

THE IMPACT OF USING BLENDED LEARNING ON THE DEVELOPMENT OF SKILLS IN THE DESIGN OF ELECTRONIC CONTENT MATERIAL FOR POSTGRADUATE STUDENTS AT TABUK UNIVERSITY

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ABSTRACT

The study at hand investigates the impact of prompt training programs on master degree students, in the areas of Curriculum and Teaching methods. The study examines the development of the electronic content and design skills. To achieve their goals, the researchers developed an achievement tool, which measures the efficiencies of electronic content and design, and the card to analyze the students' projects, and verify the validity and reliability of the tool. The study sample consists of 39 students. The results showed the superiority of the experimental group students in post-test performance, due to the efficiencies of electronic content designed to measure the control group. Statistical significant differences, also emerged, in relation to the performance of the experimental group students, in analyzing Students' card projects, and which are compared to the control group students.

Keywords: Blended Learning, Electronic Content Design, Instruction Design.

INTRODUCTION

The advent of globalization, and the information society, which took the world by storm, concurs with the emergence of e-learning schools, and the concepts of virtual classes. In response, the educational systems in the Arab countries, in particular, saw fit to confront head on, the massive challenges, which must be tackled through the adoption of new educational mindsets, and advanced strategies. The endeavor is geared to empower future generations, in the acquisition of interpersonal skills, seen as key in dealing with the challenges of the current century. The electronic curriculums and e-learning constitute fundamental elements, for all countries, and their institutions, anxious to build their future, in the age of information technology and electronic learning. The idea of electronic curricula has thus emerged, leading some experts in the field, to predict that the electronic school will constitute the most ideal and popular method for education and training, in the near future (E-school conference: 2002: 245).

E-learning is a broad term, which covers a wide sphere of educational materials. These may be provided using technology applications such as CD-ROM, a local area network (LAN) or the Internet. It also embodies computer-based training; web based training, electronic performance support systems, distance learning, online learning and e-tutoring (Kurtus, 2004). At this level, multimedia refers to any combination of text, graphic art, sound, animation, and high quality video, delivered by computer (Vrasidas, 2002). E-learning is considered as one of the most modern methods of learning, for a number of factors. First, it allows live video interviews and discussions on the network. Second, it provides up-to-date information, in line with the requirements of learners, simulation programs, motion pictures, interactive exercises and practical applications (Al-Karam & Al-Ail, 2001). Other benefits include the ability to meet

the individual needs of learners, and self-pace learning, which gives students a chance to speed up or slow down their learning, in the way they deem fit. Self-paced learning reduces the cost of training (accommodation, travel, books), enhances the retention of information, and permits access to information at a convenient pace. The system updates information across the entire network instantly, which, as in Codone, (2011) quickly facilitates “the unification of content material and information for all learners, improves cooperation and interaction among students, and spares the student’s blushes, in front of his/her peers.” Moreover, E-Learning solves the problems associated with knowledge expansion, and the growth in demand for education. In Guckel & Ziemer, 2002, “E-learning increases the effectiveness of learning to a large degree, reduces the time required for training, and reduces the cost of training.” Despite the development of teacher training techniques at Arab universities, the interest in employing multimedia in university teaching is still modest, The process of formulation, and development of programs and platforms, for e-learning constitutes the most significant requirement in the application of e-learning, needing a great deal of effort from experts, and specialists, in the areas pertaining to its’ design and programming.

The Problem of the Study

Providing students with scientific and practical skills, in the design of electronic content material requires sound grounding, possession of knowledge and practical efficiency. Instructional design model takes into account procedural steps, of which educational materials, educational multimedia design, solutions to educational problems, and training program. Having said that, for Reiser & Dempesey (2007) “Instructional technology can no longer be considered a luxury, but an imperative necessity for the requirements of the modern age.” The researchers of the Master's program in Curriculum and Teaching Methods have through teaching, and field visits to teachers training students, in schools, observed a reluctance teachers to employ multimedia and e-learning techniques in the teaching process. Lack of awareness, and/or conviction, or simply the absence of skills in the design and implementation of multimedia and e-learning techniques, may be the source of the reluctance, mentioned above. Since the students form the crux of any educational system, formulating strategies for identifying and acquiring the skills of e-content design, and training the students in their usage, researchers sought to identify the impact of teaching curriculum and multimedia applications. They used a training program based on blended learning, to train students on the skills of E-content design: Our research strives to answer the following core question: To what extent can training program based on blended learning contribute to the acquisition of e-content design skills for students?

