



The Effectiveness of Blended E- Learning Forum in Planning for Science Instruction

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Received: 23.02.2014

Revised: 14.10.2014

Accepted: 20.10.2014

The original language of article is English (v.11, n.4, December 2014, pp. 3-16, doi: 10.12973/tused.10123a)

ABSTRACT

The research aimed to investigate the effectiveness of blended e- learning forum in planning for science instruction in a sample of science student- teachers at Al Aqsa University. The researcher adopted the quasi – experimental approach and designed three analysis tools of the contents of study plans in science; one for the analysis of a lesson plan; the second for the analysis of the content of a study unit: the third for the analysis of a plan for the whole science course. The sample was purposive and consisted of (66) male and female student-teachers enrolled in science teaching strategies course in Al Aqsa University, education faculty for the first term of the academic year 2013/2014. The results show that there are statistically significant differences between the mean scores of the experimental group subjects, who studied by using forum and those of the control group and in favor of the experimental group. Besides, employing blended learning forum proved to be effective in the quality of science lesson plans, units planning, and planning the science book among the experimental group students.

Keywords: Forum, Blended e- Learning, Planning of Science Instruction.

INTRODUCTION

In the age of femto second, genetic engineering, gene therapy, space conquest, cloning, increasing uses of Laser and successive scientific discoveries, that need tremendous development in the education systems and learning to cope with it, the science teacher needs to develop his skills and take advantage of the learning techniques of modern technology and adapt its innovations, including e-learning with all its generations and types.

The educational system plays an important role in community development by providing it with qualified personnel capable of absorbing modern technology, and the performance of different tasks, and carrying out development and innovation operations.

Many learning methods have been used in science education, but in recent years e-learning has been increasingly integrated along with the expansion and dissemination of digital platforms for everyday use. Some of these educational applications are being developed for both pre- and postgraduate training, and used at Universities to support their

curriculum. One should think of e-learning as a method of knowledge transfer (Bjarne & Steen, 2014).

e-learning is gaining ground rapidly in the various levels of primary, secondary teaching and university education, because of the growing reliance on computers in all areas of life, employing the Internet in research, communication, and facilitating learning and providing multimedia and courseware, resulting in a rise in the roles of the teacher and the tasks that require him to master its culture, being familiar with its requirements, possessing the skills and being able to plan for teaching at all levels: for a lesson, a unit of study and a textbook, and being efficient in its execution and assessment.

The computer provides a more favorable environment for the implementation of some forms of effective learning, which consist of visual presentations that are presented sequentially, and accompanied by audio explanations, colors, and simple movements, compared with traditional books as a way of transmitting information. This makes the display of multimedia more interesting, effective, easy to understand, able to make the learning experience more attractive, and improves instruction (Gulz & Haake, 2006).

Due to the nature of science, which includes the scientific knowledge of facts, concepts, generalizations, laws, scientific theories, processes of science, thinking skills, aspects of appreciation, scientific interests, attitudes, values, and ethics of science, and its close relations with the technology, community and the environment, which the traditional teaching methods cannot be familiar with and cover on one hand and the fact that it is no longer possible to keep the skills of science teachers confined to the skills of the traditional teaching, but rather they should deepen, evolve and expand to include the skills of e-learning on the other hand, that is, the spread of e-learning increases the status of a science teacher, but not in his traditional role, but in his ability to manage the teaching of science using new technologies, including e-learning forums and the ability to plan, manage and interact with learners electronically.

This calls attention for caring for the skills of e-learning and forums for each curriculum, including science because of the nature of science and its relation to the universe, the environment, life and its importance to human beings, in a context of scientific research and field application, and in the light of clear visions of global innovations in information and communications technology, and science teaching.

So concern is no longer limited to the scientific knowledge of scientific facts, concepts, generalizations, scientific laws and theories, but there is a shift of attention to the thinking skills, research and practical skills as well as skills of e-learning, researching, and sailing across the web and planning for the teaching of science in compliance with all of those previously mentioned.

The teaching system in general and science teaching in particular has seen a serious positive shift caused by the emergence of novel educational patterns such as: Digital Curriculum, e-learning, distance learning, smart classrooms, and using creative assistant tools, such as virtual laboratories, multimedia, digital libraries and e-books, and other modern technologies that rely generally on the employment of computer mainly in teaching and learning processes through the achievement of a high and effective level of communication and interaction between information sources and students (Ismail,2009). In addition to blended e-learning forum.

