشرها لطلبة المرحلة الجامعية من وجهة نظر الطلبة أنفسهم بجامعة تبوك.

3. التعرف على آبرز التحديات التي تواجه توظيف شبكات التواصل الاجتماعي وتحول دون دعمها لنشر البحوث العلمية لطلبة المرحلة الجامعية من وجهة نظر الطلبة أنفسهم بجامعة تبوك.

أهداف الدراسة:
1. التعرف على أبرز الفرص المتاحة أمام شبكات التواصل الاجتماعي عند توظيفها لدعم البحوث العلمية ونشرها لطلبة المرحلة الجامعية.
2. التعرف على آبرز التحديات التي تواجه توظيف شبكات التواصل الاجتماعي وتحول دون دعمها لنشر البحوث العلمية لطلبة المرحلة الجامعية من وجهة نظر الطلبة أنفسهم بجامعة تبوك.

أهمية الدراسة:
1. الاستجابة لنتائج البحوث وتوصيات المؤتمرات بشأن الاهتمام باستخدام شبكات التواصل الاجتماعي.
2. كما يؤمل أن تكون الدراسة الحالية مساعدة للمؤسسات الجامعية في توفير طرق وأساليب استخدام الشبكات الاجتماعية في دعم نشر البحوث العلمية ورسم السياسات التربوية لتحسين وتطوير الخدمات التعليمية لطلاب وتفاعل أعضاء هيئة التدريس معهم من خلال تطوير طرق وносابس استخدام الشبكات الاجتماعية.
3. إثراء المكتبة العربية في جانب البحث التربوي بدراسة في مجال استعمال شبكات التواصل الاجتماعي في دعم مهارات نشر البحوث العلمية ورسم السياسات التربوية لتحسين وتطوير الخدمات التعليمية لطلاب وتفاعل أعضاء هيئة التدريس معهم من خلال تطوير طرق ووسابس استخدام الشبكات الاجتماعية.

حدود الدراسة:
الحدود البشرية: 
عينة عشوائية من طلبة جامعة تبوك، والبالغ عددهم (300).
الحدود المكانية: 
جامعة تبوك، كلية العلوم الطبية التطبيقية-الطبي-التربيـة، كلية العلوم الطبية التطبيقية-البنفس، كلية العلوم الطبية التطبيقية-الاقتصاد، كلية العلوم الطبية التطبيقية-الإنسان.
الحدود الزمنية: 
أجرت الباحثة هذه الدراسة خلال الفصل الدراسي الأول للعام الدراسي 1434/1435 هـ.
الصدق والثبات لأداة الدراسة:

1. صدق الاستبيان: تم التأكد من الصدق الظاهري للاستبيان وذلك عن طريق عرضه على عدد من المحكمين ذوي الاختصاص، وبناءً على ملاحظات ومقترحات المحكمين تم إجراء التعديلات على الاستبيان ليخرج بصورته النهائية.

2. ثبات الاستبيان: للتأكد من ثبات الاستبيان تم حساب معاملات الاتساق الداخلي باستخدام معادلة آلفا كروناخ حيث بل معامل ثبات أداة الدراسة (0.87) وتعتبر هذه النسبة عالية وتوكد على أن الاداة صالحة ومناسبة للتطبيق.

إجراء تطبيق أداة الدراسة (الاستبيان):
تم توزيع الاستبيان على عينة الدراسة بدقة 11 طالب وطالبة. ثم تم جمع الاستبيانات وتفريغ البيانات والمعلومات وتحليلها إحصائيا واستخلاص النتائج منها.

النتائج وتفسيرها:
إجابة السؤال الأول:
جدول رقم (1) الفرص المتاحة أمام توظيف شبكات التواصل الاجتماعي في دعم البحوث العلمية ونشرها لطلبة المرحلة الجامعية من وجهة نظر الطلبة.

