Designing educational blogs effect on the student’s knowledge acquisition in the secondary stage: Case study of KSA Schools

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Abstract

This research aims to identify the effect of the difference between blogs in design and form on the student knowledge acquisition process in the High stage in Bisha governorate in KSA. Two designs were chosen from blogs designs; one depends upon the hypertext while the other depends upon the super graphics. The following supposition was tested: There is no statistical difference ($\alpha = 0.05$) between the degrees average of first experimental student group (who depend upon the hypertext) and the degrees average of second experimental student group (who depend upon the super graphics) to test the students' knowledge acquisition in Mathematics.

The scientific approach proposed for achieving these research goals depends upon the experimental design approach (Pre-experimental measurement- After experimental measurement) for two experimental student groups; the first group depends upon study by using blogs designed by hypertext while the other one study by using blogs designed by super graphics. The research sample consists of 48 students appointed from Prince Sultan High School. Such sample was divided into two experimental groups; the first group studied textually while the other studied graphically. The unit of Engineering Diaries (Reflection- Displacement- Rotation) was chosen from the mathematics curriculum for the first secondary stage to perform the study effect test. The researcher designed knowledge test of the unit of Engineering Diaries in the mathematics curriculum as measuring instrument. Knowledge test was performed on both groups before and after the experiment.

Key Words: (General Education- E-learning- Educational Blogs- Knowledge Acquisition- Mathematics- Experimental Approach- Experimental Group)

1. Introduction

Educators always seek the best means and instruments to provide effective educational environment to attract the students’ attention and argue them to exchange opinions and experiments. IT that already represented by computer, internet etc are considered to be one of the most successful means that provide enrichment educational environment that allow performing co-projects between different schools. Student can develop their knowledge using important subjects by contacting with their fellows and experiments who concerning about the same important subjects. The student shall be responsible for the information search then framing such information in order to develop their thinking skills. For the educational process, logging on the web allows the educator to reach to educational experiments and experiences which are hard to be reachable by another. Internet allows people to be contacted across far distances and access to different information resources. Technology use increases the learning chances in a better way from schools. Such process called "E-learning" which is considered to be one of the most important privileges of the future schools.Kouwena and Hevelid stated that using several systems in the World Wide Web "internet" shall change the life and work style by technology and providing ability to
contact the student with schools, universities, research centres, libraries etc., which help to spread, transfer and share information. Internet use in the education field has a positive impact on the educator and student performance in the class or lab. Internet is a tool helping for search about information. It converted the educational process from the traditional way which spends a lot of time, money and effort to be Autistic or Open Collaborative International Learning which help to learn and share information between students to be reachable in few seconds. Internet saved spending more time, money and effort in the information research process. Internet is a new learning technology which made reading books, magazines, periodicals, scientific researches, articles and different information by Search Engines. Blogs became popular and spread widely after eleven September events and during the war against Iraq as blogs considered as mean for the western opponents to express their opinions and political situations regarding war. For Arab, blogs started at 2003 [6]. Blogs' started as in index in which personal notes and daily events could be typed on their own pages. Blogs usage was developed and expanded to be included several purposes and general and/or specialized subjects. Blogs users number was increased by internet users as was widely followed by continuous readers who have the same interests in order to discuss several subjects.[7] The report made by Nielsen Online mentioned, besides publishing this report through Ministry of Communication and Information Technology website, that using networks and blogs consumes about 10% of the time used to browse the internet pages, the report added that one minute out of eleven minutes is used to browse the internet generally. This minute is used weather in browsing blogs or social networks. [8]. After the fast spread of blogs among users is considered to be the second revolution in the internet world after E-mails; and now in addition to E-mails and Wiki is regarded as one of the showed internet services. [9].Blogs have several definitions, but we are going to review some as follows: "it is a dynamic internet pages that changes timely according to the proposed subjects, where subjects are being viewed at the top of the blog according to the date of its publication (the newest to the older than the older and so on). [10].