This shift from traditional learning to e-learning requires the development of teaching methods, identifying the learning outcomes, carrying out processes of the content of the educational material, selection of teaching methods appropriate for learners and effective in achieving the desired objectives (Green, 2004).

Mowafaqu's study (2007) proved that e-learning is effective in the development of achievement and scientific thinking among learners. And e-learning has types or patterns

dubbed by some as generations of e-learning due to its appearance in sequence, depending on the evolution that has occurred on information and communication technologies as e learning that relies on television, video tapes, and aural technology, computer-based e learning, the Internet based e learning, mobile learning technology, and blended learning (Abed Elmajeed, 229)

In the e-learning interaction between the teacher and the learner, supporting the social relations between them, active interaction between the teachers themselves, taking into account the capabilities of each learner, providing freedom of the educational environment of the learner in terms of entering the program and getting out of it as needed, diversity in the forms of e-content, the possibility of learning in the house, providing flexibility in e-content of e-learning and access to lifelong learning, diversity of multimedia, and methods of evaluation should be available (Ehlers, 2004).

It is worth noting that the success of teaching science based on the e-learning system depends on the harmonious integration between the two so that mastery of e-learning skills along with mastery of the skills of traditional teaching such as planning, implementation, and evaluation of teaching science is attained.

The system of blended e-learning forum in the teaching of science consists of inputs such as : the formulation of specific objectives for the teaching of science, determining the structure of the learning outcomes of science based on theories of learning and teaching, the formulation of the outputs of the teaching of science based on e-learning, analysis of the scientific content, cognitive maps for outcomes of earlier analysis, the characteristics of learners and their previous experience in the teaching of science and e-learning, and the requirements of e-learning forum like equipment, materials, courseware objects and educational forms of feedback, appropriate teaching methods, professionally trained science teacher- technicians and programmers to manage the e-learning forum, and the processes such as: the way of designing the organization of the contents of the e-learning forum, screens strengthening it with forms of feedback, implementation of appropriate teaching methods, implementing methods of assistance and guidance, and ongoing examination of the requirements of e-learning forum, and experimenting e-learning forum with the learners, and the application of assessment tools to students in classroom, the analysis of their responses, continuous monitoring of the e-learning forum, and constantly updating it and outputs such as: increasing the achievement among students in science, the acquisition of scientific thinking skills and processes of science, and the development of scientific interests, the formation of positive attitudes towards e-learning, or the acquisition of life skills and lifelong learning, and strengthening ties between teachers and learners and with each other as well.

In order for science teaching with e-learning forum to succeed, it is necessary to focus on identifying learning outcomes for the science teaching, attending to the holistic evaluation of learners in science subjects, how to manage the e-learning forum, and activating the role of the learners to generate scientific knowledge and discovery for themselves, encouraging learners to learn from the e-learning forum, taking care of scientific planning and thinking in science learning, besides providing realistic examples and analogies, thinking maps, and providing learners with feedback.

The use of e- learning forums is deemed to be one of the most important educational tools that directly and positively affect communication between students in the educational process (Rossi, 2009). It is one of the methods to provide asynchronous support which allows for participation at any time and in any place, and gives enough time for the learners to read the posts so that they can interact purposefully about the topics, and allowing freedom of expression and opinion, increases participation, interaction and dialogue (Dennls, & Hamm, 2007). Educational forums spread in the educational field because of educational goals they

attain (Andresen, 2009). They encourage participants to present their ideas in a way that others can understand (McNamara & Burton, 2009).

Given the importance of e-learning and e-learning forum, many studies have addressed it; for example Canning's study (2000) indicated the competencies that must be generally mastered by the electronic teacher such as: designing e- classes, objectives, e-content, e-management, the e-procedures, e-evaluation, working hours, and how to solve problems in the virtual classroom. Carney's study (2004) aimed to measure the effectiveness of proposed training modules based on the use of multimedia to improve the performance of primary teachers in the field of information and communication technology. The results confirmed the effectiveness of training proposed modules based on the use of multimedia in the development of teachers' performance in the field of information and communications technology.