<table>
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<th>الانحراف القياسي</th>
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<td>1</td>
<td>تساعدا في نشر الاداة البحثية لمجتمع البحث</td>
<td>4.26</td>
<td>0.70</td>
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<tr>
<td>2</td>
<td>تساعدا في انتقاء التخصصات بين أعضاء الفريق البحثي والتعاون في البحوث الجماعية والمشروعات العلمية</td>
<td>4.25</td>
<td>0.78</td>
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<td>4</td>
<td>تساهم في شريك الاداة التذكيرية وتوسيع المعرفة المرتبطة بالبحث</td>
<td>4.15</td>
<td>1.00</td>
</tr>
<tr>
<td>5</td>
<td>تفوفر فرص بحثي للمتقدمين في مجال البحث والتعاون مع الباحثين في مجال التخصص</td>
<td>4.47</td>
<td>0.71</td>
</tr>
<tr>
<td>6</td>
<td>تساهم في تفعيل البحث عبر توفير مصادر المعلومات المتوفرة على الإنترنت</td>
<td>4.35</td>
<td>0.83</td>
</tr>
<tr>
<td>7</td>
<td>تساهم في تنفيذ الدراسات الحالية وتنزيل المنشورات ذات العلاقة بالمحترم</td>
<td>4.30</td>
<td>0.65</td>
</tr>
<tr>
<td>8</td>
<td>تساهم في تشجيع البحوث والتقارير في الورشات العلمية والمجلات</td>
<td>4.32</td>
<td>0.60</td>
</tr>
<tr>
<td>9</td>
<td>تساهم في تشجيع البحوث عبر الإنترنت</td>
<td>4.59</td>
<td>0.81</td>
</tr>
<tr>
<td>10</td>
<td>تساهم في مشاركة المراجع والمصادر</td>
<td>4.29</td>
<td>0.65</td>
</tr>
</tbody>
</table>

أشارت نتائج الجدول رقم (1) أن عبارات الفرص المتاحة أمام توظيف شبكات التواصل الاجتماعي في دعم البحوث العلمية ونشرها لطلبة المرحلة الجامعية قد حظيت بموافقة كبيرة، وحيث أن المتوسط الحسابي العام لاستجابات عينة الدراسة يساوي 0.02 وهو مؤشر على أن هناك موافقة بشرية من قبل الطلبة بجامعة تبوك على تلك الفرص. ولقد احالت عبارة متوسط الفردية المجموعية السائدة للفردية في هذا السؤال 4.59 في المرتبة الأخيرة. تعرف مستوى اللغة الإنجليزية من خلال التعامل عليها بنطاق 0.02 و4.03.

إجابة السؤال الثاني:
جدول رقم (2) محور التحديات التي تواجه شبكات التواصل الاجتماعي في دعم البحوث العلمية ونشرها لطلبة المرحلة الجامعية من وجهة نظر الطلبة:

<table>
<thead>
<tr>
<th>المرتبة</th>
<th>العبارة</th>
<th>المتوسط الحسابي</th>
<th>الانحراف القياسي</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>قلة البرامج التدريبية المخصصة لتنمية مهارات استخدام شبكات التواصل الاجتماعي</td>
<td>4.77</td>
<td>0.81</td>
</tr>
<tr>
<td>2</td>
<td>قلة الحوافز المادية والمعنوية للناشرين في مجال البحث والنشر</td>
<td>4.64</td>
<td>0.75</td>
</tr>
<tr>
<td>3</td>
<td>بعض مصادر المعلومات تكون غير مفيدة ومطابقة لمجال البحث</td>
<td>4.15</td>
<td>0.53</td>
</tr>
<tr>
<td>4</td>
<td>ضعف مهارات اللغة الإنجليزية لدى الطلبة</td>
<td>3.91</td>
<td>0.74</td>
</tr>
<tr>
<td>5</td>
<td>عدم توفر الوقت الكافي للضغط على شبكات التواصل الاجتماعي بسبب التكاليف والوقت والجهد</td>
<td>3.55</td>
<td>1.04</td>
</tr>
<tr>
<td>6</td>
<td>عدم توفر الفرص الكافية الاستخدامية للشبكات التواصل الاجتماعي بسبب التكاليف والوقت والجهد</td>
<td>4.07</td>
<td>0.69</td>
</tr>
<tr>
<td>7</td>
<td>غياب التوازن المتوازن نحو الحقوق المتساوية للمعلومات المتاحة عبر شبكات التواصل الاجتماعي</td>
<td>4.24</td>
<td>0.74</td>
</tr>
<tr>
<td>8</td>
<td>قلة الوعي بالأهمية في التوظيف للشبكات التواصل الاجتماعي في البحث</td>
<td>4.31</td>
<td>0.65</td>
</tr>
<tr>
<td>9</td>
<td>انتهاج النشاط السائد في استخدام شبكات التواصل الاجتماعي</td>
<td>4.77</td>
<td>0.83</td>
</tr>
<tr>
<td>10</td>
<td>قابلية لتعزيز مهارات استخدام شبكات التواصل الاجتماعي وتحرير القواعد</td>
<td>4.63</td>
<td>0.73</td>
</tr>
</tbody>
</table>

المتوسط الحسابي والانحراف القياسي:

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</table>
يلاحظ من النتائج الواردة بالجدول رقم 01 أن عبارات محور التحديات التي تواجه شبكات التواصل الاجتماعي وتحول دون دعمها للبحوث العلمية ونشرها لطلبة المرحلة الجامعية المتضمنة عبارات 20-11 والتي بلغ عددها 10 عبارات بناءً على ما حصلت مواقف من قبل الطلبة بجامعة تبوك، وبلغ المتوسط الحسابي العام لاستجابة عينة الباحث 43.00، حيث أن هناك موافقة كبيرة من قبل الطلبة بناءً على ماً حصلت مواقف من قبل الطلبة بجامعة تبوك.