2. Literature Review

The purpose of the study [11], entitled "Measuring the impact of social networking via the Internet as one of the Web 2.0 tools on the achievement and perception towards cooperation", the study group was formed of 400 students of Chicago schools, the students were divided into two groups, one control and other experimental considering using blogs and wikis and the results of the study found the lack of statistically significant differences in achievement between groups with no statistically significant differences at the level (.05) in the perception towards cooperation in favour of the experimental group. The study [12] was aimed to identify the impact of the integration of blogs in ten chapters in five classes on students' skills and the degrees they achieve in the final tests for those classes by comparing the academic level of the students before and after the use of blogs, the study concluded that the use of blogging as a kind of duty led to the development of the school academic achievement and strengthen ties and relations among students and the curriculum to enjoy. A study [13] entitled "Description how students take advantage of blogs in achieving the desired interaction between students, teachers and build academic community and a database in the official study site," The study included eleven doctoral students are studying the courses East Carolina University curricula have been allocated Blog to each student to provide some instructions on how to use them, and the study found to outweigh the use of blogs on teaching using classroom discussions. The study [14] entitled "The effectiveness of using educational blogs in development attainment and the trend towards the female students in Al-Qassim University," where this study found there were statistically significant differences at the level (0.05) between the mean scores of gain for the students of experimental group (who are studying the use of blogs) and students of the control group (who were studying in the traditional way) in achievement test for the experimental group, the researcher has observed differences between the designs of educational blogs as they are used as a tool to help in the education process, where the designs vary in terms of the form of blogs and blog topic.

3. Blogging applications in the educational process:

Bloggers can use multiple objects of an educational tool tailored to the needs of learners, and can have some of the possible applications summarized in the following areas:

- **In explaining courses:**
- **An aid for discussion and argue:**
- **Students and teacher are trained on specific skills:**
- **Public, academic and universities libraries:**
Conduct Educational Research in Higher Learning:
Classroom management:
School management:
Student achievement files:

The blog see[21]:

The use of blogs in the educational process is limited to four uses, namely:
- Mean of communication:
- Educational sources:
- Collaborative tool.
- Window to display the business:

4. Problem Statement
The high prevalence of blogs and the diversity of uses that included many aspects of life has led to the possibility of their use in the educational field where there were many educational uses of the blogs of different forms, including the use of templates to provide educational content in interactive guarantees among the parties of the educational situation hence the necessity to study the blogs in a scientific, research impact in education and learning and given to studies that touched on the educational blogs, despite their rarity, they were confined in a comparison of education using blogs and education using the wiki or the study of the impact and effectiveness of blogging in the collection of knowledge or direction towards blogging, the impact of blogs design has not been addressed in the collection of knowledge of education among students of schools or universities, and research seeks to answer the question of which states: What is the impact of design blogs on cognitive achievement among first-grade secondary students?

5. Research Methodology
After reviewing the different research approaches and previous similar studies of, as well as after determining the study, we could be argued that the appropriate approach for the current study is an experimental research approach, a label which launches on the research design, which aims to test the relations of cause and effect until it reaches the causes of the phenomenon, and empirical research is the only way to test hypotheses about causal relationships directly. Although empirical research involved with other research in many aspects of the research plan, but he set some foundations that made the researchers put it in along with other research on the other side. The experimental approach is closer research to solve problems with scientific methods. Research has adopted the following hypothesis: There is no statistically significant difference in the level of significance (0.05) between the mean degrees of the first experimental group students (taught across a blog based on hypertext) and degrees of the second experimental group students (taught across a blog based on the high fees) in cognitive achievement in mathematics test. Sample of search was chosen by selecting a group of 48 students from the first grade secondary school at Prince Sultan school, province of Bisha, Saudi Arabia, this sample was divided into two experimental: the first experimental group (taught across a blog based on hypertext) and number 24 student and the second experimental group (taught across a blog designed based on fees) and the 24 students, heterogeneity of groups has been account according to table 1 as follows:

<table>
<thead>
<tr>
<th>Group</th>
<th>Num</th>
<th>M.</th>
<th>The standard deviation</th>
<th>degrees of fr</th>
<th>Value “T”</th>
<th>level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first “text”</td>
<td>24</td>
<td>9</td>
<td>3.046</td>
<td>47</td>
<td>0.34</td>
<td>It does not refer</td>
</tr>
<tr>
<td>The second &quot;graphical&quot;</td>
<td>24</td>
<td>9</td>
<td>2.378</td>
<td>43.51</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the data of table (4) is clear to us that there were no statistically significant differences between the averages of the
two sets of students search in the pre-test at the 0.05 level of significance, and this means that homogeneous groups. And the limits of the search are set spatially at High Prince Sultan in Bisha, Saudi Arabia and temporally in the second quarter of the year 2014 and objectively on the subject of engineering transfers in mathematics grade first secondary, the blogs and cognitive tests are designed, according to the variables that have been identified as follows: the independent variables, are represented two variables, are design, which relies on high fees and the other, which depends on high-texts you determine the dependent variable was a collection of knowledge for students, the experimental method was designed to search according to Table 2 as follows:

<table>
<thead>
<tr>
<th>Independent variable</th>
<th>The design is based on high fees</th>
<th>The design is based on high text</th>
</tr>
</thead>
<tbody>
<tr>
<td>The dependent variable</td>
<td>Design is based on hyper fees</td>
<td>Design is based on hyper text</td>
</tr>
<tr>
<td>Cognitive achievement</td>
<td>The first experimental group</td>
<td>The first experimental group</td>
</tr>
</tbody>
</table>

The educational blogs have been prepared as follows:
Following the technical and special educational standards for designing educational blogs according to the following stages and form prescribed by (1) as follows:

**Analysis** ➔ **Design** ➔ **Outcome** ➔ **Assessment** ➔ **Using**

**Figure (1) stages of preparation two of educational blogs**

And according to the model [24] and shown in Figure (2)

<table>
<thead>
<tr>
<th>Analysis Stage</th>
<th>Determine the characteristics of learners</th>
<th>Determine the educational needs of the subject and the public course</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Study the reality of the sources and available materials</td>
<td></td>
</tr>
<tr>
<td>Design stage</td>
<td>Formulate goals behaviorally and follow ABCD arrangement</td>
<td>Determine the educational content elements</td>
</tr>
<tr>
<td></td>
<td>Building test - put references</td>
<td>Choose the method of learning experiences and assemble pupils and teach methods for each goal</td>
</tr>
<tr>
<td></td>
<td>Choice of media and educational materials</td>
<td>Design of educational multimedia message to the desired output</td>
</tr>
<tr>
<td></td>
<td>Design of educational events and elements of the learning process</td>
<td>Put implementation of the learning strategy</td>
</tr>
<tr>
<td>Production stage</td>
<td>To get the media and the preparation of facilities</td>
<td>Acquisition of available</td>
</tr>
<tr>
<td></td>
<td>Modification of the available</td>
<td></td>
</tr>
<tr>
<td>Evaluation stage</td>
<td>Make a mini-work of formative assessment</td>
<td>Make an extended work out for the final work of the calendar/synthesis</td>
</tr>
<tr>
<td>Stage of use</td>
<td>Merging and copying and distribution</td>
<td>Continue constant calendar</td>
</tr>
<tr>
<td>Feedback</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Audit and adjustment operations</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure (2) design model

5-1 The analysis phase:
5-1-1 Determine the characteristics of learners:
5-1-1-1 Demographic elements:
- Gender: male students
- Chronological age: Students ages ranging from 15-17
- Cultural background: students have the experiences of the previous stages in the article and all the mathematical skills.
- Language: All students speak Arabic.

5-1-12 Educational analysis:
- Ability to deal with the computer and the Internet: the students are acquainted with the skills of dealing with the computer and the Internet to allow the application of blogs and have emails.
- Ability of literacy: Students are able to read well and are familiar with mathematical symbols.
- Level of education: students ranging between average and superior. There are not research assistants.
- Cognitive methods: Students from the cognitive area are independent on cognitive domain.

5-1-1-3 previous requirements for students:
- Knowledge of geometric shapes
- Forms drawing Skills
- Knowledge of similarity and congruence of geometric shapes
- Knowledge of arithmetic operations (Multiplication - dividing - collect – subtract)

5-1-2 Determine the educational needs of the topic:
The importance of the subject can determine, that engineering conversions unit through both sides are very important:

5-1-2-1 The practical side:
Where the student recognizes shapes after conducting engineering conversions processes them and acquires the necessary knowledge and experience to be of determining the appropriate conversion, which has been applied to a particular form until it became this image or is being able to create a certain perception of form before applying the conversion upon these types of transfers involving reflection, displacement, rotation, tiling and extension and through these two blogs, student will be able to study these three types of transfers: the reversal - displacement – rotation.

5-1-2-2 The ready side:
This unit is considered as closely related as before similarities lessons and congruence of forms of engineering, is considered an essential building in the future engineering lessons and associated with the calculus lessons, integration, applications of trigonometric and levels engineering and all the consequences of these transfers from the lessons taught by the student at the secondary level or beyond if he specialized in mathematics or in another discipline based on the mathematics of all kinds such as engineering or physics and other kinds.