Abed Elmajeed's study suggested (2009) a strategy for blended e-learning with cooperative learning to teach science, and came to the effectiveness of the strategy of e-learning in the development of the skills of scientific inquiry and the attitudes towards the study of science among the students of the preparatory stage. Hancock & etal's study (2009) identified the obstacles that may face the teachers at their design and development of online courses, and revealed that many teachers lack the appropriate knowledge and skills to design online educational content. Ogochukwu's study aimed (2010) to verify the preference of high school students to multimedia presentations versus traditional teaching in mathematics. And the results showed that multimedia presentations have the potentiality to develop the preferences of students, and raise the level of satisfaction they have for multimedia. Salama's study (2011) was aimed to identify the degree of influence of the use of certain electronic correspondence systems in solving the problems of practical education and development of attitude towards its use among students at teachers college. The results showed the effectiveness of using e-mail and chat in solving many of the problems and queries raised by the students and the most important of which were the problems of recruiting educational techniques and preparing daily lessons. Similarly, Kabli's study ((,2013) aimed to identify the views of a sample of students from the University of Tiba in e-learning through educational forums in teaching, and found that most of the members of the study sample agreed that the educational content was cognitively clear for the learners to obtain the information needed for educational process.

E-learning considers the following experiences to be within the scope of e-Learning: traditional classroom instruction that incorporates the planned and effective use of collaborative and/or interactive digital tools and resources, blended learning experiences that incorporate various combinations of technology-mediated and traditional classroom instruction, and distance delivered courses or programs (NSTA, 2008, 1).

Many research projects focused on designing or establishing the efficacy of innovations that work well within specific contexts. They typically faced the conundrum of narrowing the research-practice gap when it came to changing or transforming practices in schools and other contexts for learning, and to scaling up to meet the needs of a broader audience (Looi, & Wong, 2014, 82).

E-learning forum is specialized in providing the interactive environment, flexible learning, the freedom of space and time, the diversity of methods of assistance and guidance as needed, and appropriate for all learners, the possibility of evaluating outputs and its success, relying on the scientific method in the design, development, implementation, besides keeping abreast with the successive innovations in information and communication technologies, increasing prevalence with cost-cutting, the possibility of updating the scientific content, technical development, and providing learners with the feedback.

Research problem

The science teacher is the basic element for achieving the goals of teaching science as he is the real executive of the science curriculum, and director to the teaching of science. However, his traditional tasks are no longer sufficient to the aspirations of progress and development in various fields.

To achieve this, it is necessary to take care of preparing pre-service science teachers in colleges of education by focusing on e-learning skills appropriate for the development of science teaching skills beginning with planning skills to teach. Additionally, the researcher gave an open-ended question to a sample of science student-teachers in the College of Education at the University of Al-Aqsa the result of which showed that they desperately needed new effective strategies enabling them to master the skills of planning for the teaching of science. Moreover, the researcher scanned many study plans of student- teachers in the course of practical education, which showed that they were devoid of many of the quality standards of the teaching plan in terms of the formulation of behavioral objectives , analysis of the content of the lesson , selection of appropriate activities , distinguishing between the activities of teaching and learning, lack of organization, and lack of the distinction between lesson plans, unit planning and science textbook planning.

The study problem is stated in the following major question: What is the Effectiveness of Blended E- Learning Forum in Planning for Science Instruction among student-teachers?

The major question is divided into the following questions:

- 1- What is the effectiveness of blended e-learning forum in designing a daily science lesson plan among student-teachers?
- 2- What is the effectiveness of blended e-learning forum in designing a plan for a science unit of study among student- teachers?
- 3- What is the effectiveness of blended e-learning forum in designing a term plan of the science textbook among student- teachers?

The importance of the research

The current research is important for the following reasons: It keeps pace with the world, Arab, and Palestinian interest to develop the teaching of science by employing all kinds of e-learning, especially the blended e learning forum, and interest in helping teachers to acquire the skills of designing different lesson plans. Calling the attention of officials in the Ministry of Education and the educational supervisors to guide science teachers to design lesson plans with high quality. Drawing the attention of faculty members in colleges of education to raise students' awareness of employing blended e-learning forum via specialized technological training courses in the university. And it may be useful to researchers and educators who may take advantage of the tool in the analysis of the contents of the study plans to conduct complementary research.