وقد اختلقت عبارات قلة البرامج التدريبية المخصصة لتنمية مهارات استخدام شبكات التواصل الاجتماعي في دعم النشر البحوث العلمية صدارة تلك التحديات بروح 8,77، وتسلم منها بناءً على قيمة المتوسط عبارة الاتجاه السلبي باستثناء عبارة قلة البرامج التدريبية المخصصة لتنمية مهارات استخدام شبكات التواصل الاجتماعي في دعم النشر البحوث العلمية، التي بلغت عدد فقرات بانها قد حظيت بموافقة من قبل الطلبة بجامعة تبوك.

وقد احتجزت عبارة قلة البرامج التدريبية المخصصة لتنمية مهارات استخدام شبكات التواصل الاجتماعي في دعم النشر البحوث العلمية صدارة تلك التحديات بروح 8,77، وتسلم منها بناءً على قيمة المتوسط عبارة الاتجاه السلبي باستثناء عبارة قلة البرامج التدريبية المخصصة لتنمية مهارات استخدام شبكات التواصل الاجتماعي في دعم النشر البحوث العلمية، التي بلغت عدد فقرات بانها قد حظيت بموافقة من قبل الطلبة بجامعة تبوك.

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وبعد أن تم حسب علمية هذه التحديات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، وتعمل شبكات التواصل الاجتماعي في مجال البحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية الأعما桼 والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال والبحث والنشر العلمي، ساهمت هذه التحملات وبدعم النشر البحوث العلمية ونشرها في مجال الدوريات العلمية والأعمال و
الاهتمام بتفعيل شبكات التواصل الاجتماعي وغيرها من مستحدثات تكنولوجيا العصر التي انتشرت في حياتنا اليومية ويستخدمها الطلبة ب حياتهم بشكل يومي وتوظيفها التوظيف الأمثل لخدمة التعليم والتعلم وقضايا البحث.

3- التأكيد على وجود مقرر يختص بمهارات العلمي وأخلاقيات البحث.

4- إيجاد دوريات علمية متخصصة لنشر بحوث طلبة مرحلة البكالوريوس.

5- إيجاد حوار ودعم طلبة مرحلة البكالوريوس المتميزين في النشر العلمي.

6- إعداد برامج تدريبية وتنقية لزيادة الوعي بأهمية شبكات التواصل الاجتماعي لدعم نشر البحوث العلمية.

7- ضرورة تنظيم وحث الطلبة للمشاركة في المؤتمرات العلمية المحلية والعالمية لمتابعة أخر التطورات العلمية المتخصصة.

8- العمل على بناء شبكة تواصل اجتماعي علمي عربية لنشر بحوث الطلبة على غرار فكرة موقع Research Gate لتساعد في إثراء المحتوى العربي.
قائمة المراجع:

أولا: المراجع العربية:


العاجز، فؤاد. 2010. دور الجامعات الفلسطينية في تحقيق التنمية الشاملة، قدم إلى المؤتمر السنوي العاشر للجمعية المصرية لتربية المقارنة والادارة التعليمية، القاهرة.

الموسوي، علاء محمد. 2009. دور تقنيات المعلومات والاتصالات في تعزيز استخدام الطرق الحديثة في تدريس الفيزياء الجامعية. مركز الحاسب الالي، جامعة عدن.


عبيد، عاصم محمد. 2011. شبكات التواصل الاجتماعي في دعم الممارسات الدراسية من وجهة نظر طلبة كلية علوم الحاسب والمعلومات بجامعة الإمام محمد بن سعود

تاريخ الاسترداد: 05-02-0100

مجاهد، أماني. 2010. توظيف بعض امكانيات الشبكة العنكبوتية ويب 2 لتقديم خدمات متقدمة في المكتبات. مجلة جامعة المنوفية، ص ص(14-16).