5-1-3 The reality of the sources and available materials:

5-1-3-1 Instruments and tools:
Computer – A data Shaw device – A Skinner device - color printers

5-1-3-2 Programs:
Power Point program (power point) - (ispring_pro) - Word program (Microsoft word) - Paint program

5-1-3-3 Equipment:
Learning Resources lab - computer lab

5-2 The design stage:

5-2-1 identifying educational and behavioural goals as shown in Table 3

List of behavioural goals for two blogs:

<table>
<thead>
<tr>
<th>S.</th>
<th>Behavioral target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Student knows the definition of reflection</td>
</tr>
<tr>
<td>1.1</td>
<td>Student draws image resulting from the reversal</td>
</tr>
<tr>
<td>1.2</td>
<td>The student recognizes the symmetry lines</td>
</tr>
<tr>
<td>1.3</td>
<td>The student draws symmetry lines</td>
</tr>
<tr>
<td>1.4</td>
<td>The student recognizes the symmetry points</td>
</tr>
<tr>
<td>1.5</td>
<td>The student draws symmetry points</td>
</tr>
<tr>
<td>2</td>
<td>The student knows the definition displacement (reversal)</td>
</tr>
<tr>
<td>2.1</td>
<td>The student draws picture resulting from displacement by using of the co-ordinates of the points</td>
</tr>
<tr>
<td>2.2</td>
<td>The student draws picture resulting from displacement using frequent reflections</td>
</tr>
<tr>
<td>3</td>
<td>The student knows the definition rotation</td>
</tr>
<tr>
<td>3.1</td>
<td>Students draw picture resulting from rotation form using angle rotation</td>
</tr>
<tr>
<td>3.2</td>
<td>The student recognizes the shapes that achieve rotational symmetry</td>
</tr>
</tbody>
</table>

Table 3 lists of the behavioural goals

5-2-2 Determine elements of the educational content shown in Figure (3)

![Figure (3) Determine the educational content elements](image-url)
5-2-3 Preparation Search tools:

Measuring and test the validity of the hypothesis variables, the researcher was preparing achievement test (before - after), this test passed several preparation steps are as follows:

5-2-4 Define the goal of the test:
It is determining the level of students in the engineering conversions unit in mathematics' courses of first grade secondary.

5-2-5 Content Analysis:
To know the facts, concepts and generalizations contained therein.

5-2-6 Achievement test to determine the type of questions as a type:
It is selection of multiple choice questions.

5-2-7 Determine the vocabulary of test, depending on the behavioural goals.

5-2-8 Building achievement test,
It is 30 questions.

5-2-9 Testing arbitration by professionals

5-2-10 Examine the results of the arbitration so as to know the following:
   - The relative weight of the items of content that quarry showed that almost match.
   - Know the time required for testing a full hour.
   - modify formulations of erroneous test
   - questions arranging snugly to the student's easier for the toughest
   - Prepare model to answer questions.

5-2-11 For the application of the pilot were exploratory experiment on secondary Imam Muhammad bin Saud students to 20 students and was designed to find out:
   - Clarity of test instructions: the test instructions are clear
   - Clarity Vocabulary: All vocabularies are clear
   - Calculation of the test time: the total times of student answers / number of students = 461/20 = 23.05
   Therefore, the researcher sees as a result of the pilot test that the appropriate time to answer 25 minutes

5-2-12 sincerity test:
By using the midterm retail, we can know sincerity test was as follows:
Account validity and reliability by SPSS software and extract the results shown in the next table (4):

| Table (4) validity and reliability Account Scale: cognitive validity and reliability test |
| Case Processing Summary |
|---|---|---|
| Cases | Valid | 20 | 100 |
| Excluded* | 0 | 0 |
| Total | 20 | 100 |

A. List wise deletion based on all variables in the procedure
Reliability Statistics

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>N of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.779</td>
<td>2</td>
</tr>
</tbody>
</table>

5.2.13. Account the stability of the test:
Cronbach's alpha coefficient = 0.779 this means that the test has high stability coefficient.

5-2-14 account sincerity of test:
Valid coefficient = root of reliability coefficient = 0.882 this means that the test has high sincerity coefficient, and then the final image of the test was put as it has 30 questions in its final form. The coefficient easy and difficult of the test questions was calculated.

6. Numerical Results
By reference to the SPSS statistical program to extract the results and validate hypotheses, the researcher used t-test for the average of two independent groups to determine significance differences between the mean scores of students in the first two experimental group was taught via text blog and experimental group was taught across graphical blog after cognitive post-test application. In order to answer the question on the search, which provides:
What is the impact design blogs on cognitive achievement among first-grade secondary students?