The current research is aimed to determine the effectiveness of blended e-learning forum in planning for the teaching among science student- teachers, and these plans at three levels: a daily lesson plan, planning a study unit, and planning a science textbook.

The operational definition of terms

Blended e-learning forum: a system of learning based on modern electronic technology of computers, networks, educational courseware, multimedia, and the possibilities of the Web, and activating the relations between the elements of the teaching process of the teacher and the learner and the science content, learning environment, allowing learners to read topics and

to send their varied comments and questions at any time, then answering and getting asynchronous feedback through panel discussions to develop the skills of planning to teach science.

Planning for the science teaching: a series of actions and measures organized by the science teacher before he begins the teaching and evaluation process in order to achieve the objectives of teaching science effectively, and are measured through the analysis tools prepared for the current study.

METHODOLOGY

The researcher adopted a quasi-experimental design with experimental and control groups with the pretest and posttest.

a) Sample

The sample consisted of (66) male and female student-teachers from those who registered for the course of strategies for teaching science¹, and were purposively selected from those who have an e-mail, interest in computer and the Internet.

b) Instrument

The study has three instruments to analyze content: (1) the first content analysis tool focused on analyzing the content of the daily science lesson plan, (2) the second focused to analyze the elements of the plan for the unit of study in science, (3) the third focused on an analysis of the elements of a term plan of the science textbook. Each of the three plans included a list of criteria, and sub indicators: They also included objective of the analysis process, and analysis sample, the unit of analysis, categories of analysis for each study plan, the unit of recording, and controls of the process of analysis. There was also an analysis card so as to assess the availability of quality standards of the plan in each type independently.

The construction of these instruments went through the following steps: (1) Building a list of criteria of a daily plan , for a unit plan , and for a term plan to teach a science textbook.

(2) Defining the objective of the analysis: Content analysis process aims to identify the availability of standards of a good plan in each type of the three plans, and assessing the availability of each standard.

(3) Identifying analysis sample: analysis sample of (66) science daily lesson plan, (66) a plan for the unit of study, and (66) a plan for the textbook .And all the plans selected were for lessons and topics in science.

(4) Identifying analysis categories: the researcher relied on the criteria for the planning of teaching because they are best suited to identify the quality of the study plans, and to achieve the objectives of the current study. The basic categories of analysis of the daily plan are: Writing general data of a science lesson. Formulation of behavioral objectives of a science lesson. Writing a good warming of a science lesson. Identifying the teaching-learning aids of a science lesson. Selecting appropriate teaching and learning activities. Determining the appropriate time to achieve each objective. Formulation of formative evaluation techniques. Formulation of summative evaluation questions. Choosing appropriate homework. And writing a good closure for the lesson .The categories of for Unit Plan analysis are: Writing general data for the study unit. Formulation objectives of the study unit. Determining the appropriate number of classes for each lesson of the unit. Content analysis of unit in terms of scientific knowledge. Analysis of the activities of a study unit in terms of science processes. Determining the appropriate teaching-learning aids. Identifying the scientific experiments and activities to be performed. Choosing the appropriate teaching methods. Identifying evaluation techniques of each study unit. And identifying references for the unit.

The categories of analysis of a science textbook plan: Writing the general data of a science textbook, Writing the general objectives of science textbook units, Determining the appropriate time for each unit of the science textbook, Content analysis of each unit in terms of scientific knowledge, Analysis of the activities of a study unit in terms of science processes, Identifying the teaching technologies, Choosing the appropriate teaching methods, Identifying the appropriate evaluation techniques, Identifying additional references for teaching a science textbook. Writing dates of holidays and vacations.

(5) Identifying the unit of analysis: The main idea that revolves around a paragraph or several paragraphs of the content of the plan of study was chosen as the unit of analysis due to its suitability to the goal of the analysis process, and the unity of the idea is a brief clause, or phrase that includes the idea around which revolves the subject of analysis.

(6) Registering Unit: It is the smallest part of the content of the study plan chosen by the researcher and subjected to counting and measuring whose appearance or recurrence indicates a certain significance in determining the results of the analysis. And in current study is the unit that shows which teaching criteria of a quality plan are manifest, such as a word or a goal or a sentence or paragraph.