在此之前، تمت تعديل نص هو النص المقبول، حيث تم إزالة بعض المعلومات المعروفة وتم تضمين المراجع العربية في قائمة المراجع المعروفة في النص المقبول. }
ثانيا: المراجع الأجنبية


Rambe, Patient. 2011." Exploring the Impacts of Social Networking Sites on Academic Relations in the University". Office of International Academic Programmes, University of the Free State. Bloemfontein. South Africa


واقع استخدام التعليم الإلكتروني في تدريس منهج الترجمة بالتعليم العالي بالسودان من
وجهة نظر المختصين

ياسر محمد سعيد عبد المجيد
جامعة السودان للعلوم والتكنولوجيا – رئيس قسم الابتعاث بالخارج

المستخلص
هدفت هذه الدراسة إلى التعرف على أهمية استخدام التعليم الإلكتروني في تدريس منهج الترجمة بالتعليم العالي بالسودان من وجهة نظر المختصين، الكشف عن مدى توفر الوسائل الإلكترونية بمؤسسات التعليم العالي بالسودان، معرفة إتجاهات أساتذة الترجمة نحو استخدام الوسائل الإلكترونية.

استخدم الباحث وفقاً للمنهج الوصفي التحليلي، وبلغ حجم مجتمع الدراسة (147) من أعضاء هيئة التدريس بدرجة مساعد تدريس فما فوق. استخدم الباحث الاستبانة كأداة للدراسة.

و أهم نتائج الدراسة:
1. معظم مؤسسات التعليم العالي لا تتوفر فيها وسائل التعليم الإلكترونية.
2. ضعف استخدام الوسائل الإلكترونية في تدريس اللغة الترجمة.
3. إيجابية أتتذات الترجمة نحو استخدام الوسائل الإلكترونية.

توصيات الدراسة:
1. ضرورة توفير الوسائل الإلكترونية بمؤسسات التعليم العالي بالسودان.
2. تأهيل الأساتذة بمهارات التعليم الإلكتروني.
3. توفير البنية التحتية اللازمة لاستخدام التعليم الإلكتروني في التدريس.

الكلمات المفتاحية: التعليم الإلكتروني، الترجمة، الإنترنت، منهج التعليم الإلكتروني.
الفصل الأول

الإطار العام للدراسة

المقدمة:

قد أدت النقلات السريعة في مجال التكنولوجيا إلى ظهور أنماط جديدة للتعلم والتعليم، مما يزيد في ترسيخ مفهوم التعليم الذاتي. حيث يتابع المتعلم تعلمه حسب طاقته وقدرته وسرعة تعلمه وفقاً لما لديه من خبرات ومهارات سابقة. ويعتبر التعليم الإلكتروني أحد هذه الأنماط المتطورة لما يسمى التعلم عن بعد عامة، والتعليم المعتمد على الحاسوب خاصة.

يعتمد التعليم الإلكتروني أساساً على الحاسوب والشبكات في نقل المعارف والمهارات، وتضم تطبيقاته التعلم عبر الإنترنت والتعلم بالحاسوب وغرف التدريس الافتراضية والتعاون الرقمي. ويتم تقديم محتوى الدروس عبر الإنترنت والأشرطة السمعية والفيديو وعبر الوسائل والأقراص المدمجة.

مشكلة الدراسة:

إن التعليم الإلكتروني استحدث تعليم معاصر فرض وجوده في واقع العملية التعليمية بجدارة ونجاح كبير، إلا أنه لم يصل إلى وضع معايير مدروسة لتطبيقاته في العملية التعليمية، الأمر الذي يدعو إلى تحديد معايير خاصة.

تساؤلات الدراسة:

يمكن أن تصاغ أسئلة الدراسة في سؤال رئيسي هو:

ما فاعلية استخدام التعليم الإلكتروني في تدريس منهج الترجمة بالتعليم العالي بالسودان من وجهة نظر المختصين؟ وتتفرع من هذا السؤال الرئيسي الأسئلة التالى:

1. ما مطالب استخدام التعليم الإلكتروني من حيث الأدوات والبرامج اللازمة لتدريس اللغات والترجمة؟
2. ما مطالب استخدام التعليم الإلكتروني في تدريس اللغات والترجمة من حيث المناهج الإلكترونية؟
3. ما مطالب استخدام التعليم الإلكتروني من حيث البيئة التربوية؟
4. ما أهمية التعليم الإلكتروني في مجال الترجمة نظراً لحداثته وتطوره السريع؟
5. ما هي تضاعفات استخدام التعليم الإلكتروني في مجال الترجمة؟
6. ما هي التسهيلات التي تواجه الأساتذة في تدريس اللغات والترجمة؟
7. ما هي التسهيلات التي تواجه الأساتذة في استخدام الوسائل الإلكترونية؟
8. ما هي التسهيلات التي تواجه الأساتذة في استخدام الوسائل الإلكترونية؟

أهمية الدراسة:

تبحث هذه الدراسة في استخدام التعليم الالكتروني وهو اتجاه حديث يسعى المؤسسات التعليمية إلى إدخاله في برامجها. وقد ترسى هذه الدراسة في تقديم مطالب استخدام التعليم الإلكتروني باختلالات في تدريس العلم الإنساني بالتعليم العالي.