Limitation of the Study

The research was limited to E-content design skills, in which a checklist was designed as an instrument to collect data, and confined to Master's Degree students at The Department of Curriculum and Teaching Methods at The University of Tabouk, for the second semester, of the academic year 1435-1436H.

Definition of Terms

- 1- The Electronic curriculum and course support: It is represented, in our research, under the plan approved by the Department of Curriculum and Teaching Methods, at The University of Tabouk. The plan comprises predetermined goals, four units, educational activities, and assessment activities, which work to provide students with information, and experiences about

multimedia applications, their production, usage, skills and models of electronic curriculum design.

- 2- Electronic content design skills: it is a subfield of study and research related to theoretical principles (Descriptive) and practical procedures (Prescriptive), on how to formulate educational programs, school curricula, educational projects, and educational lessons, and integrate them with modern technology outcomes (Alrawaydh et al, 2011: 51). The researchers define this procedure by the class of degree obtained by the learner, using efficiency scale of E-content design, and a checklist of Student projects, formulated towards that end.

The Aims of the Study

Identify the impact of a training program based on blended learning, which facilitating the acquisition of E-content design skills by postgraduate students at the University of Tabouk .

Significance of the Study

- To suggest a proposed training program based on blended learning that could be useful for postgraduate students in the acquisition of e-content design skills.
- To suggest a tool that could be useful to measure the skills of teachers and those of Master's Degree students, at The Department of Curriculum and Teaching Methods, in the design of electronic content.
- To direct the attention of researchers to grasp the significance of developing teaching methods, through blended learning and multimedia applications.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

The current part of the research discusses theoretical background and literature reviews, which include two major issues: blended learning, and e-content design.

First: Blended Learning

As a teaching method, Blaz, (2006, p1) argues that, “Blended Learning embodies a wide range of teaching strategies and trends that attract the attention of any good educators, namely: the students and the learning process. Koeze, 2007 (p 8) for his part, defines blended learning as a “compilation of the best practices of research and instructional strategies, for teaching and learning that support students’ achievement, and develop their abilities, by adapting various styles of learning that fit the learners’ diverging needs.” Campbell (Campbell, 2008:1) stated many definitions of blended learning .The first of which, he describes as a series of procedures, under which, students are grouped, and taught in classes, according to their ability. Teaching students according to their ability and needs, while reflecting a student-centered learning method, based on proven practices which improve students’ learning. The method also entails innovative ways of thinking and planning, novel practices for addressing the multi-faceted needs of classrooms and students, today. Blended learning consists of an instructional style, and combines on the one hand, traditional learning, in which educational interaction occurs directly between the teacher and the learners, and on the other, e-learning based on the use of modern technologies and multimedia applications. The combination creates an active, interactive environment, through programs and technical tools, without restrictions of time or space.

Blended Learning components

Mohammed (2010) considered that blended learning consists of traditional classes, virtual classrooms, E-mail, web pages, chat, CD, DVD, scientific forums, and Video Conference. Salamah, on the other hand, (2005) mentions that blended learning contains many elements, which may be combined together to achieve blended learning. such as: traditional classes, virtual classes, traditional guidance and counseling (true teacher), interactive video or satellites, e-mail, e-mails, continuous talks on the network.