(7) Controls of the analysis process: Analysis is done in line with of the content and the operational definition of each type of study plan with its standards and indicators, analysis includes the contents of the study plans prepared by the students, focusing on all the elements in each type of the three plans, limiting the analysis to the objectives, steps, activities and evaluation in the light of scientific content, Using the prepared tool to register results and determining the availability degree of each unit and category of analysis.

8 - Analysis process procedures: classification of plans into three categories: a daily lesson plan, a study unit plan, a science textbook plan, reading every study plan separately, determining the availability of a sub- standard in every element of the study plan. giving scores (3, 2, 1) high, moderate, and small, respectively, according to the degree of availability of the standard relevant to the element in the study plan, calculating the total score for each study plan so that each student gets two total scores of each type of the three plans;, one before blended e- learning or conventional learning, and another after learning.

9 – Validity of the analysis process: The analysis process validity was verified by a group of arbitrators specializing in curriculum and teaching methods who have expressed their agreement on the process of analysis. In addition, the researcher analyzed the three lesson plans in conjunction with another researcher, and calculated the coefficient of agreement between the two analyses using the following equation:

$$\text{Agreement coefficient} = \frac{\text{the number of agreements between analysts}}{\text{the number of disagreements} + \text{the number of agreements}} \times 100\%$$

The agreement coefficient was (0.7), which shows the validity of the process of analysis of study plans.

10- The reliability of the analysis process: The researcher re- analyzed three lesson plans chosen at random from the plans that have been completed by the –student- teachers after three weeks of the first analysis, then computed the agreement coefficient which reached (0.81); which indicates the reliability of the analysis process.

c) Procedures

To answer research questions, the researcher followed the following steps:

1- Reviewing the related literature, research and previous studies on e-learning and educational forums to learn about their concepts, types, importance, evolution, and their relationship to teaching.

- 2- Selecting the appropriate scientific content for teaching with blended e-learning forum. The material was part of the course strategies for teaching science1 during the first semester of the academic year 2012/2013.
- 3- Preparation of the lecturer guide to oversee the e-learning forum, and presenting it to a group of arbitrators specialized in educational technology and teaching methods, then modifying it in the light of their views.
- 4- Designing the three tools, and ensuring their validity and reliability.
- 5- Selection of the research sample, which included two groups; one experimental and the other control.
- 6- Administering research tools to the two groups to ensure their equivalence in dependent research variables on Monday 26/11/2012 and Wednesday 28/11/2012.
- 7- Teaching the two groups the same of scientific content, itself with the processing of user names and passwords for the e-learning forum to students in the experimental group and instructing them on how to access it and participate in it and send short messages to the mobile of every one of them with the help of electronic services for lecturers available at the site of Al-Aqsa University during the period of 3/ 12/2012 to 23/01/2013, and teaching the control group without access to educational forums, but via the traditional method.
- 8 - The application of research tools on the two groups on Tuesday, 29.01.2013.
- 9- Data collection and computing it statistically- using SPSS program and presenting it in tables.
- 10- Interpretation and discussion of the results of research, and providing recommendations.

d) Pre Application of research instruments:

The researcher applied the tools on the two groups of research in order to determine the extent of equivalence by calculating the t-test for two independent samples between the scores of both groups in the three tools, as seen from the table 1:

Table 1. Results of the "T" test in the pre application of the content analysis tools of lesson plans in science among students in experimental and control groups

Instrument	group	N	Mean	S.D.	T	P
Content analysis of lesson plan	Control	32	3.75	1.11	0.05	0.96
	experimental	34	3.76	1.23		
Content analysis of unit plan	control	32	3.38	0.79	1.47	0.15
	experimental	34	3.09	0.79		
Content analysis of textbook plan	control	32	3.19	0.977	0.19	0.84
	experimental	34	3.24	0.96		

As seen from table 1, the value of the calculated "T" is less than the value of the tabular "T", which shows the equality of the experimental group and the control group in the three dependent variables.