الحذور الموضوعية:

يجب احترام بعض القيم والأحيان في تدريس اللغات والترجمة في الجامعات السودانية.
الفصل الثاني

المحبحة الأولى: التعليم الإلكتروني

مفهوم التعليم الإلكتروني:

"التعليم الإلكتروني هو نظام تفاعلي للتعليم عن بعد، يوفر للمتعلم وفقاً للطلب، ويعتمد على بيئة رقمية، معتمدة على الشبكات الإلكترونية، والمتخصصة في تقديم المحتوى التعليمي وفقاً للطلب، ويعتمد على بيئة رقمية متكاملة تستهدف بناء المقررات وتسليمها بواسطة الشبكات الإلكترونية، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، والإنترنت، 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الإلكتروني.
- شبكات الربط الداخلية والخارجية.
- شبة إنترنت عالية السرعة.
- البرمجيات اللازمة لتشغيل الأجهزة وتصميم وإدارة التعليم الإلكتروني.
- المكتبة الإلكترونية.

2. المطالب البشرية وتشمل:
- مدربياً متميزين في الحاسب الآلي والشبكات.
- فريق صيانة والدعم الفني ذو قدرات وخبرات تتناسب مع مهمته.
- متخصصين في تقنيات التعليم ذوي مهارات عالية.
- فنيين تصميم الصحفات والبرامج والعروض الإلكترونية.

3. المطالب التشريعية والادارية وتشمل:
- الدعم المالي لبرامج التعليم الإلكتروني.
- الاعتراف بالتعليم الإلكتروني وشهادته.
- تشجيع التعليم الإلكتروني وتبنيه في المؤسسات التعليمية.
- دعم وتشجيع الأبحاث والدراسات في مجال التعليم الإلكتروني.
- وضع وينات وقوانين تنظم العمل مع التعليم الإلكتروني.

ثالثاً: محتويات و متطلبات المنهج الإلكتروني:
يرى (الظفيري، 2003م) بأن مطالب المنهج الإلكتروني تتحدد فيما يلي:

أ. المحتوى العلمي: فالمحتوى العلمي يجب أن يشمل:
- الفهرس الرئيسي للدروس أو الوحدات الدراسية.
- ارتباطات تشويبية.
- مواضيع فرعية لكل وحدة دراسية.
- تحوي الدروس أو المواضيع على النقاط أو الأفكار.
- إضافة وسائل متعددة (صوت، فيديو، صور متحركة وثابتة).
- الابتعاد عن وضع المحتوى بصورة تجعل المتعلم يقرأ من شاشة الحاسب.

ب. الأنشطة اللصفية في المنهج التعليمي الإلكتروني:
- إثارة قضايا علمية متعلقة بموضوع الدرس من خلال إجراء حوار حي مع الطلاب عبر الشبكة.
- إرسال رسائل إلكترونية من والى معلم المادة.
- مدى هواب على وجه التحديد من خلال البراءات أو ما يحدده المعلم.
- إجابة طلاب التدريس من خلال البحث في المصادر الإلكترونية أو ما يحدده المعلم.
- إرسال رسائل إلكترونية.
- تسجيل الأبحاث والدراسات في مجال التعليم الإلكتروني.
- التواصل الإلكتروني مع الزملاء.
- ربط بين الدروس المتاحة مع دروس أخرى في مواد أخرى.

رابع: أدوار المعلم في التعليم الإلكتروني:
حدد عبد المنعم (2003م) أدوار المعلم أو الأنشطة المطلوبة منه في عصر التعليم الإلكتروني، بما يلي:
- تقديم المعلومات الفورية لعدد كبير ومتنوع من الطلاب.
- استخدام البريد الإلكتروني.
- استخدام محادثة.
- توظيف الموارد التعليمية المتعددة وivel مواقع متعددة على الإنترنت.
- الاستخدام لمقدمة.
- استخدام البريد الإلكتروني.
- التواصل مع المدارس الإلكترونية.
- متابعة أداء الطلاب.
- إعداد تقارير دورية.