The following was done:
- Monitor the students' results in the post-test.
- Calculate the arithmetic average and standard deviation of the scores of students in achievement post-test, so as to find the value of "T" of the differences between the two experimental groups.
- To test the validity of the hypothesis test, the researcher used t-test for two independent groups to see the differences between the averages of two experimental groups. Table 5 shows the results of the averages, standard deviations and the value of "T":

Table (5)
The t-test for two independent groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Num</th>
<th>Arithmetic</th>
<th>The standard deviation</th>
<th>degrees of fr</th>
<th>Value “T”</th>
<th>level of significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>The first &quot;text&quot;</td>
<td>24</td>
<td>20.50</td>
<td>7.768</td>
<td>46</td>
<td>-1.064</td>
<td>It does not refer</td>
</tr>
<tr>
<td>The second &quot;graphical&quot;</td>
<td>24</td>
<td>23.79</td>
<td>6.386</td>
<td>44.340</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is clear to us, through the data in table 5, that there were no statistically significant differences at the 0.05 level between the Mediterranean for the two experimental groups: the first that follows the superior text design and the second that follows ultra-graphic design, then we accept the hypothesis of zero, summarize the results as follows:
- The value of statistical significance Sig = 0.116 which is greater than the value of the significance level 0.05
- Acceptance of the hypothesis of zero (null hypothesis)
- It is proven by the results of the health study hypothesis, which states:
- There is no statistically significant difference in the level of significance (0.05) between the scores mean of the first experimental group students (taught across a blog based on hypertext) and degrees of the second experimental group students (taught across a blog based on the high fees) to test the collection of knowledge in the subject mathematics, which already is clear to us that there were no statistically significant differences between teaching in blog of superior script
design and teaching in the blog of superior graphic design, researcher sees, that research findings have to study, based on:

- The strong tendency by the students to learn through learning blog as a way of learning new for them despite the difference in design two blogs, but the quality of their design contributed significantly to the lack of differences between the two designs.
- Due to the characteristics of students as secondary educated may not be the difference in the two designs (super texts - ultra fee) make a difference for students at this age and possibly make a difference in the stages of age or less levels as primary and medium.
- Learning provided, by using educational blogs, learning environment where active and interactive least dispersion element and lack of attention.
- Learning provided, by using educational blogs, thrill and excitement element in the learning environment as a new way to the students.

Results of the study have agreed in this research in terms of the effectiveness of teaching using blogs on the collection of knowledge with the study of:

- The study [17], which aimed to identify the impact of the integration of blogs in ten chapters in five semesters on the skills of students and the degree they receive in the final tests, where the study found that the use of blogs as a kind of school homework to be led to the development of academic achievement.
- The study [20], which aimed to identify the impact of the use of blogs in university learning and what they can add to the learning environment in the classroom and how students can develop experience of students, the study found that the use of the blog has helped to develop the academic achievement of students.
- The study [11], which aimed to identify the "effectiveness of using learning blogs in development and the trend towards the female students in Al-Qassim University," where this study found that there were statistically significant differences at the level (0.05) between the scores mean of the students of experimental group (who were studying the use of blogs) and students of the control group in achievement test for the experimental group.

7. Conclusion

There is no statistical difference (α = 0.05) between the degrees average of first experimental student group (who depend upon the hypertext) and the degrees average of second experimental student group (who depend upon the super graphics). The results support what resulted from the literature; "learning by educational blogs is a more effective method of learning in order to achieve better students' knowledge acquisition”. Moreover, the high school students were moved to a good level of concert and visual thinking that accordingly affected by graphics and pictures to the abstract thinking.

This research aims to recognize the effect of the difference between blogs design and form. The researcher founded that no literature review studied the blogs design and form such as (Reaction Interface- Textually or Graphical objects) and its effect in the students' knowledge acquisition or in the attitude to such blogs.

References

1. Al-Baz, Jamal Mohamed Qasim, "Identify the Internet, different electronic means, its usage in the educational process and education technology". Symposium of "The educational process in the Internet age" held in An-Najah National University- Nablus (2001 AD) from the following web site: http://www.najah.edu/arabic/conferences/IT/Main.htm
2. Al-Shahran, Jamal Abdul Aziz (2002) "The world wide web (The internet) and its role in enhancing the scientific research for students in King Saud University Riyadh.
4. Fatani, Samer Abdul Karim (2009), blogs, Blog of “My Blog”.
8. Information Technology (2009). Social media users number on the Internet is more that than e-mail users number, Al-Riyadh Newspaper, Riyadh, Edition no. 14901 issued on. 11th April.
9. Al-Ameri, Mohamed (2010 AD). How to create blog in online forums in the field of Human Development Success Skills? Recovered on 16/02/1433 AH from the following web site:


17. Al-Mdhuni, Fawzia Bint Abdullah (2010), "Educational blogs usage effectiveness in developing the educational progress and the trend towards it by the female students in the University of Qassim."


19. Ali, Saeed Jamal (1997). The effectiveness of some educational strategies on high school students' education progress that are accepted and independent of the cognitive field and skills in solving physical problem, PhD Thesis (unpublished), Faculty of Education, Al-Azhar University, Cairo.