Blended learning styles

AL-Sabagh (2014) sums up the various blended learning styles as:

- **A combination of direct contact and indirect contact:** The practice combines between direct and indirect contact. Indirect blended learning comprises six elements: classrooms, space of application of learning skills, face to face teaching, educational materials, electronic educational materials, and audio learning material. Direct contact blended learning, requires the use of direct contact educational content, electronic teaching, electronic training, collaborative learning with direct contact, information management with direct contact, web educational services and learning with smart devices.
- **A combination of self-learning, collaborative direct learning:** It comprises, as in Redha, (2012) “Self-learning, learning based on student’s plan, individual learning processes, and learning on demand based on student’s need and learning pace, which suits him/her. Co-operative learning comprises more interactive contact between students.”
- **A combination of formulated content, as needed and ready-to use content:** The practice rests on ready-to-use content, which ignores the environment and institutional requirements. Despite the fact that the purchasing cost of the content is comparatively, usually much lower than its’ production cost, which is higher than the formulated content, the general content based self-speed may be adapted by blending a number of experiences (classroom or web). On the other hand , Ghareeb, 2009, points out that “SCORM standards (a reference to the components of participatory content model) has opened the door wide towards greater flexibility, in the integration of ready and formulated content, as needed to improve the learner experience at the lowest cost.”

E-content design: The practice rests on the use of electronic resources for teaching. It provides appropriate behavioral changes towards achieving learning goals. It also helps students research, and access to, electronic information through, innovative and collaborative-interactive technology. The practice found expression in the E-learning environment. The core of e-content design represents building concepts, goals and sequencing of activities, interactive, presented electronic content on the web, learner’s role, and teaching methods. Therefore, E-content is not simply a traditional instructional material on the web, but it is a combination of interactive resources to enhance learning and well-established learning activities (Saleh, 2005: 23). The E-content designer, immerse himself/herself in all learning activities, related to course content such as curricula, programs, textbooks, instructional lessons, modules, teaching content-analysis, to develop goals, select appropriate learning methods, propose cognitive tools in the classroom, design and implement the educational scenario, propose appropriate materials and tools, and design assessment tests for e-content. (Alroaydh, Bani Domi and Al-Omari 2011: 49). The e-content design requires, a team of specialists in teaching design, teachers, educational experts, teaching material evaluator, administrators, and computer programmers,

to design a well-defined plan which embodies goals, educational support systems' and teaching strategies. These contribute to choosing optimal technological applications and development plans. Under these plans, e-content design (ADDIE) undergoes five stages (Alroaydh and others 2011: 122; Abdul Hamid 2005: 68), first the analysis phase, in which the needs and system components analysis take place. Second, the design phase, in which the identification of problems, whether administrative or educational training, are related to electronic content under design. From this point onwards, e-content design, works to identify and formulate sub-goals, strategies, teaching methods, and development phase. The latter includes plans for development, the formulation of educational material, and the application phase, which comprises the delivery, and distribution of educational materials and tools. Under the process mentioned above, e-content, in all its' details, and implications, forms the final product, leading to a final assessment. To conclude, after the e-content material, had been confirmed as quality assured, it is posted on the network or on the CD, with all supporting material and tools. These act to enrich teaching curricula, of which, audio files, video, and links to informative websites, such as: digital libraries, and professional societies.

It is clear from the above that e-content is the product of the analysis, design and development processes, under which it is designed. The design is made possible through pedagogy, and developed at the back of learning tools, multimedia applications, learning modules, and through communication and management systems. These are usually selected during the assessment, at which stage, the educational system is implemented, and the learner self-interacts, either with the system, or in participatory and collaborative learning, using the e-learning portal which integrates all the other components, in a connected way, and provides the learner with easy access to these resources and services. The above implies that e-content design process requires a substantial collective effort, in which many specialists, of which, teaching designers, instructional content experts, and programmers to develop and follow up the product, may join forces. (Alistair, 2002: 89)

Previous Studies

Theoretical works on the subject of blended learning and e-content abund. The researchers will present these studies according to a chronological order. Abdul Majid (2008) conducted a study aimed at developing teachers' training students' skills, on the design and production of electronic lessons, and their attitudes towards e-learning. To compile his study, he used a proposed training program for the design of electronic lessons, a student's 'attitudes scale towards the use of e-learning, and a checklist to measure students' skill, in the design and production of electronic lessons in mathematics. The results showed that students benefited greatly from the proposed program (Moodle). KhalafAllah (2010, p.....), also conducted a study aimed at identifying the effectiveness of the use of electronic and blended learning, in the development of the production skills of educational models. The researcher used an achievement test, to scale the cognitive skills of the educational models production, and a checklist to scale the educational models skills for learners. The study highlighted the efficiency of both the electronic and blended learnings, in developing the achievement and performance skills, related to educational models. Kumar and Sudhir (2010) conducted a study aimed at determining the level of e-learning skills for teachers with university degrees, and their use of e-learning in the classroom. The findings highlighted sponsored teachers' deficiency in e-learning skills, while non-sponsored teachers displayed sufficient skills and abilities, in designing and implementing e-learning, inside the classroom. Thunaibat (2013) conducted a study aimed at investigating the effectiveness of programmed learning, based on blended and traditional learning in educational attainment at Tafila Technical University, for

learners studying a teaching methods course. The findings highlighted significant statistical differences, in favor of the experimental group, related to achievement test and measurement scale. Badawi (2014) conducted a study aimed at investigating the effectiveness of a proposed program in e-learning, to develop design skills, for electronic tests and the trend towards electronic assessment at the level of postgraduate students. The findings highlighted significant statistical differences, in the mean scores of the study sample, in the pre and post application of checklist and practical performance of designing electronic tests skills. Because of the experimental application, the study indicated the advantages of post application, over pre-application.

Al-Sabagh also (2014) conducted a study aimed at analyzing the impact of blended learning strategy in the development of algorithm designing skills. The experimental cohort comprised students at the Faculty of Education of the Islamic University of Gaza. The findings highlighted the preponderance of the blended learning strategy based study course, over the traditional method, in the development of algorithm designing skills for students. Abdul Majid (2014) also conducted a study aimed at examining the effectiveness in the use of a proposed training program, based on learning via mobile phones, in which Math teachers were provided with design skills of digital learning objects. The results showed that the proposed program has improved the practice, of engaging students in learning activities, and that of designing digital learning objects, in the field of mathematics.

Discussing Previous Studies

In terms of the methodology used, it is clear that the studies and research on blended learning discussed above, as per Thunaibat, (2013) agreed that one of the goals of blended learning rests on raising and developing learners' attainment levels. However, other studies, of which KhalaAllah, (2010) sought to develop educational models Skills, while Al-Sabagh (2014) focused on developing Algorithm designing skills. The study at hand is consistent with previous studies, in the use of blended learning. It though, differs in the research goal, the objective of which is to provide postgraduate students with the required skills for E-content design. In terms of the methodology used, some previous studies, of which, Kumar and Sudhir, (2010) have used descriptive methods, while all other previous studies agreed on the use of quasi-experimental approach. The current research agree with these studies, in its' use of the quasi-experimental approach. The array of studies, in this area used different tools, which relied on building achievement test and measurement trends (Khalaf Allah, 2010). The current study also agreed with some of the studies that used the checklist to judge the practical performance of the research sample (Abdel Majeed, 2008; Badawi 0.2014).

THE STUDY TOOL AND PROCEDURES

The Study Approach

The researcher used quasi-experimental approach, because it will be commensurate with the current study.

Population of the Study

The study sample is consisted of all students at the Department of Curriculum and Teaching Methods, who enrolled in The Technology Curriculum Support (Edu 615) course distributed into two classes, an experimental group totaling (19) students, who studied through the training

program, and control group totaling (20) students, who studied the course in the traditional way.

The Study Tools

Two tools have been selected for the research:

- A questionnaire was administered to measure postgraduate students' competence in e-content design.
- A checklist was administered to measure graduate students' practical performance in e-content design in order to judge the students' projects.