خامس: تفاوتات استخدام المعلمين وتدريبهم:
وضعت الجرير (2003م) برنامج تدريبي للمعلمين للاستعداد من التعليم التقليدي إلى التعليم الإلكتروني، تظهر فيه أهم المطالب اللازمة للمعلم بما يلي:
- استخدام برامج التصفح.
- استخدام محركات البحث.
- تحميل برامج من الانترنت.
- استخدام البريد الإلكتروني.
- إرسال رسالة الإلكترونية.
- إجراء حوارات حية مع الطلاب عبر الشبكة. ويظهر اختصاراً عليها مطالب استخدام الإنترنت.

الفصل الثالث
إجراءات الدراسة الميدانية
مجتمع الدراسة:
يتكون مجتمع الدراسة من أعضاء هيئة التدريس بكليات اللغات والترجمة، كمبيون للعلوم والكيمياء، جامعة القسم العربية، جامعة الرباط، ومعاهد المدرسة الإسلامية، البخاري، عضو (147) من أعضاء هيئة التدريس (مساعد تدريس وما فوق).
أدوات الدراسة: تُعتبر الاستبانة هي أداة الدراسة حيث قام الباحث بتجميع استبانات تكونت من أربعة محاور للإجابة عن فرضيات الدراسة.

 الصحي و ثبات الاستبانة:

المخاير النظري: تم عرض الاستبانة في صورتها الأولى علي عدد 8 مكمان وقد أبدوا ملاحظاتهم التي تقيد بها الدراسة حيث استبانة تصميم البرمجيات النهائية وهذا هو الصدق الظاهري للإجابة.

الثبات:

قامت الباحث باختيار عينة عشوائية بسيطة من أعضاء هيئة التدريس، واستخدام برنامج التحليل الإحصائي (spss) تم حساب النتائج بناء على (ألفا كرونباخ)، حيث بلغ (0.90) ومن الجدول أعلاه رقم (3) أن غالبية أفراد الهيئة الذين أجروا الاستبانة في شعب علمية بأحد (54) بنسبة (55.7)٪) بين أجابوا بناء عدد (43) بنسبة (44.3)٪.

الجدول (2) بحسب الفرضية الأولى:

معظم مواسم التعليم العالي لا توفر فيها وسائل الكترونية في تدريس اللغات والترجمة.

الفرضية السؤال
ci
two
two

ci
two

ci
two

ci
two

ci
two

ci
two

ci
two

ci
two

التفسير

القيمة الإحتمالية

الأجابة

العدد

نعم

لا

المجموع

54

43

97

نسبة

55.7

44.3

100

توجد فروق معنوية بين الإجابات على العبارة نلاحظ لقيمة (0.90)

حساب الثبات بمعامل (ألفا كرونباخ)، حيث بلغ (0.90)

توجد فروق معنوية بين الإجابات على العبارة نلاحظ لقيمة (0.90)

ويوجد قبضة في نتائج التدريس، وباستخدام برنامج التحليل الإحصائي (spss)
أن معظم مؤسسات التعليم العالي لا توفر فيها وسائل التعلم الخفيفة في تدريس اللغات والترجمة مما يثبت صحة الفرضية.

الجول (3) يجب على المختصين في تدريس اللغات والترجمة في مؤسسات التعليم العالي للوسائل الإلكترونية يعتبر ضعيفًا:

<table>
<thead>
<tr>
<th>الفرضية</th>
<th>التفسير</th>
<th>القيمة الإحتمالية</th>
<th>الوسيط</th>
</tr>
</thead>
<tbody>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
<td>أوجد استخدام الحاسب الآلي في تدريس اللغات/الترجمة</td>
<td>4</td>
<td>0.000</td>
</tr>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
<td>استخدم برنامج word بدرجة فعالية عالية</td>
<td>4</td>
<td>0.000</td>
</tr>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
<td>أتيت على الحاجة بكاشفة إشراك المختلفة</td>
<td>4</td>
<td>0.000</td>
</tr>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
<td>أتيت على الإجابة بكفاءة متميزة</td>
<td>4</td>
<td>0.000</td>
</tr>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
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<td>0.000</td>
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<td>4</td>
<td>0.000</td>
</tr>
<tr>
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<td>4</td>
<td>0.000</td>
</tr>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
<td>أتيت على الإجابة بكفاءة متميزة</td>
<td>4</td>
<td>1.110</td>
</tr>
<tr>
<td>نتيجة التدريس معنوية أي توجد فروق معنوية بين الإجابات على العبارة للاختبار معنوية</td>
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<td>4</td>
<td>1.110</td>
</tr>
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<td>4</td>
<td>1.110</td>
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<tr>
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<td>أتيت على الإجابة بكفاءة متميزة</td>
<td>4</td>
<td>1.110</td>
</tr>
</tbody>
</table>

من الجدول رقم (2) أعلاه يضحى:

أي أن نتيجة الإختبار معنوية أي توجد فروق معنوية في تدريس اللغات والترجمة مما يثبت صحة الفرضية الأولى.