The researcher selected a sample of students majoring in science teaching at the third level enrolled for the course strategies for teaching science1 in the College of Education at the University of Al-Aqsa in Palestine and ensured that all students in the two groups have studied course the principles and skills of teaching, which focuses on the general skills of teaching and does not focus on specialized teaching skills. Moreover, the researcher made sure that the subjects have never studied science teaching strategies course1, which is the focus of the current study, whether as a re-sit exam or for improving the GPA. The researcher asked a specialist colleague in computer and information technology to prepare a user name and a special password to the subjects of the treatment group to maintain confidentiality and privacy. The researcher held a meeting with students of the experimental group before starting the experiment to clarify to them how to access the site of the forum, to learn and navigate

between forums Sub Browse models and the importance of scanning the study plans available, the need to participate, receive feedback and guidance in conjunction with the regular attendance of lectures, taking into account that the conventional learning control group subjects learn in the traditional way with no access to e-learning forum. The researcher found some observations and conclusions during the trial period which indicate clear motivation and effective participation in the e learning forum on the part of male student-teachers much more than those of female student-teachers especially in the beginning of the experiment for they feared the leak of their e-mails and their real names. This apprehension has been overcome by using shortcut names for each one of them, in addition to assuring them of strict confidentiality of their e-mails. Then they started to participate in growing numbers to enter the forum to learn steadily with the passage of time. The researcher also noted that the focus was on the screens that contained the practical aspects of the plans of study compared to those addressing the concept of each plan and its importance in the teaching of science. This means that the subjects were more interested in the practical aspects

FINDINGS

The results related to the analysis of daily lesson plans

Table 2. Results of the "T" test to examine the difference between the mean scores of students in the experimental group and those of the control group in the post application tool for the analysis of the content of the daily lesson plans

Group	N	Mean	S.D.	d.f.	T value	P
Experimental	34	9.41	1.21	64	4.56	0.00
Control	32	7.75	1.72			

As seen from the table 2, the value of calculated "T" is greater than the value of tabulated "t" at the level of significance (0.01), and this indicates a statistically significant difference between the mean scores of students in the experimental group, who learned through blended e-learning forum and those of the students of the control group, who learned in the conventional method, and in favor of the experimental group students.

To identify the effect size through the " η^2 " using the following equation:

$$\eta^2 = \frac{T^2}{T^2 + df}$$

Then the value of "d" was calculated, which reflects the magnitude of the effect of the blended e- learning forum, as illustrated in Table 3:

Table 3. Results of the t-test to examine the difference between the mean scores of students in the experimental group in the results of the analysis of daily lessons plans

Application	No.	Mean	S.D.	D.F	't' value	η^2	d	Effect size
Pre	34	3.76	1.23	33	20.19*	0.93	7**	Large
Post		9.41	1.21					

* (t) Tabulated value at degrees of freedom (33) and the level of significance (0.01) is (2.73).

* If the value of the effect size is more than (1); it is great and strong.

As seen from table 3, the value of calculated (t) at the degrees of freedom (33) is greater than the value of tabulated (t) at a level of significance (0.01), and this indicates a statistically significant difference at the level of significance (0.01) between the mean scores of students in the experimental group between the two applications of pre and post analysis tool of the content of daily lesson plans and in favor of the post application.

As seen from table 3, that the employment of Blended e-learning forum was highly effective in increasing the quality of the plans in the daily teaching of science among the students of the experimental group. And this result can be explained on the basis that (93%) of the total variance of the quality of the plans for the daily science classes was due to the impact of blended e-learning forum.

The results of the analysis of a study unit plans

Table 4. Results of the "T" test to examine the difference between the mean scores of students in the experimental group and the control group in the post application tool for the analysis of the content of the study unit plans in Science

Group	N	Mean	S.D.	d.f.	T value	P
Experimental	34	7.35	1.69	64	2.27	0.027
Control	32	6.34	1.93			

As seen from table 4, the value of calculated "T" is greater than the value of tabled "T" at the level of significance (0.05), and this indicates a statistically significant difference between the mean scores of students in the experimental group, who learned by blended e-learning forum and those of the students in the control group, who learned in the normal way, and in favor of the experimental group students.

Table 5. Results of t-test to compare the difference between the mean scores of students in the experimental group in the results of the analysis of the of study units plans in science.

Application	No.	Mean	S.D.	D.F	't' value	η^2	d	Effect size
Pre	34	3.09	0.79	33	13.83*	0.85	4.8**	large
Post		7.35	1.69					

As seen from the table 5, the value of calculated (t) at the degrees of freedom (33) is greater than the value of tabulated (t) at a level of significance (0.01), and this indicates a statistically significant difference at the level of significance (0.01) between the mean scores of students in the experimental group between the two applications for pre and post analysis tool content plans for the study units and in favor of the post application

As seen from table 5, the employment of Blended e-learning forum was highly effective in increasing the quality of the plans for study units in science among students in the experimental group. This result can be explained on the basis that (83%) of the total variance of the quality of the plans was due to the impact of of blended e-learning forum, because it provided models of the plans for the unit of study, which described how to formulate the objectives of the study unit, the analysis of the content of the unit, elements of scientific knowledge, analysis of its activities to the processes of science, experiments and hands-on activities and appropriate teaching methods, and identifying methods of evaluation of the study unit.

This result is consistent with those of Eileen & Others (2004) which indicated the ability of e-learning dialogues to develop learning skills among university students. However, Kay's study (2006) revealed the effectiveness of e-learning forums in improving the ability of learners to learn and that discussions within the forums formed a knowledge base that can be tapped on later. However, the findings of Kabli (2013), showed that most members of the research sample agreed that the educational content is cognitively clear for learners to get the information needed for science teaching process

*The results of the analysis of term plans for science textbook***Table 6.** Results of *t* test to examine the difference between the mean scores of students in the experimental group and those of the control group in the post application tool for the analysis of the content of the term plans of science textbook

Group	N	Mean	S.D.	d.f.	T value	P
Experimental	34	7.76	1.86	64	3.31	0.002
Control	32	6.22	1.93			

As evident from table 6, the value of calculated T is greater than the value of tabulated t at the level of significance (0.01), and this indicates a statistically significant difference between the mean scores of students in the experimental group, who learned via blended e-learning forum and students of the control group, who learned in the normal way, and in favor of the experimental group students.

Table 7. Results of the *t*-test to compare the difference between the mean scores of the students in the experimental group plans quarterly results of the analysis of the science textbook

Application	No.	Mean	S.D.	D.F	't' value	η^2	d	Effect size
Pre	34	3.24	0.96	33	12.45*	0.82	4.68**	large
Post		7.76	1.86					

As seen from table 7, the value of calculated (t) at the degrees of freedom (33) is greater than the value of Tabulated (t) at a level of significance (0.01), and this indicates a statistically significant difference at the level of significance (0.01) between the mean scores of students in the group experimental between the two applications for pre and post analysis tool of content of term plans and in favor of the post application.

As seen from table 7, the employment of Blended e-learning forum was shown highly effective in increasing the quality of the term plans in the teaching of science among the students of the experimental group. This result can be explained on the basis that (82%) of the total variance of the quality of the term plans science textbooks is due to the effect of blended e-learning forum, which provides training opportunities for student-teachers on how to write general objectives of the units of science textbook, content analysis module to the elements of scientific knowledge, analysis of the activities of the unit in the processes of science, identification of technologies, selection of appropriate teaching methods, determining the types of good evaluation tools, and identifying additional references for teaching science textbook.

DISCUSSION and CONCLUSIONS

This suggests that the employment of blended e-learning forum in university teaching is more suitable for increasing the effectiveness of student-teachers and equips them with planning skills of the traditional teaching, and reliance on it can increase other aspects of learning as achievement, skills and attitudes.

This may be due to belief that blended e-learning forum activates the role of the student-teachers and increases their positivity in building science lesson plans, develops self-learning skills, and scientific thinking, which is essential to the planning process for the teaching of science, and the recruitment of scientific knowledge, in addition to the availability of daily science lesson plans in the Learning forum, including the behavioral objectives, appropriate warming up, suitable teaching and learning aids specific to the science lesson, selection of appropriate teaching and learning activities for the implementation of the science lesson,

employing methods of formative and summative evaluation and homework, and finally writing a good closure of a lesson.

This result is consistent with the findings of Van de Sande's study, (2010) , which concluded the effectiveness of e-learning forums in providing assistance to University students in higher education My findings are consistent with Ogochukwu's,(2010) which indicated that multimedia presentations may develop the preferences of students, and raise the level of satisfaction they have, Salama's study (2011) that confirmed the effectiveness of using e-mail and chatting in solving the problem of preparation of daily lessons.

It can be used educational forums in lesson plans, as examples: pressure, chemical reactions, temperatures in human life, the human body organs. It can help to increase the participation of students and reduce the anxiety of preparing a plan for a new lesson, especially when it is the development of the science curriculum.

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