A Checklist to Measure Postgraduate Students' Practical Performance, In E-Content Design, In Order To Judge the Students' Projects

The checklist sought to determine e-content design proficiency among postgraduate students' projects, after they had studied technology curriculum support course (Edu 615), in which skills of e-content design have been determined, through review of many previous related studies (Badh 2009; Badawi 2014). The checklist included 28 sub skills and four main skills: planning skills for e-content design, e-content design skills, implementation and development of e-content skills, assessment of e-content. It has been taken into account, when formulating the skills that they be procedural, non-compound, and for phrases to have negative words, while checklist instructions must be clearly defined, with goals neatly mentioned, so that any learner can use it precisely. Checklist includes 28 sub skills.

- 1- **Checklist validity:** To ascertain the validity of the checklist, it has been validated by referees, in the area of curriculum, teaching methods and education technology at University of Tabuk. Amendments recommended by referees have been included, where the formulation of three paragraphs/articles has been modified, and four paragraphs/articles deleted. So, after amendments, the checklist consisted of 24 skills.
- 2- **Checklist reliability:** it has been measured with the Cooper Equation, is estimated by finding the agreement ratio between the researcher and one of the colleagues. E-content design skills agreement ratio ranged (0.80- 0.82), and average agreement ratio for the checklist was (0.86). This indicates a high stability coefficient.

The Final Checklist: Once validated, the checklist now, consists of 24 sub skills.

STUDY RESULTS

To answer the study's main question: What is the Impact of using blended learning, on developing Postgraduate students skills in designing Electronic Content?

Null Hypothesis

H0:1: There are no statistically significant differences at the level of significance ($\alpha = 0.05$) between mean scores of the experimental, and control groups on post application of checklist of e-content design skills. To test the validity of this hypothesis, analysis of covariance (ANCOVA) has been used, in order to compare scores of checklist post application, between the experimental and control groups. Table (1) shows means and standard deviations for samples' scores of the experimental and control groups on checklist post application of e-content design skills. Table (2) shows the results of covariance analysis, for significance in the

differences between mean scores of the experimental, and control groups, on post application of checklist of e-content design skills.

Table 1: Means and standard deviations for samples' scores of the experimental, and control group, on checklist post application of e-content design skills and its four skills

Group	Statistical	E-content Planning	E-content design	E-content implementation	E-content assessment	E-content design skills
Experimental Group	SMA	1.95	3.05	3.89	4.12	13.00
	standard deviation	1.39	1.31	1.41	.94	3.00
Control Group	SMA	1.05	2.30	2.05	2.20	7.60
	standard deviation	0.89	1.26	1.28	1.28145	2.19

Table (1) shows means and standard deviations for samples' scores of the experimental, and control groups, on checklist post application of E-content planning, and all skills as a whole. The findings indicate variation between scores of the experimental, and control groups. To find out whether these differences are statistically significant, analysis of covariance (ANCOVA) has been conducted according to the degree of experimental, and control groups, on each skill of checklist of E-content planning. The following is an explanation of these results:

Table 2: Means of test scores of analysis of covariance between experimental, and control groups, on checklist of post application and its four skills

Skill	Sum of Squares	Mean Square	Mean of Squares	F(Statistical significance
Efficiencies of e-content planning	7.784	1	7.784	5.616	.023
Efficiencies of e-content design	6.949	1	6.949	4.366	.044
Efficiencies of administration and implementation of e-content	30.810	1	30.810	16.620	.000
efficiencies of electronic content assessment	32.000	1	32.000	27.809	.000
The total score for the efficiencies of electronic content design	281.713	1	281.713	42.496	.000

Table (2) indicates that there is a statistically significant difference between mean scores of experimental, and control groups, in the checklist post application, on the four checklist skills. Referring to table (1), it shows differences in favor of the experimental group, in which mean responses of this skill were respectively, (1.95; 3.05; 3.89; 4.12; 13.00), which is higher than mean response scores of the control group respectively, (1.05; 2.30; 2.05; 2.20; 7.60). The figures reveal that the application of the proposed program, to provide students with skills of planning, designing, implementation and assessment for e-content, has been of great benefit to students. On that basis, the study question has been answered, indicating null hypothesis was rejected, while alternative hypothesis was accepted. The results allow us to state that: there are significant differences ($\alpha = 0.05$) between mean scores of the experimental, and control groups, on post application of checklist of electronic content design skills. Researchers consider that the previous result can be attributed to the following:

- Training program based on blended learning, which provides them with practices of using e-links. This in turn, enables them to master practical skills and reflect on their projects, at the end of the study (Technology curriculum support).
- Researchers attribute this result to fact that the proposed program motivates students to work and cooperate, through the application of E-sharing and interaction tools, provided by the program and the optimal utilization of the resources such as E-mail, YouTube channel, whatsapp, posts on Facebook. All of these tools, in addition to the traditional way of teaching, have given students the opportunity to share and interact online. Attiah (2009: 460), supports this view, by pointing out that “blended learning which integrates e-learning methods with traditional teaching methods, engages and enhances students’ interaction.” Attiah is in line with the Constructivist learning theory, which urges learner’s interaction and active learning, to achieve the desired outcomes, and allow them to participate and interact in building new experience. Reaching those outcomes is made possible through cooperation with the faculty member. This may lead students to mastering e-content design skills, and reflecting on the quality of their educational projects related to e-content design. Under the above process, students attained higher scores than those under the control group, on the checklist of scientific performance.
- This result is in line with some previous studies such as that of KhalafAllah (2010), which showed the effectiveness of blended learning, in developing educational attainment, and performing skills to produce educational models and, which is consistent, with AISabagh’s study (2014) which showed the effectiveness of blended learning strategy, in the development Algorithm designing skills for female students in the Faculty of Education at the Islamic University of Gaza. On the other hand, it partially agrees with Abdul Majid’s study (2014), which showed how the integration of traditional learning with mobile phones learning contributed in providing mathematics teachers with required skills of digital learning objects.

The Scientific and Practical Significance of the Study Results

The researchers explain the practical significance of the study, by calculating the effect-size of dependent and independent variables. Table (3)

Table 3: Practical Significance of the Study

Independent variables	Dependent variable	Eta-squared	Effect size
A training program based on blended learning	E-content design skills	0.54	large

Table (3) shows that the size effect of the proposed program based on blended learning to provide postgraduate students with e-content design skills in Department of Curriculum and Teaching Methods at University of Tabouk equals 54%. The rest effect attributed to various factors, such as educational background, and students undergoing courses in integrating technology with the curriculum, graduate specialization, peers and other factors. The size effect in the acquisition of skills necessary for the e-content design was 39%, which is a large ratio. The main reasons for this, is due to changes in study pattern, in which the learners becomes active participants in their learning process, instead of being passive recipients. This is what has been provided by the training program, based on blended learning which positively affected acquisition of efficiencies of e-content design.

RECOMMENDATIONS

This study recommends:

- Necessary attention should be paid to the integration of e-learning methods with the traditional way in teaching postgraduate students at the University of Tabuk, especially the classrooms where smart boards, connected to the internet are provided.
- Necessary attention should be paid to train postgraduate students on e-content design skills.
- The necessary participation of Master's Degree students, whose specialty is curriculum and teaching methods, and that of curriculum professors, in curriculum content design, in public education which positively provides them with the curriculum content design skills.
- Holding training courses and workshops for faculty members and students, to learn how to use technology, in the field of education.

Suggested Topics for Further Research

In light of the study results, further research topics can be suggested:

- Conduct a study on larger samples, to examine the effectiveness of blended learning on providing students with e-content design skills, in order to generalize the research findings and achieve the benefit in various programs and courses.
- Conduct a comparative study on the use of blended learning and virtual classrooms, in the development of postgraduate students to design electronic content.
- Conduct a study exploring e-content design in Saudi Arabia, which has been used widely in teaching, and which has been expanded and established in education, in southern provinces, in light of current events.

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