 Совет: مصادر بمحتوى طبيعي في تدريس اللغات والتغيير في مؤسسات التعليم العالي للوسائل الإلكترونية يعتبر ضعيفًا: مصادر من نظرات اللغة والترجمة مما يثبت صحة الفرضية الثانية.

357
جدول (4) يجيب عن الفرضية الثالثة:
توجد إتجاهات إيجابية لأساتذة اللغات والترجمة بمؤسسات التعليم العالي بالسودان نحو استخدام الوسائط الإلكترونية.

<table>
<thead>
<tr>
<th>الفرضية</th>
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<th>الوسيط</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.111</td>
<td>يعتبر تعلم الحاسوب ضروري لاستخدام اللغات والترجمة</td>
<td>0.000</td>
<td>5</td>
</tr>
<tr>
<td>4.111</td>
<td>النتائج والملاحظات في تدريس اللغات والترجمة</td>
<td>0.000</td>
<td>5</td>
</tr>
<tr>
<td>4.111</td>
<td>استخدام الحاسوب والإنترنت من أساليب التدريس الحديثة في تدريس اللغات والترجمة</td>
<td>0.000</td>
<td>5</td>
</tr>
<tr>
<td>4.111</td>
<td>تستخدم كلية اللغات/الترجمة الانترنت كواحدة من أساليب التدريس الأساسية في تدريس اللغات والترجمة</td>
<td>0.016</td>
<td>3</td>
</tr>
<tr>
<td>4.111</td>
<td>التعليم الإلكتروني يساعد في توضيح مفاهيم الترجمة من خلال البرامج التعليمية</td>
<td>0.000</td>
<td>5</td>
</tr>
<tr>
<td>4.111</td>
<td>التعليم الإلكتروني يساعد الطلاب في تعلم معلومات كثيرة في زمن قصير</td>
<td>0.000</td>
<td>5</td>
</tr>
<tr>
<td>4.111</td>
<td>التعليم الإلكتروني يعفي الطلاب من التفكير الابداعي في المحاضرات</td>
<td>0.000</td>
<td>4</td>
</tr>
<tr>
<td>4.111</td>
<td>التعليم الإلكتروني يزيد من فاعلية الطلاب في تعلم المفاهيم المذكورة في المنهج</td>
<td>0.000</td>
<td>4</td>
</tr>
<tr>
<td>4.111</td>
<td>التعليم الإلكتروني يساعد في تعلم الطلاب المفاهيم المذكورة في المنهج</td>
<td>0.000</td>
<td>4</td>
</tr>
<tr>
<td>4.111</td>
<td>التعليم الإلكتروني يدعم استخدام الطلاب في التعلم في دورات التدريس والتدريب</td>
<td>0.000</td>
<td>2</td>
</tr>
<tr>
<td>4.111</td>
<td>استكمال استخدام الحاسوب والإنترنت في تدريس اللغات والترجمة المبتكرة</td>
<td>0.000</td>
<td>2</td>
</tr>
<tr>
<td>4.111</td>
<td>الأتمتة التعليمية تقنية تعلم المفاهيم المذكورة في المنهج</td>
<td>0.000</td>
<td>2</td>
</tr>
<tr>
<td>4.111</td>
<td>برامج التعليم الإلكتروني في تدريس اللغات والترجمة تستمتع في استخدامها</td>
<td>0.000</td>
<td>2</td>
</tr>
</tbody>
</table>

من الجدول رقم (4) أعلاه يتضح:

- إن هناك إنجازات إيجابية لاستخدام اللغات والترجمة بممارسات التعليم العالي بالسودان نحو استخدام الوسائط الإلكترونية.
- توجد إنجازات إيجابية لاستخدام الوسائط الإلكترونية في تدريس اللغات والترجمة بمؤسسات التعليم العالي بالسودان.

بما يثبت صحة الفرضية الثالثة.
التعليم الالكتروني يساعد في توضيح منهجية استخدام الحاسب والإنترنت من أساسيات التقنيات. هيئة التدريس لا يستخدموا الفيديو سجال زادة اللغات والترجمة إيجابية نحو معظم أعضاء هيئة التدريس لا يطلب من الطلاب نظمًا استخدام البريد الإلكتروني. أغلب الجهود المبذولة لا تساهم في تحسين تدريس اللغات/الترجمة.

من الجدول رقم(5) أعلاه يتبين:

- أن هناك صعوبات ومعوقات أساسية تحول دون استخدام الأساتذة في التدريس العالي بالسودان للوسائط الإلكترونية في تدريس اللغات والتربية.

النتائج والتفاصيل:

توصى هذه الدراسة إلى النتائج التالية:

1. معظم مؤسسات التعليم العالي لا توافر فيها وسائل الالكترونية تدريس اللغات والتربية.

من حيث:

أ. قلة الموارد التي تتوفر لديها.

ب. قلة التواصل مع الطلبة.

ج. قلة الوعي بالوسائط الإلكترونية.

د. قلة التدريب في مجالات البحث والتدريس.

2. ضعف استخدام الوسائل الإلكترونية في تدريس اللغات والتربية في مؤسسات التعليم العالي.

أ. عدم وجود نظام إداري في النظام التعليمي.

ب. قلة التدريب في مجالات البحث والتدريس.

ج. قلة الوعي بالوسائط الإلكترونية.

د. قلة الموارد التي تتوفر لديها.

النماذج وأدوات التدريس:

- توجل عبارة عن الفرضية الرابعة بين الإجابات على العبارة نلاحظ لقيمة الوسيط (0).
هنالك صعوبات ومعوقات أساسية تحول دون استخدام الأساتذة في التعليم العالي في السودان للوسائэ الالكترونية في تدريس اللغات والترجمة منها:
أ. قلة المخصصات المالية.
ب. قلة اهتمام إدارة الجامعة.
ج. وجود معامل حاسب ألي داخل الجامعة.
د. كثرة الأعمال التي تقع علي عاتق الأستاذ.
ه. عدم امتلاك الأساتذة المهارات الكافية.
و. عدم وجود تدريبات في استخدام الحاسب الآلي.
ز. عدم امتلاك البعض مهارات الحاسب الآلي.
ط. عدم توفر الإنترنت للطلاب في البيت.
ي. كثرة أعداد الطلبة.
ك. عدم توافر الرغبة لدى الطلاب.
ل. عدم امتلاك بعض الطلاب لمهارات الحاسب الآلي.

توصيات الدراسة:
1. ضرورة توفير الوسائل الإلكترونية بمؤسسات التعليم العالي بالسودان.
2. أن تأخذ الجامعات بطالب التعليم الإلكتروني عند اختيارها أعضاء هيئة التدريس.
3. توفير البنية التحتية اللازمة لاستخدام التقنية في التعليم والتعلم من خلال المواقع الإلكترونية والمكتبات والأجهزة والمواقع الإنترنت مع الاستفادة من الخبرات الداخلية والخارجية في هذا المجال.
4. تنفيذ دورات تدريبية في استخدام الحاسب الآلي والإنترنت للطلاب.

هنالك توافق بين فروض الدراسة ونتائجها.

4. هناك صعوبات ومعوقات أساسية تحول دون استخدام الأساتذة في التعليم العالي بالسودان للوسائط الإلكترونية في تدريس اللغات والترجمة.
المصادر والمراجع:

ابراهيم, مروان عبد المجيد (2000م) سس البحث العلمي لإعداد الرسائل الجامعية, عمّان, مؤسسة الوراق, ط 40.


الظفيري, فايز منشر. "أهداف وطموحات في التعليم الإلكتروني" رسالة التربية, سلطنة عمان, ط 100.

الشهري, فايز بن عبد الله (2002م). التعليم الإلكتروني في السعودية: قبل أن نشترى القطار... هل وضعنا القضبان" مجلة المعرفة, ع 20, ديسمبر, ص 84-90.

الموسي, عبدالله بن عبد الرحمن بن محمد (2007م) "متطلبات التعليم الإلكتروني في الدول العربية في التعليم" دمشق, النامية, ط 18.


الموسي, عبدالله بن عبد العزيز بن محمد (2001م). "المصادر والمراجع"}

http://faculty.ksu.edu.sa/aul turki/ara/DocLibrary/Forms/AllItems.aspx

تاريخ الدخول إلى الموقع 00/00/0100م الساعة 00:02 م.ع.

عبيك, صفاء خالد (1982م) "ما بعد الترجمة في ضوء الدراسات المقارنة, در لرشيد للنشر, ص 14.


المصادر والمراجع: