EFFECTIVENESS OF USING BLACKBOARD COLLABORATE TOOLS IN PROMOTING PRACTICAL SKILLS AMONG STUDENTS OF THE FOUNDATION YEAR IN E-LEARNING COURSE

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ABSTRACT: *The current study is an attempt to identify the effectiveness of using Blackboard Collaborate Tools, such as wiki, panel discussions and virtual classrooms, in promoting the practical skills among the female students of the Foundation Year in the E-Learning Course. The study sample consisted of (50) female students enrolled in the Foundation Year of College of Education at Princess Nourah bint Abdulrahman University, Saudi Arabia, for the academic year (2016/2017). The results showed that there were statistically significant differences at the level of (0.01) between the mean scores of the participants in the pre-and-post measurement for the practical skills within the Blackboard of E-Collaborative Learning in favor of the post measurement; according to Black equation, the effectiveness rate achieved by more than (1.2).*

KEYWORDS: Effectiveness, blackboard, practical skills, e-learning

INTRODUCTION

Educational institutions are no longer the sole educational environment that provides educational services; thus, educators always seek the best methods to provide an educational interactive environment that attracts learners and encourage them to exchange their views and experiences. E-Learning places leaners at the core of the learning process, where learners work cooperatively to acquire and exchange information and suggest problem-solving ideas beyond the limitations of place or time [1]. In order to greatly benefit from E-Learning in education, it is necessary to achieve its goals. Such goals include providing a rich learning environment that serves all aspects of the educational process and modeling education in a standard form such as optimizing multimedia and question banks. E-Learning allows the spread of technological innovations in all educational institutions, besides preparing a generation of educators and learners capable of using such technological innovations [2]. According to Al-Garwan and Al-Hamran [3], E-Learning is flexible in terms of updating the educational content, expandable and scalable. Its interactions allow the exchange, transfer and categorization of ideas beyond the limitations of place and time. E-learning further takes into consideration individual differences between students, develops the strategies of induction, deduction and inference during interaction with educational activities. It seeks to achieve various goals in the educational learning process through adopting modern techniques, allowing students and instructors to gain the IT-recruitment skills, and encouraging communication among participants of the educational learning process at the domestic, university, students and local levels.

The concept of e-learning has developed in mid-2005 and the second-generation term Computer Supported Collaborative Learning (CSCL) has emerged due to the emergence of the web 2.0 applications that depend on high-speed networks. E-collaborative learning provides learners with the opportunity of social interaction and participation so as to build knowledge infrastructure in a manner that allows for continuous learning based on technology and modern means of communication. Salem [4] argues that learning management is a key component of e-learning and an integrated system responsible for the e-learning system management via the internet. This system includes admission and registration, course registration, course management and assignments, besides following up on students' education, supervising synchronous and asynchronous communication tools, managing tests and issuing certificates. Blackboard is deemed one of the powerful commercial-learning management systems due to the various educational opportunities it provides through overcoming all obstacles facing educational institutions and learners. It further helps several educational institutions spread education via the internet.

Given the significance of the e-learning systems, the 12th Scientific Conference on Information Systems and Computer Science (2005) has recommended the necessity of developing the learning management systems in accordance with their Arab community. Namely, courses have to be tailored at all educational levels according to the requirements, circumstances, and traditions of each Arab local community.

Statement of the problem

Duff [5] argues that however e-learning dates back to the 50's, it has become an urgent requirement known as the educational system of the 21st Century. The rapid technological change makes education and its continuity essential, which requires focusing on continuous education in preparing in-service instructors and training them. E-learning can contribute to developing formal education in universities and schools and helping those who have not completed their university degree hold a university degree. In general, e-learning is required because of several factors:

1)   The increasing demand on continuous education.
2)   Early employment deprives some groups of their educational opportunities such as obtaining educational qualifications.
3)   Labor requirements in recent years necessitate rehabilitation more than once.
4)   The rapid technological developments require continuous training and new methods to meet the labor demands.
5)   Formal education no longer absorbs a large number of students, especially in the countries of high population growth such as developing countries.

In e-collaborative learning, students learn through online collaborative groups; each group collaborates in lessons learning or problem solving or project completion. As stated by Loo [6], it has two forms:
1- Synchronous Collaborative Learning.
2- Asynchronous Collaborative Learning.

The e-collaborative learning environment is deemed one of the environments through which the internet's various tools and potentials can be used in developing the problem-solving skills, if adequately adopted and recruited to this end. Ibrahim El-Far believes that collaborative learning is

one of the modern educational trends which correspond to individual learning through old learning methods such as instructors, educational TV, or textbooks or through modern learning ones, including educational software and multimedia compact discs. The internet further facilitates peer learning in an educational positive systematic environment through the participation of leaners and educators in discussions and the exchange of views regarding all targeted academic topics [7]. In light of meeting the increasing demand on higher education and the greater access to knowledge, emerges the significance of e-learning, building on the principles of lifelong education and self-learning and on facilitating access to the CIT-based knowledge among leaners. Moreover, the traditional educational systems are no longer capable of meeting the requirements of those who are willing to access higher education.

The blackboard is one of the methods adopted to achieve e-learning. It is already applied in Princess Nourah University, where the two researchers are members at the Teaching Techniques Department at the College of Education. They noted that the students' use of the blackboard is limited to downloading some models, participating in the forum, and accessing schedules and their scores, which is much less than what the blackboard provides. Hence came the idea of the current study which is based on the effectiveness of using the blackboard collaborate tools; wiki, panel discussions and virtual classrooms, on promoting the practical skills among students of the Foundation Year in the E-Learning Course. Gewertz and Catherine [8] argue that e-learning and the internet are deemed a fertile land for the growth and effective building of collaborative learning. They maintain the social aspects of collaborative learning, which is based on the exchange of information between a group of learners who collaborate together to reframe discussions and reorganize courses, besides expressing their views and receiving feedback from other colleagues in the group.

The effectiveness of e-collaborative learning in promoting knowledge and skills has been emphasized by several studies. For instance, Labib [9] has emphasized the effectiveness of an electronic strategy of e-collaborative learning in the Computer Problems Course on the skilled performance of the students enrolled in the General Educational Diploma, the Educational Computer Division. Habishi [10] has attempted to use the e-collaborative learning in developing field training among the students enrolled in the Computer Instructor Preparation Division, the College of Special Education. The study has identified a set of foundations and standards required for designing the e-collaborative learning environment. The study has also developed a list of procedural objectives required for promoting teaching skills among students during the field training through the e-collaborative learning environment.

The effectiveness of a collaborative web-leaning-based proposed training program in promoting instructors' competencies in adopting the e-learning technology in teaching has been addressed by Wali [11]. The study has suggested adopting the collaborative web-learning within the vocational training program provided annually by the Ministry of Education to in-service instructors.

Thus, the current study is an attempt to use the Blackboard Collaborate Tools effectively in promoting the skills of the female students enrolled in the Foundation Year in the E-Learning Course based on a systematic vision.

Question:

There is a lack of practical skills among the female students of the Foundation Year in the E-Learning Course. For instance, e-collaborative Learning is not adopted in designing the Course's practical projects and the blackboard tools are not used in their interaction with each other. Therefore, the study attempts to answer the following question:

What is the effectiveness of using the Blackboard Collaborate Tools in promoting the practical skills among the female students of the Foundation Year in the E-Learning Course?

This main question subdivided into:

1- What are the procedures required to promote the practical skills among the female students of the Foundation Year in the E-Learning Course through the Blackboard Collaborate Tools?

2- What is the significance of using the Blackboard Collaborate Tools in promoting the practical skills among the female students of the Foundation Year in the E-Learning Course?

3- How effective the Blackboard Collaborate Tools are in promoting the practical skills among the female students of the Foundation Year in the E-Learning Course?

Objectives

The present study aims to:

1- Identify a list of procedural objectives to promote the practical skills among the female students of the Foundation Year in the E-Learning Course.

2- Explore the significance of the Collaborative E-Learning Tools within the Blackboard system to promote the practical skills among the female students of the Foundation Year in the E-Learning Course.

3- Identify the effectiveness of the Blackboard Collaborative E-Leaning in promoting the practical skills among the female students of the Foundation Year in the E-Learning Course.

Significance

The study attempts to develop the practical skills among the students of the Foundation Year in the E-Learning Course through:

1- Developing the practical skills among the students of the Foundation Year in the El-Learning Course through the adopting of the blackboard system and the activation of the e-collaborative learning.

2- Producing educational projects within the e-collaborative learning environment through the blackboard system to promote collective work among the female students in building new knowledge relating to the design of projects via the collaborate tools and the exchange of views.

3- Employing the e-collaborative learning tools in education in general and in the university education, in particular, to maintain continuous communication between instructors and students regardless of place and time.

Limitations:
The current study is limited to:
1- Random sample of the female students of the Foundation Year at the College of Education.
2- The first semester of the Academic Year 2016\ 2017.
3- Adopting the e-collaborative learning environment through three tools (Wiki, Virtual classrooms and Panel discussions).
Tools
The following tools are prepared to answer the questions of the current study:

1- A list of procedural objectives necessary for promoting the practical skills among the female students of the Foundation Year through the e-collaborative learning tools.

2- A questionnaire of the foundations and standards necessary for the designing of projects within the blackboard of e-collaborative leaning to promote the practical skills among the female students of the Foundation Year.

3- An observation card of the practical skills among the female students of the Foundation Year and of the proposed e-collaborative learning.

METHODOLOGY

The current study adopts the following two methodologies:

1- The descriptive-analytical method: for reviewing the research literature and developing a proposed vision of the foundations and standards relating to the proposed e-collaborative learning tools within the blackboard system.

2- The quasi-experimental method: for measuring the effectiveness of using the blackboard collaborative tools on the practical skills among the female students of Foundation Year in the E-Learning Course.

Variables:

1- Independent variables: the blackboard of the e-collaborative learning tools.

2- Dependent variables: performance skills among the female students of the Foundation Year with regard to:

-     The practical skills of using the blackboard system.
-     The skills of using the e-collaborative learning tools.

Hypotheses:

To ensure the effectiveness of using the blackboard e-learning system in promoting the practical skills, the following hypotheses have been tested:

1- There are statistically significant differences at the level of (0. 01) between the mean score of participants in the pre-and-post measurement for the practical skills within the Blackboard of E-Collaborative Learning in favor of the post measurement.

2- The Blackboard collaborative e-learning achieves an effectiveness rate by more than 1.2.

Sampling:

The study sample consists of a randomly-selected (50) female students enrolled in the Foundation Year of College of Education at Princess Nourah bint Abdulrahman University, Saudi Arabia, for the academic year (2016/2017).

Concepts

1- Blackboard (Blackboard Academic Suite):

It is a learning management system provided by the Blackboard Company for direct educational services located in Washington. This powerful system has provided various educational opportunities through eliminating all obstacles facing educational institutions and learners. This flexible, scalable and expandable system has helped several educational institutions powerfully spread education via the internet.

It is procedurally known by the two researchers as: a global educational system for leaning management available in several languages such as Arabic and designed to help instructors and students interact in e-lectures and use e-courses. This is in addition to performing the activities

complementary to the traditional education, given that the blackboard enables instructors to introduce: courses, dialogue forums, chatting, e-quizzes, academic resources and others.

2- Blackboard Tools: procedurally known by the two researchers as the e-collaborative leaning tools within the blackboard tools, namely wiki, panel discussions and virtual classrooms to build new skills and create educational interaction and participation with regard to the educational content of the E-Learning Course.

3- E-collaborative learning:

It is defined by Stahl, Koschmann and Suthers [12] as the science studying computer or technology-based learning so as to ensure the improvement of the learning process and adopt the collective work so that learners can discuss their ideas and express their views, thereby enabling cross-fertilization and paying attention to the various viewpoints relating to education.

Further, it can be procedurally defined as the second generation of the blackboard e-leaning system, where learners work in groups and exchange opinions to build new knowledge in order to achieve a shared goal; namely, developing their practical skills via the web.

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

It is a commercial learning management system provided by the Blackboard Company. This powerful system has provided various educational opportunities through eliminating all obstacles facing educational institutions and learners. This flexible, scalable and expandable system has helped several educational institutions powerfully spread education via the internet. It is also flexible, scalable and expandable [13].

Name of the production company:
Blackboard
Languages:
Available in English, Arabic, Spanish, Italian and French
Link:
http://www.blackboard.com/us/index.aspx
The following figure (1) features the front end of the official website on http://www.blackboard.com./

Figure 2-1: Front-end of the blackboard official website

It has been designed on educational basis to help instructors provide an e-learning environment. It is used at a personal level and can serve a large number of students. It provides more than one hundred ready-made templates, along with supporting the Word and PDF documents. It further offers an effective system for archiving and enabling retrieval of students' grades, besides providing sample tests prepared by instructors.

Advantages of the blackboard system:

1) The existence of dialogue forums for topics proposed by instructors or learners.

2) The possibility of downloading and sharing files.

3) The possibility of using e-mails and attaching files.

4) The possibility of making observations regarding a course.

5) The possibility of conducting and archiving conversations.

6) The possibility of searching for courses available within the system.

7) The possibility of downloading courses and including them in a CD, besides reviewing such courses by instructors via mobile phones.

8) The possibility of grouping learners; each group has its own forum and files.

9) The possibility of preparing and correcting self-tests and automatically recording grades.

10) Enabling learners to create their own pages.

11) Enabling instructors to prepare tests at the course level and attach pictures, audio, or video clips.

12) Enabling instructors to post an announcement or assignment, or to present materials and set an opening and closing date for the presentation.

13) The possibility of following up on trainers during their access of the system, along with reporting the time they spend.

14) The existence of a Bulletin Board that supports mathematical symbols, images and PowerPoint files.

15) The existence of many templates, including edit tools.

16) It is compatible with global standards such as SCORM and IMS standards.

17) The existence of a store for all educational units with several tools[13].

How to access Princess Nourah bint Abdulrahman University's blackboard system:

As for staff members:

−   Username and university password.

−   To access academic courses, they must be available in the academic system and registered for the staff member.

For students:

The system is accessible through https://lms.pnu.edu.sa/ by using a user name (university no.) and a password (civil registration no.). Figure (2) represents the front-end of the blackboard system for students.
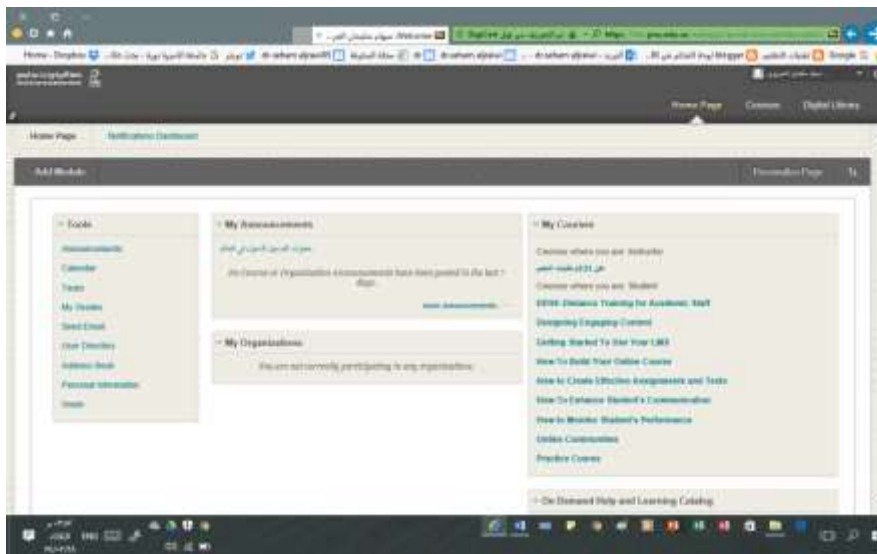
Figure 2-2: The front-end of the Princess Nourah University's blackboard system

In his study, Ismael [14] refers to the value of the blackboard e-learning system which saves time, effort and money for both instructors and students. It is an effective system in the educational process in terms of encouraging innovation, thinking and the expression of views, being educational skills for students. It ensures safe communication between students and instructors in any time and everywhere. The researcher adopts the descriptive method, while using practical tools through practical explanation of Qatar University's blackboard system as the study tools. The researcher also adopts (the modern literary criticism) as a model for this practical study or the practical workshop, given that it is one of the courses educated at the Arabic Department, College of Arts and Science, Qatar University. The study explains how to achieve the principle of equity in the university education through:

Lectures: instructors can post e-lectures in the form of text files on the website; assessment: tests and trainings can be conducted; activities: instructors can form working groups and assign each group with a specific presentation, given that such groups can interact with each other.This is in addition to identifying recommendations for the problem of financing university education and reducing its costs for the poor groups through: the university book and professors. Finally, the study explains how to carry out an academic preparation for the university students in terms of critical sense, creativity and innovation, and the expression of opinions.

Woods, Baker and Hoppers [15] address perceptions that faculty have of how certain blackboard features enhance or elevate their assessment of student work and instructional capabilities, and how faculty use of blackboard might positively affect the psychosocial climate within the face-to-face classroom setting. Additional analysis seeks to identify the factors that predict use and positive perception of blackboard as a supplement to face-to-face teaching activities. The researchers adopt the descriptive method and surveys as a study tool. They use Manova for conducting statistical analyses. The researchers examine responses from 862 faculty members at 38 institutions.

The results indicate that faculty primarily used blackboard as a course management/administration tool to make course documents available to students and manage course grades. Few faculty used blackboard for instructional or assessment purposes. Faculty attitudes, on the whole, were positive when it came to the classroom management functions of blackboard, but neutral or otherwise undecided in terms of its instructional or psychosocial benefits. In addition, women had more positive attitudes than men did in terms of enhancing classroom management and fostering a positive relational climate.

Martin [16] explores the usefulness of content delivery and how it helped students in learning computing skills. 145 undergraduate college students enrolled in a computer literacy course responded to an online survey and seven instructors in a University of North Carolina who taught the course were surveyed over email to determine value and usefulness of the features in the environment.

Overall, assignments, course documents and grade book were reported as the most useful features. Immediate feedback on quizzes, accessing the materials at all times, and getting comfortable in use of technology was rated as most helpful areas. Both students and instructors responded positively to the LMS experience and provided evidence that numerous learning outcomes can be enhanced by the presence of such a system.

The study of Blackboard Learn [17] identifies students' experience in innovation and the way it affects their education. It explores how students use e-learning and how it supports their academic grads. The study targeted 505 students of higher education in the United Kingdom through an online questionnaire. It concluded that most students complete their academic works untraditionally and 54.7% of the students spend up to 5 hours a week online. Participants' responses ranged between 'agree' and 'strongly agree' with regard to the advantages of e-learning. 43% of the students indicated that e-learning helps them achieve higher academic grades and their responses are positive with regard to receiving feedback from instructors.

Heirdsfield, Walker, Tambyah and Beutel [18] identify opinions of the staff and pre-services students about the online blackboard-based education. The study discusses how far this system is applied by the staff and its effectiveness on students. The researchers adopted the descriptive method and distributed online surveys. The study included all the staff and students in the Queensland University of Technology. Shared comments on positive and negative aspects of the blackboard were identified. The system's advantages included the accessibility of database, workshops, and assignments anytime as well as the possibility of communication between students and staff of other universities which facilitates cooperation among them and saves their time. While 76% of students used video recorded lectures, 77% of staff did not use the blackboard-based tests.

E-Collaborative Learning (Concept & Tools)
Web 2.0 applications have recently spread and become frequently used. They are considered one of the main methods of the e-collaborative learning due to their useful tools for learners which help build knowledge and develop skills. Such tools attract a large number of internet users and have become a main method through which e-contents can be accessible. Against this backdrop,

the theoretical framework of the current study tackles tools of the e-collaborative learning within the blackboard system and their role in promoting the practical skills of female students.

The e-collaborative learning term has emerged as a result of the learners' need for educational and social interaction, given that Downes [19] indicates that what distinguishes collaborative e-learning is its social and participatory features, being E-Learning 2.0.

As indicated by El-Khaledy [20], e-collaborative learning focuses on educational fields and is used by various learners working on the same topic by using different networks. It aims to support learners and effectively build knowledge during the learning process. Strijbos, Kirschner and Martens [21] explain the nature of e-collaborative learning, noting that it enables learners worldwide to interact with each other, which requires instructors to motivate learners and plan well for their academic courses and teaching methods. This direct interactive participation helps learners build knowledge and new skills and provides them with the opportunity to voice their inquiries and learn from each other. The e-collaborative learning concept is illustrated as follows:

Figure (3) E-Collaborative Learning Concept

There are several tools of e-collaborative learning within the blackboard such as wiki, panel discussions and virtual classrooms. The following are the most important and wide-spread tools:

1- Wiki

It is an extensive database that allows the exchange of knowledge and views among its visitors which enriches their experience. Moreover, its rapidly and constantly- renewed content suits the new technology, besides being deemed a significant application for the joint collective learning.

Patarakin [22] illustrates that Wiki is a digital space that allows collaborative inclusion of its information.

Krebs, Ludwig and Müller [23] present an approach to apply Wiki in Mathematics classes as it allows collaborative content creation, in particular in writing and the creation of new links of this content. This is in addition to applying Wiki in collaborative creation of formal learning contexts. Wikis is proved to be effective in enhancing thinking and participation among students in Mathematics.

This is in accordance with the current study, where Wiki is used for its ability to manage the E-Learning Course content so as to improve the practical skills among female students through collaborative work.

2- Panel discussions: it is also called the Bulletin Board and it is one of the asynchronous collaborative learning tools, where learners can express their opinions about any topic or inquiry. http://www.elearning-arab-academy.com/home/212.html

The discussion board allows asynchronous interaction through extended time periods. It allows further flexibility for all participants. Below are some benefits of the panel discussions:

- It transcends time and space boundaries.
- Participants can think carefully and respond to initial communications.
- It maintains compatibility between different learning patterns. For instance, shy students can speak more freely when responding to discussions.

Creating the sense of community is crucial for any online successful experience. The panel discussions can be used in simulating discussions taking places in the traditional classrooms. Such discussions can serve a wide-range of purposes, including:

- A place for online discussions and interaction among participants.
- An additional medium for interaction and exchange of ideas.
- A medium for asking questions about homework and content of the academic courses.
- A means of ensuring the application and understanding of courses.
- A discussion-record that can be revisited by participants.
- An activity that reflects the application and understanding of courses [24].
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3- Virtual Classrooms: it is an integrated communication environment for introducing interactive and synchronous lectures, where instructors can give online lectures. It also maintains recorded lectures on the course page within the blackboard system to be re-viewed by students who couldn't attend. Thus, it overcomes the obstacles of time and place.

Advantages of virtual classrooms:
- Unlimited in terms of the number and age of students.
- Discussions of several and new topics which encourage participation.
- Rapid response and communication with students by instructors; let alone the electronic follow-up of attendance.
- Opportunity to focus on teaching, improve performance, use modern technology and acquire knowledge, skills and experience.
- Safe environment for conducting risky experiments and simulation.
- The possibility to learn at any time.

The educational use of virtual classrooms:

1- Virtual classrooms can be used in e-collaborative learning as follows:

– Students are divided into small heterogeneous groups (including various knowledge levels); each group ranges between 3-5 individuals.

– Students of the same group cooperate in explaining a module specified by the instructor through a text or audio conversation or e-mail, along with relevant instructions.

– It allows joint collaborative work for a specified period (i.e.10 minutes) with the help of the instructor.

– Each group keeps the conclusions reached in a Word or a USB drive to be shared with other students.

– The coordinator of each group explains the results.

– The instructor listens to and evaluates each group.

2- Virtual classrooms can be adopted to implement the problem-solving technique as follows:

− The instructor arouses some questions to motivate students and help them identify the problem.

− Following the discussions, the instructor asks students to identify the problem.

− Every student sits on a computer alone to carry out a simulation and seek to solve the proposed problem.

− The instructor follows up students to offer help and every student saves and sends their simulation to the instructor.

− The instructor presents the simulation that solved the problem to the rest of students.

3- Virtual classrooms can be adopted in doing homework as follows:

− Instructors can present homework in the form of a question or a problem.

− Students answer through a simulation that identifies an appropriate solution.

− Homework is submitted in files included in folders named with the students' names and the instructor evaluates their performance.

− Such files can be shared among students to enrich the learning process through mutual online interaction between instructors and students [25].

The study focused on the blackboard collaborative learning tools due to their significance in promoting the practical skills in the E-Learning Course though the tasks implemented by the participants. Advantages and services of the LMS contributed to preparing the study tools and taking notes on the participants' responses to such tools, thereby reaching recommendations that contribute to the development of the practical skills of using the blackboard collaborative tools of the female students enrolled in the College of Education at Princess Nourah bint Abdulrahman University.

Procedures

Procedures included the following steps:

First: Collaborative instructional design

The two researchers view several instructional designs appropriate for e-learning such as: Khamees [26], Morrison, Ross and Kemp [27], Ali [28], and Refaat and El-Sharkawy [29]. A proposed model drawn to be applied in the instructional design within the blackboard e-collaborative learning comprises the following stages:
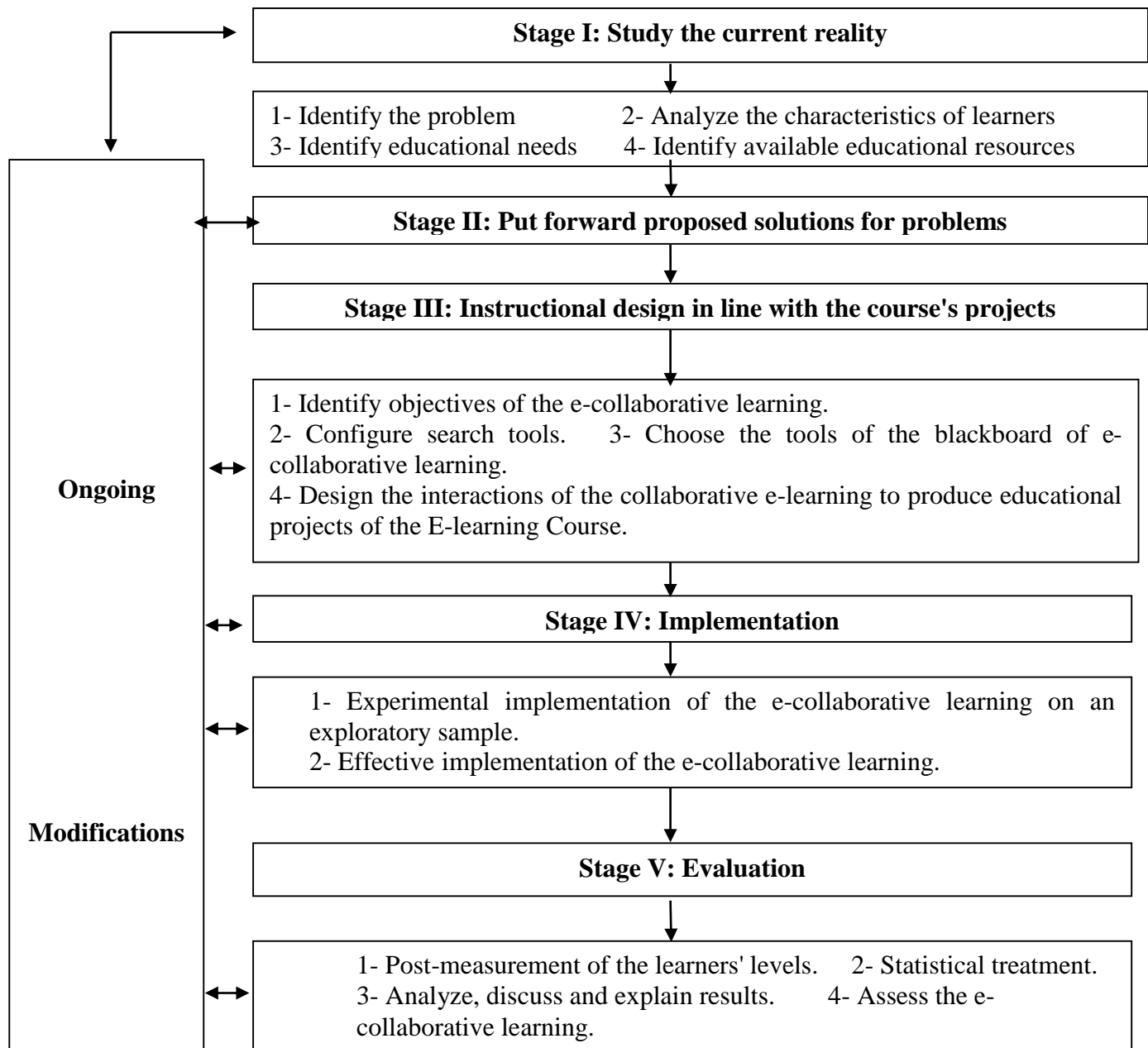
Stage I: Study the current reality

1- Identify the problem   2- Analyze the characteristics of learners 3- Identify educational needs   4- Identify available educational resources

Stage II: Put forward proposed solutions for problems

Stage III: Instructional design in line with the course's projects

1- Identify objectives of the e-collaborative learning. 2- Configure search tools.   3- Choose the tools of the blackboard of e-collaborative learning. 4- Design the interactions of the collaborative e-learning to produce educational projects of the E-learning Course.

Stage IV: Implementation

1- Experimental implementation of the e-collaborative learning on an exploratory sample. 2- Effective implementation of the e-collaborative learning.

Stage V: Evaluation

1- Post-measurement of the learners' levels.   2- Statistical treatment. 3- Analyze, discuss and explain results.   4- Assess the e-collaborative learning.

Ongoing

Modifications

Figure (2): A proposed model for the instructional design of projects within the e-collaborative
Stage I: Study the current reality:
This stage studies all circumstances surrounding the e-collaborative learning before the implementation of course's projects. This stage includes the following steps:
1- Identify the problem: by studying the current reality of the E-Learning Course, given that it is a new course adopted in the newly-introduced Foundation Year of the female students enrolled in

the College of Education, it is proved that the newly graduated students are unfamiliar with objectives and skills of the e-learning.

2- Analyze the characteristics of learners: characteristics of 50 female students enrolled in the Foundation Year of the College of Education at Princess Nourah University are analyzed. The group includes failing students of the cancelled Preparatory Year. Thus, the study sample includes a combination of characteristics of failing and new students.

3- Identify learners' educational needs: in order to identify the most important educational needs and practical skills of female students in the E-Learning Course, the two researchers take observations of participants inside classrooms during teaching the course. This is in addition to reviewing previous studies, researches, conferences and books relevant to e-leaning in general and to adopting the web 2.0 tools-based e-collaborative learning in the university education in particular. Moreover, the researchers develop a list of proposed procedural goals to develop the practical skills of the female students enrolled in the Foundation Year in the E-Learning Course. This raises the students' need to deal with different practical skills related to the e-collaborative learning tools, namely, wiki, panel discussions and virtual classrooms.

4- Identify available educational sources: characteristics of the learning environment are analyzed and the College's financial and human potentials are identified. Such potentials include computers connected to the internet to enable students to easily access the blackboard of e-collaborative learning via the University website, 4 laboratories with 16 computers (Core 2 duo) per each, 16 LCDs and 4 white boards, besides equipped laboratories in terms of electricity, seats, curtains and fans as well as applications (such as operating systems and web browsers).

Stage II: Put forward proposed solutions for problems
During this stage, requirements of the desired performance are considered, besides proposing a group of solutions for the lack of practical skills among the female students enrolled in the Foundation Year in the E-Learning Course through:

First solution: developing a list of foundations and standards related to the practical skills and presenting it to experts in the field of computer and education technology to learn about their views and instruct students to apply them.

Second solution: designing presentations to explain the E-Learning Course and how to use the blackboard tools.

Third solution: preparing theoretical lectures concurrently with using the blackboard web tools.

Fourth solution: designing collaborative educational scheme for the E-Learning Course's projects, including some Web 2.0 tools determined to be activated within the blackboard so that students can build new collaborative practical knowledge during the semester. The required projects comprise (designing infographs, production of videos, designing presentations, and creating educational blogs).

Stage III: Instructional design in line with the course's projects
This stage includes the following steps:
1- Identify objectives of the collaborative e-learning tools:
A list of goals of the e-collaborative learning necessary for promoting the practical skills of the E-Learning Course is developed. Such goals include building a body of knowledge relating to web applications and accessing and interacting with the blackboard system. The following figure indicates the key skills and knowledge of the e-collaborative learning:
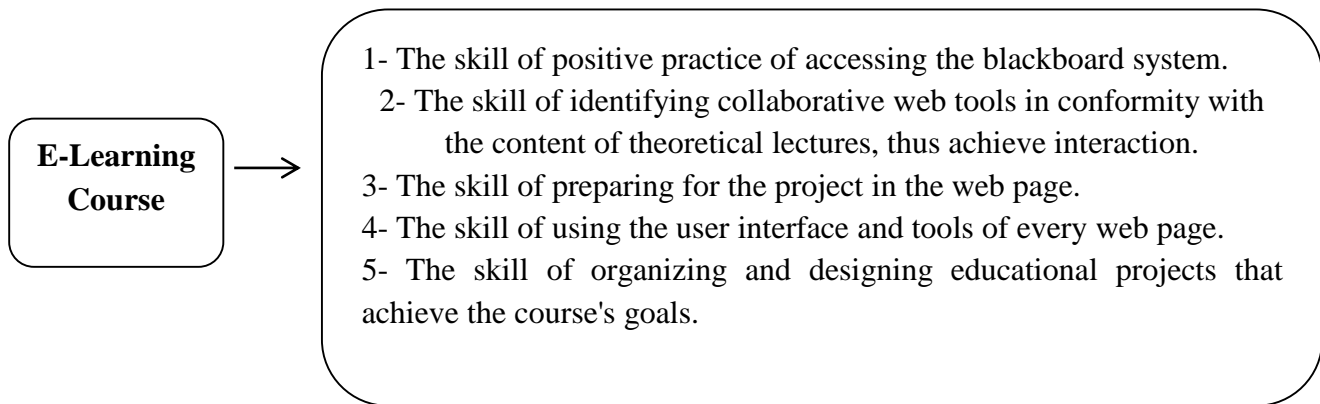
E-Learning Course → 1- The skill of positive practice of accessing the blackboard system.
2- The skill of identifying collaborative web tools in conformity with the content of theoretical lectures, thus achieve interaction.
3- The skill of preparing for the project in the web page.
4- The skill of using the user interface and tools of every web page.
5- The skill of organizing and designing educational projects that achieve the course's goals.

Figure (3) Key skills of the collaborative e-learning system

2- Configuration of the study tools:
The current study adopts the following tools:
First tool: a questionnaire for identifying the practical skills that the students need in the blackboard system.
Developing the questionnaire required the following steps:
A- Goal identification: the questionnaire targets the identification of foundations and standards necessary for using the e-collaborative learning tools.
B- Identification of the data and formulation of indicators: opinions of experts and specialists in the computer field with regard to the e-collaborative learning, and opinions of education technology as well as results and recommendations of previous studies.
C- Validity of questionnaire: validity of the questionnaire is considered one of the fundamental systematic procedures and means that the questionnaire fulfills its intended purposes. The questionnaire is validated through:
Experts' validity: in order to ensure the questionnaire's validity, the researchers adopted the experts' validity method by presenting the initial questionnaire to the study experts to benefit from their views in ensuring that each paragraph reflects the real meaning of the concept under consideration. This is in addition to ensuring the accuracy of verbal and scientific wording of the questionnaire and the extent to which it is clear and inclusive of all stages and aspects of the e-collaborative learning environment. Based on the experts' opinion, some unclear paragraphs have been reformulated.
Thus, the questionnaire is logically valid and includes 2 domains, 12 standards and 29 indicators as follows:

Table (1) Distribution of indicators in the first domain: educational standards (design, interaction, and content)

Standards	No. of Indicators	Numbering of Indicators
1- Understanding the goals of the blackboard of e-collaborative learning system.	5	1-5
2- Interaction and educational control within the e-collaborative learning system.	5	6-11
3- Help and search within the e-collaborative learning tools.	3	12-14
Total indicators of the first domain	14	

Table (2) Distribution of indicators in the second domain: technical standards

Standards	No. of indicators	Numbering of indicators
4- Clarification of the wiki page as an environment of the e-collaborative learning.	2	15-16
5- Understanding how to use wiki within the blackboard.	1	17-19
6- Integration between the wiki content and the students' skilled performance to produce the course's projects.	4	20-23
7- Achieving the goal of working in the panel discussions.	2	24-25
8- Exchanging views in the panel discussions.	1	26
9- Integration between the content of the panel discussions and the feedback.	1	27
10- Accessibility of information in the virtual classes' page along with the possibility of interaction among students.	2	28-29
11- Achieving the feedback through the virtual classes within the blackboard.	1	30
12- Integration between goals and content of the virtual classes in the E-Leaning Course within the Blackboard system.	1	31
Total indicators of the second domain	15	

- Content validity: it is the extent to which there is a correlation between the scores of each instrument and the total scores of the questionnaire. For measuring the content validity, the questionnaire has been applied on the study experts who are specialists in the computer and education technology and teaching methods. The correlation coefficient between the score of each indicator and the total scores of its criterion has been measured and ranged between 0.603 and 0.876. In order to ensure the construct validity, the correlation coefficient for all the questionnaire standards has been measured and ranged between 0.791 and 0.866. It has been proven that all indicators are statistically significant at the level of (0.01) and (0.05), which emphasizes that the questionnaire is internally consistent.

D- Reliability: means obtaining similar results if the questionnaire is repeated under similar circumstances. To measure the reliability of the questionnaire, it is presented to the experts of the study who are specialized in the computer and education technology and teaching methods. Cronbach's Alpha is adopted through SPSS to measure the discrimination index of each paragraph, along with deleting the paragraph of weak negative or positive value (which is less than 0.19) to obtain a strong reliability coefficient. The high value of alpha which reaches up to (0.9886) indicates that paragraphs of the questionnaire are systematic.

Second instrument: a list of procedural goals for promoting the practical skills among student of the Foundation Year through using the blackboard of the e-collaborative learning tools.

The development of this tool required the following steps:

a- Identify goals: the list targeted the identification of procedural goals that the students of the Foundation Year have to be acquired to promote the practical skills through the collaborative e-learning tools.

b- Identify the sources of developing the list: opinions of experts and specialists in the computer and education techniques as well as previous and relevant studies.

c- Content validity: the list is presented to the experts in its initial form to become familiarized with their views in terms of: the extent to which knowledge and skills of the desired learning are achieved, the accuracy of wording each goal included in the list, and the extent to which goals are coherent and sequenced in terms of the degree of difficulty and complexity. This is in addition to conducting a statistical treatment of the experts' responses to calculate the percentage of achieving each targeted goal. 80% of the goals included in the list are achieved, except for rephrasing some behavioral goals in light of the experts' opinions.

d- Reliability: to measure reliability**,** the list is submitted to the experts in computer and education technology and teaching methods. Cronbach's Alpha is adopted through SPSS and reaches up to 0.9883.

Third instrument: observation card of the practical skills among students within the blackboard of e-collaborative learning tools.

a- Identify goals: the observation card aims to measure the practical skills among the students enrolled in the Foundation Year in the E-Learning course and the use of the blackboard of e-collaborative learning tools.

b- Designing steps: the two researchers designed the observation card through benefiting from previous studies and developing the card skills in a behavioral manner. The observation card comprises two domains: dealing with the e-collaborative learning tools and the practical skills of designing the course's projects. The two researchers define the performance measure with (zero), given that zero indicates that the skill is not performed and (1) indicated that the skill is well-performed. The card includes 7 main domains with 21 relevant sub-skills as shown in table (3).

Table (3) Domains of the observation card and the number of skills of each domain

Main domains of the observation card	No. of Skills of each domain
First domain: using the e-collaborative learning tools	
Domain (1): using wiki	4
Domain (2): using the panel discussions	5
Domain (3): main skills for dealing with virtual classrooms within the blackboard	4
Second domain: Practical skills of designing the course's projects	
Domain (4): designing the web page under the required project.	5
Domain (5): using new models in the web page.	1
Domain (6): using the page tools appropriately.	1
Domain (7): evaluation of the required project via the web.	1
Total	21

c- Ensuring validity of the observation card: by presenting the card to experts to learn about their views regarding the extent to which the card fits its intended purpose and the appropriateness of the card's domains for sub-skills. This is in addition to measuring the accuracy of the linguistic and scientific wording of the card's skills and the extent to which they are capable of describing the targeted behavior. The validity of the observation card and its ability to measure the required skills are emphasized by the experts.

d- Measuring reliability coefficient: by identifying the correlation coefficient between the experts' scores, given that each researcher separately uses the observation card to evaluate the students' performance through dealing with the e-collaborative learning as well as their use of practical skills in designing the project and the course's requirements. Afterwards, the reliability coefficient between each two monitored scores, followed by identifying the mean of reliability which reaches up to (0.87), which is suitable for the purposes of the current study.

Against this backdrop, the observation card is valid and in its final form.

3- Designing interactions of the e-collaborative learning to produce relevant educational projects

First step: carrying out preparations for designing the educational projects of the e-learning course through the blackboard of e-collaborative learning tools. Among these already implemented projects are (infographic, blogs, production of video clips, presentations).

Second step: registration and logging in the blackboard website through activating the students' university e-mails, including their names in the Banner and registering the courses plan for the second semester.

Third step: reviewing the manual of using the blackboard through which students become familiarized with the system's tools and how to use.

Fourth step: searching inside the e-collaborative learning tools within the blackboard; namely wiki, panel discussions and virtual classrooms.

a- Wiki

- Objective: providing students of the Foundation Year with a theoretical background of the blackboard, given that students lack such knowledge being a group of new and failing students enrolled in the Foundation Year.

- Content: the two researchers identify a set of topics related to the practical skills of the E-Learning Course's content, objectives and significance.

- Design of relevant processes: such processes can be shown in the below figure:
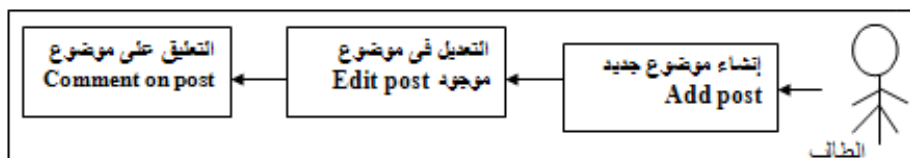

Figure (4) different processes relating to wiki design

First Process: Add post

This process helps students express their views and exchange ideas through adding new posts and receiving comments by pressing wiki tab on the homepage to access the topic related to the E-Learning Course, where the new post tab is pressed to write the title and the content. The post then is categorized and saved to be published.
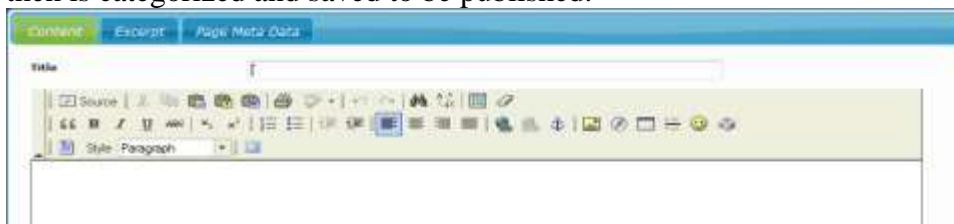

Figure (4) Wiki editor for adding a new post

Second process: Edit post

This process enables students to modify the content of a specific post by addition or omission through clicking on the icon next to any old post. A pointer will show up to carry out the required modification and then click the save button.

Third process: Commenting on posts:

This process allows commenting on posts and exchanging ideas between students and instructors through a constructive dialogue with regard to some posts related to wiki by clicking any post, adding a comment and clicking the submit button to publish the comment.
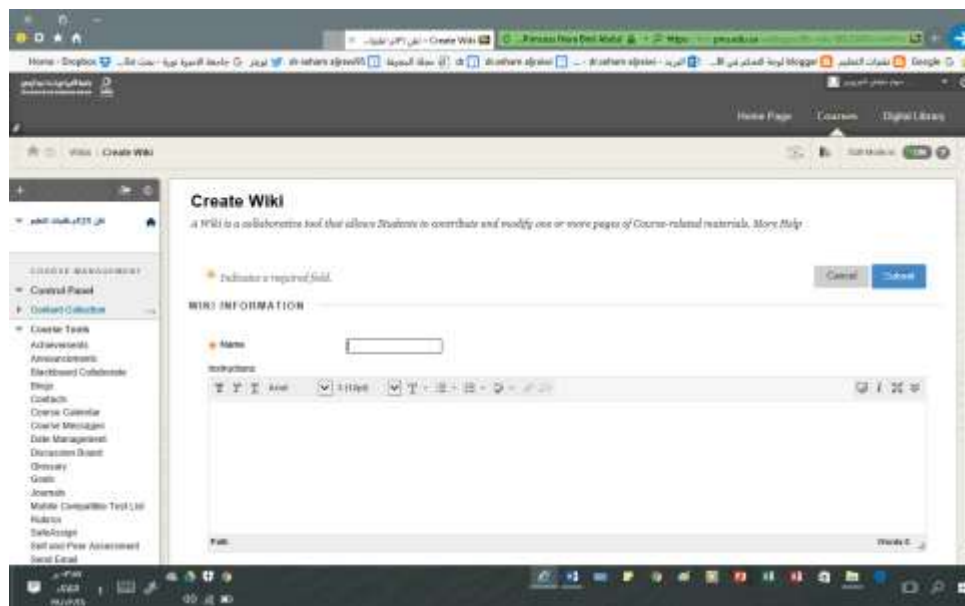
Figure (5) Wiki page within the blackboard system

b- Panel discussions

- Objective: presenting a set of practical skills and commenting on them to exchange views and build new skills with regard to designing educational projects, thus achieve the required skilled performance in the E-Learning Course.

Figure (6) the panel discussions within the blackboard system

c- Virtual classrooms

Objective: to connect this tool with the two previous ones (panel discussion and wiki)

Content: includes the e-learning lectures and projects.

Figure (7) virtual classes within the blackboard system
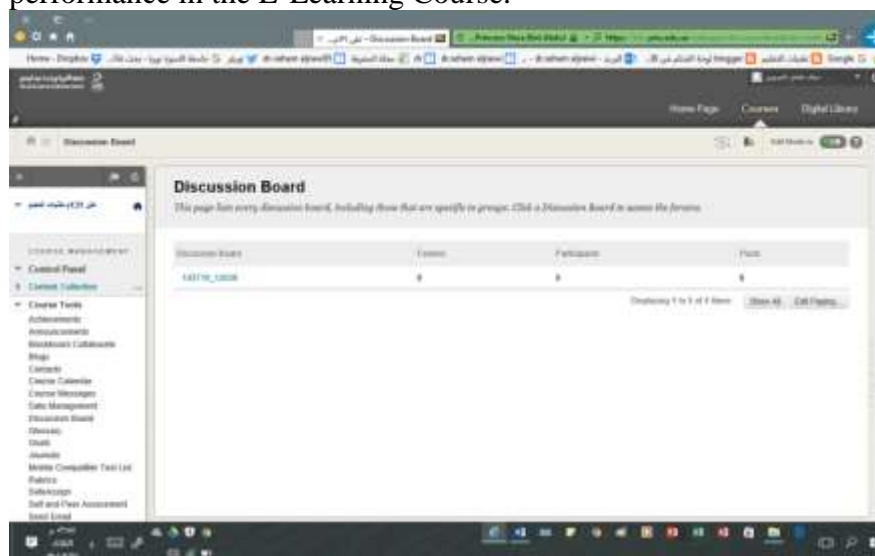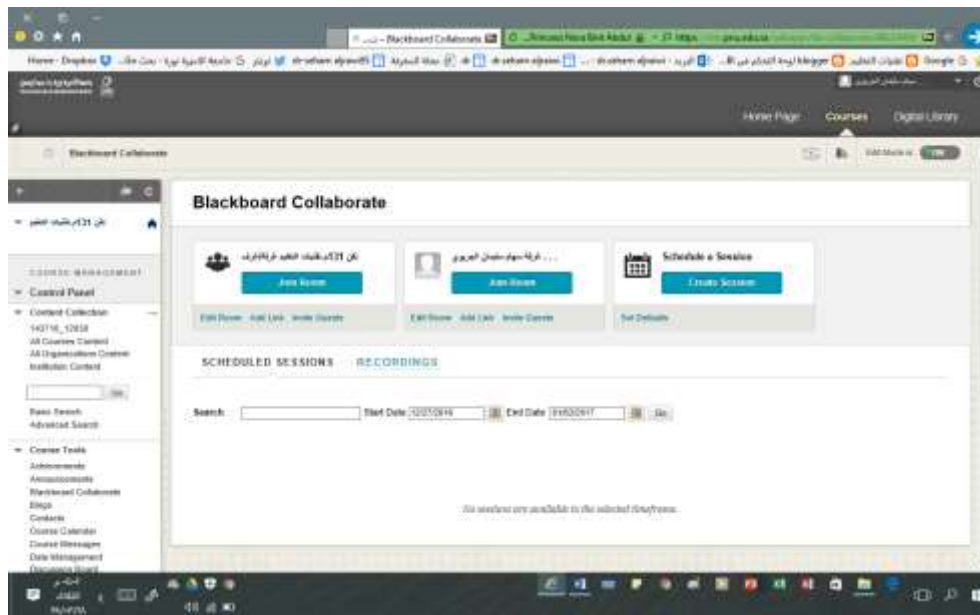
4- Designing interactions within the e-collaborative learning

The e-collaborative learning includes three types of interactions, namely interaction of the students enrolled in the Foundation Year with the content of the e-collaborative learning tools, the students' interaction with each other and the students' interaction with instructors.

Such interactions are carried out through the e-collaborative learning tools: wiki, panel discussions and virtual classrooms.

5- Pre-measurement of the learners' level

The pre-measurement of the foundation year students is based on two domains: the students' performance in dealing with the e-collaborative learning tools and their performance with regard to the practical skills of producing educational projects.

Stage IV: Application

The use of the e-collaborative learning tools is applied on the study sample which consists of (50) female students enrolled in the Foundation Year for the Academic Year 2016\ 2017). The application has taken 30 days. The students' acceptance of the blackboard of e-collaborative learning is noticed by the two researchers. The students also request other courses to be taught in the same manner.

Stage V: Evaluation

During this stage, the e-collaborative learning is evaluated through the experts' evaluation and the post-measurement of the learners' levels, besides analyzing the results. This stage includes the following steps:

1- Post-measurement of the learners' levels: the e-collaborative learning tools are applied on the students after being submitted to the experts. The observation card is also applied to ensure promoting the practical skills of dealing with the blackboard of e-collaborative learning tools, following the students' exchange of views and comments and the production of the E-Learning Course's projects through the e-collaborative learning so as to build new collaborative skills.

2- Statistical treatment: the Statistical Package for the Social Science (SPSS) program is used and the following statistical methods are adopted:

1- Descriptive statistic methods: to identify frequency distribution, percentage, arithmetic mean, and standard deviation.

2- Statistical inference: to ensure the validity of hypotheses through the following methods:

- Chi-square test: to measure significant differences between frequencies of accepting or refusing each paragraph included in the questionnaire and the evaluation form of the e-collaborative leaning.

- T-test: to measure the achievement rate in pre-and-post measurement of the practical skills so as to prove the effectiveness of using the blackboard e-collaborative tools.

3- Analyzing, discussing and interpreting results

This step includes analyzing and interpreting results of the e-collaborative learning and performance of the foundation year students is analyzed. This will be further clarified in the results section.

4- Evaluation of the e-collaborative learning

The e-collaborative learning is evaluated through the induction of the pre-and-post measurement. As a result, the blackboard of e-collaborative learning is proved to have a significant influence on promoting the practical skills among female students enrolled in the Foundation Year in the E-Learning Course.

RESULTS

To answer the first question**:**

What are the procedural goals required for promoting the practical skills among the female students enrolled in the Foundation Year through adopting the blackboard of e-collaborative learning tools?

A list of procedural goals relating to the course has been developed in line with the blackboard tools. Results of the list came as follows:

A- First domain: procedural goals relating to Wiki

The list was submitted to a number of experts, and the following are the results of the first domain:

Table (4) Frequencies, percentage, Calculated Chi Square Value, the level of statistical significance of the first domain and the procedural goals of Wiki

	Paragraphs	Very appropriate		Partly appropriate		Inappropriate		Chi value	Statistical level
		Chi	%	Chi	%	Chi	%		
1	Understand the Wiki concept	14	3.93	1	7.6	-	-	4.24	0.01
2	Identify the significance of Wiki	14	3.93	1	7.6	-	-	4.24	0.01
3	Deal with the Wiki tools	14	3.93	1	7.6	-	-	4.24	0.01
4	Design models for pages within the blackboard system	14	3.93	1	7.6	-	-	4.24	0.01
5	Distinguish between the stages of instructional design of the Wiki page.	14	3.93	1	7.6	-	-	4.24	0.01
6	Apply peer-learning within the Wiki page	14	3.93	1	7.6	-	-	4.24	0.01
7	Implement collective projects that serve the E-Learning Course through the Wiki	14	3.93	1	7.6	-	-	4.24	0.01

Table (4) indicates that the Calculated Chi Square Value of all paragraphs of the first aspect that are related to the procedural goals are greater than the Chai Square Distribution at a significant level of 0.01, in favor of the very appropriate response.

Table (5) Frequencies, percentage, Calculated Chi Square Value, the level of statistical significance of the second domain and the procedural goals of panel discussion

	Paragraphs	Very appropriate		Partly appropriate		Inappropriate		Chi value	Statistical significance
		Chi	%	Chi	%	Chi	%		
First skills: (goals) (preparation of the educational project)									
8	Students identify the goals targeted through the educational project (for example, info graphic).	13	7.86	2	3.13	-	-	6.,19	0.01
9	Students specify the period necessary for implementing the project.	13	7.86	2	3.13	-	-	6.19	0.01
10	Students ensure the practical implementation of the project in accordance with the theoretical lectures.	13	7.86	1	7.6	1	7.6	2.19	0.01
11	Students provide feedback to ensure the implementation of the project.	14	3.93	1	7.6	-	-	4.24	0.01
12	Students consult each other to discuss the educational project in line with the feedback.	15	100	-	-	-	-	30	0.01
13	Students engage each other in discussions about the project.	15	100	-	-	-	-	30	0.01
14	Students connect between the steps of implementing educational projects within the blackboard.	14	3.93	1	7.6	-	-	4.24	0.01
15	Students ask questions to explain different viewpoints of the educational project.	14	3.93	1	7.6	-	-	4.24	0.01
16	Students ask questions that give rise to a number of responses among other students.	14	3.93	1	7.6	-	-	4.24	0.01

Second skill: discussions about designing the educational project (using questions- discussions)								
17	The student asks questions to compare between the different steps related to the educational project.	14	3.93	1	7.6	-	-	4.24	0.01
18	The student asks questions that give rise to innovative thinking among their students to accurately implement the project.	15	100	-	-	-	-	30	0.01
Third skill: implementation of the educational project (enhancement)								
20	The researcher commends the students' efforts.	13	7.86	2	3.13	-	-	6.19	0.01
21	The researcher collaborates with the students in implementing some educational projects related to the E-Leaning Course.	13	7.86	2	3.13	-	-	6.19	0.01
22	The researcher accepts the students' ideas and reparagraphs them through the panel discussions within the blackboard.	13	7.86	2	3.13	-	-	6.19	0.01

Fourth skill: (Implementation of the educational project)								
23	The student analyzes the scientific content to implement the project according to the lecture's information	14	3.93	1	7.6	-	-	4.24	0.01
24	The student understands the different practical methods related to the educational design of the lecture's practical project.	14	3.93	1	7.6	-	-	4.24	0.01
Fifth skill (developing and modifying the educational project)								
25	The student identifies presentations software suitable for the content of the Computer Course.	14	3.93	1	7.6	-	-	4.24	0.01

26	Develop practical projects requested from students to promote their practical skills.	14	3.93	1	7.6	-	-	4.24	0.01
37	The instructor presents innovative activities for students during lectures to access the blackboard system and re-implement projects to acquire professionalism.	14	3.93	1	7.6	-	-	4.24	0.01
38	The instructor encourages distinguished students by assigning them with activities that support their scientific and practical skills in the e-learning domain through the blackboard system.	14	3.93	1	7.6	-	-	4.24	0.01
39	The instructor adopts the collaborative blackboard as an educational method to serve other courses and to motivate students to learn.	14	3.93	1	7.6	-	-	4.24	0.01
Fourth: evaluation								
40	The instructor adopts new evaluation methods that develop the practical skills among the female students within the blackboard.	13	7.86	2	3.13	-	-	6.19	0.01
41	The instructor develops evaluation methods that consider individual differences between students.	14	3.93	1	7.6	-	-	4.24	0.01

Table (5) indicates that the Calculated Chi Square Value of all paragraphs of the second domain that are related to the skills acquired by the female students enrolled in the Foundation Year through the panel discussion are greater than the Chai Square Distribution at a significant level of 0.01, in favor of the very appropriate response.

Table (6): Frequencies, percentage, Calculated Chi Square Value, the level of statistical significance of the third domain and the procedural goals of virtual classes within the blackboard

	Paragraphs	Very appropriate		Partly appropriate		Inappropriate		Chi value	Significance level
		Chi	%	Chi	%	Chi	%		
42	Students' assignments are delivered through this tool.	14	3.93	1	7.6	—	-	4.24	0.01
43	Students comment on new topics in the proposed learning environment.	15	100	—	-	—	-	30	0.01
44	Students are informed of the instructor's schedule to discuss educational projects of the course.	13	7.86	1	7.6	1	7.6	2.19	0.01
45	The students identify the instructor's schedule during the lecture in order to be evaluated.	13	7.86	1	7.6	1	7.6	2.19	0.01

Table (6) indicates that the Calculated Chi Square Value of all paragraphs of the third domain that are related to the skills acquired by the female students enrolled in the Foundation Year through the virtual classes are greater than the Chai Square Distribution at a significant level of 0.01, in favor of the very appropriate response.

The above tables show that the Calculated Chi Square Value is greater than the Chai Square Distribution tabled in favor of the 'very appropriate' and 'partly appropriate' with regard to the procedural goals acquired by the female student enrolled in the Foundation Year through adopting the blackboard tools in the E-Learning Course.

Such results are in accordance with the studies of the following researchers: Labib [9], El-Khaledy [20], Youssef [30], Khalefa [31], Moawwad [32], Roberts [33], Wang [34] and Anastasios and Michailodou [35]. Such researchers emphasize the significance of the e-collaborative learning in promoting the skills and performance of learners, given its several advantages such as building new collaborative knowledge, giving more freedom and flexibility in the learning process and exchanging experience and knowledge among learners.

Moreover, the current study emphasizes the significance of using the collaborative learning tools in the university education, especially Wiki, Panel discussion and Virtual classrooms, given that Parker and Chao [36] and Krebs et al. [23] put an emphasis on the Wiki as a tool used to enhance the learning process and support collaborative learning.

Ismael [14], Blackboard learn [17] and Martin [16] agree with the current study in terms of improving good practices in the university education through using the blackboard tools to bridge the gap between the theoretical and empirical studies in the university education.

To answer the second question:

What is the significance of using the blackboard of e-collaborative learning tools in promoting the practical skills among the female students of the Foundation Year?

The two researchers have prepared an evaluation form of the proposed collaborative blackboard tools. Results came as follows:

The first domain: general characteristics of the blackboard tools:

The form was submitted to a number of experts to identify the significance of the blackboard tools. The following are the results of applying paragraphs of the first domain.

Table (7): Frequencies, percentage, Calculated Chi Square Value, and the level of statistical significance of the first domain relating to the general characteristics of the proposed collaborative blackboard tools

First: designing the e-collaborative learning pages

	Paragraphs	Appropriate		Inappropriate		Chi value	Significance level
		Chi	%	Chi	%		
1	Designing the blackboard pages is easy and simple for learners.	15	100	-	-	15	0.01
2	The organization of the blackboard pages is systematic and harmonious.	15	100	-	-	15	0.01
3	Backgrounds of the blackboard pages are appropriate with the proposed educational projects of the E-Learning Course.	15	100	-	-	15	0.01
4	The blackboard avoids using colors that cause eye strain (bright colors).	14	3.93	1	7.6	267.11	0.01
5	The blackboard pages attract the instructor's attention to the topic not to the design.	14	3.93	1	7.6	267.11	0.01

Table (8) Frequencies, percentage, Calculated Chi Square Value, and the level of statistical significance of the first domain relating to the general characteristics of the proposed collaborative blackboard tools

Second: interaction and educational control within the e-collaborative learning

	Paragraphs	Appropriate		Inappropriate		Chi value	Significance level
		Chi	%	Chi	%		
6	Availability of appropriate interaction patterns within the blackboard.	14	3.93	1	7.6	267.11	0.01
7	Achieving the collective work principle among learners in the collaborative blackboard tools.	15	100	-	-	15	0.01
8	Accessibility of the required content.	15	100	-	-	15	0.01
9	Ease of browsing around.	15	100	-	-	15	0.01
10	The content is in sequence.	14	3.93	1	7.6	267.11	0.01
11	The provision of creative activities based on interaction among students.	15	100	-	-	15	0.01

Table (9) Frequencies, percentage, Calculated Chi Square Value, and the level of statistical significance of the first domain relating to the general characteristics of the proposed collaborative blackboard tools

Third: help and search in the collaborative blackboard tools

	Paragraphs	Appropriate		Inappropriate		Chi value	Significance level
		C	%	Chi	%		
12	Providing instructions that help instructors use the blackboard of collaborative tools.	14	3.93	1	7.6	267.11	0.01
13	Instructions are clear and understandable for learners.	15	100	-	-	15	0.01
14	Easiness of entry and exit.	14	3.93	1	7.6	267.11	0.01

Second domain: characteristics of the e-collaborative learning tools
The form was presented to a number of experts to identify the extent to which the design of the proposed blackboard tools is appropriate. The results of applying the second domain's paragraphs are shown below.

Table (10): Frequencies, percentage, Calculated Chi Square Value, and the level of statistical significance of the second domain relating to the general characteristics of the proposed collaborative blackboard tools

First: Wiki

	Paragraphs	Appropriate		Inappropriate		Chi value	Significance level
		Chi	%	Chi	%		
15	Simplified explanation of Wiki and how to use it is available.	15	100	-	-	15	0.01
16	Wiki enables learners registered in the Banner to add or edit pages.	13	7.86	2	3.13	067.8	0.01
17	Learners can edit pages through the Wiki.	15	100	-	-	15	0.01
18	Wiki enhances thematic coherence through creating several links within the blackboard system.	14	3.93	1	7.6	267.11	0.01
19	Wiki enables the instructor to review pages added by leaners and delete inappropriate ones.	14	3.93	1	7,6	267.11	0.01
20	Wiki posts links to activate leaners to write about the relevant topics.	15	100	-	-	15	0.01
21	Availability of an "Edit Summary" in Wiki to summarize the modifications made by learners.	15	100	-	-	15	0.01
22	Wiki provides feedback for learners either from instructors or the rest of learners.	15	100	-	-	15	0.01
23	Wiki holds collaborative discussions to provide training on discussion skills and acceptance of other's opinions about educational projects.	15	100	-	-	15	0.01

Table (11) Frequencies, percentage, Calculated Chi Square Value, and the level of statistical significance of the second domain relating to the general characteristics of the proposed collaborative blackboard tools

Second: Panel discussion

	Paragraphs	Appropriate		Inappropriate		Chi value	Significance level
		Chi	%	كا	%		
24	The panel discussion achieved its goals.	13	7.86	2	3.13	067.8	0.01
25	Exchange of comments and views regarding the learners' files of educational projects through the panel discussion.	15	100	-	-	15	0.01
26	The existence of visible collective blogs within the blackboard through the panel discussion.	15	100	-	-	15	0.01
27	The possibility of receiving the feedback from the instructors about the educational projects of students.	15	100	-	-	15	0.01

Table (12) Frequencies, percentage, Calculated Chi Square Value, and the level of statistical significance of the second domain relating to the general characteristics of the proposed collaborative blackboard tools

Third: Virtual classrooms

	Paragraphs	Appropriate		Inappropriate		Chi value	Significance level
		Chi	%	Chi	%		
28	Virtual classes help deliver the lecture's content and requirements of educational projects.	14	3.93	1	7.6	267.11	0.01
29	Virtual classes maintain continuous communication between learners and instructors.	14	3.93	1	7.6	267.11	0.01
30	Virtual classrooms have an effective role in providing students with feedback.	14	3.93	1	7.6	267.11	0.01
31	Virtual classrooms achieved their intended goals within the blackboard.	15	100	——	——	15	0.01

The above table indicates that the Calculated Chi Square Value of all paragraphs related to the collaborative blackboard tools is greater than the Chai Square Distribution at a significant level of 0.01.

Comment on the results of the evaluation form of e-collaborative learning tools
Previous tables indicate that opinions of the computer and education technology specialists in the evaluation form are consistent and that there are no material differences between them.
Results of the previous studies in the interactive web design, including Labib [9], Mahia [37], El-Feky [38], Gress, et al. [39] and Ismael [14], emphasized the significance of the general and technical characteristics of the e-collaborative learning.

To answer the third question:
What is the effectiveness of using the e-collaborative learning tools within the blackboard in promoting the practical skills of the female students enrolled in the Foundation Year in the E-Learning Course?

This question was answered through testing the two following hypotheses:
The blackboard of e-collaborative learning achieved an effectiveness rate by more than (1.2).
In order to measure the achievement rate related to the practical skills among the female students enrolled in the Foundation Year in the E-Learning Course, the following steps were followed:
1- The mean scores of the participants in the pre-and-post measurement of the observation card skills are measured.
2- Black equation was applied to identify the achievement rate and the results came as follows:

Table (13) Achievement rate of the effectiveness of using the blackboard tools of e-collaborative learning

Tool	N	X	Y	Z	Achievement rate
Observation card	50	6.2	5.17	31	5.2

Table (13) indicates that the achievement rate of the skills in the e-collaborative learning equals 2.5, by more than 1.2, which emphasizes the effectiveness of using the blackboard tools in promoting the practical skills among the female students of the Foundation Year in the E-Learning Course.

*The second hypothesis***:**
There is a statistical significance at the level of 0.01 between the mean scores of the participants in the pre-and-post measurement for the practical skills within the blackboard of e-collaborative learning in favor of the post-measurement.
In order to validate this hypothesis, the T-test was adopted to assess the means of the students' scores in the pre-and-post measurement of the participants who learned through the blackboard collaborative tools. The following table indicates that:

Table (14) Descriptive statistics of the pre-and-post measurement of the observation card

Measurement	N	Arithmetic mean	Standard deviation	Degree of freedom	(T) Value	Significance level
Pre	50	8889.1	4693.1	35	850.25	01.0
Post		5.16	7759.3			

Table (14) indicates that (T) value reaches up to (25.850), which is statistically significant at the level of (0.01). The degree of freedom is (35), which indicates that there is statistical significance between the mean scores of the students enrolled in the Foundation Year in the Pre-and-post measurement of the observation card either in (practical skills or using the collaborative learning tools), which emphasizes the high performance level of practical skills, thus the second hypothesis has been achieved.

This difference in the pre-and-post measurement is due to the effective role of the blackboard of collaborative learning tools in building the collaborative skills among the students, which is emphasized by Woods, Baker and Hopper [15] and Heirdsfield, Walker, Tambyah and Beutel [18].

DISCUSSION OF RESULTS

The results showed that:
1- The effectiveness rate of the e-collaborative learning tools is achieved by (2.5), which is more than (1.2) according to black equation, which shows their effectiveness in promoting the practical skills among the students enrolled in the Foundation Year in the E-Learning Course, thus validating the first hypothesis. The reasons of this effectiveness are:
–   The e-collaborative learning tools help the students build new knowledge, thereby enriching the learning process.

− The e-collaborative learning encourages collective excellence among the female students in building and applying knowledge and exchanging opinions and experiences, which enhances leaners' experience.

− The e-collaborative learning incorporates knowledge and experience, which helps overcome obstacles during the learning process and cope with scientific developments in the domain.

− It fosters an adequate climate for participation, besides enriching the learning process and encouraging learning independence.

− It highlights the individual role and responsibilities of each learner and enhances the collective role of learners.

− It exchanges the sources of learning which helps them communicate with all parties of the educational process, voice their ideas and develop specific educational goals.

2- There are statistically significant differences at the level of (0.01) between the mean scores of the participants in the pre-and-post measurement for the practical skills within the Blackboard of E-Collaborative Learning in favor of the post measurement.

RECOMMENDATIONS

− It is important to benefit from the proposed foundations and standards in the e-learning domain and provide designers of educational programs with the available learning tools either on the public education or the university education level.

− The blackboard of e-collaborative learning tools should serve as guidance in other courses in the pre and university education.

Suggestions

− Measuring the effectiveness of using other tools of the e-collaborative learning within the blackboard such as (blog and Journals) to promote the practical skills among students of the Foundation Year in the E-Learning Course.

− Measuring the effect of using the blackboard tools of e-collaborative learning in promoting the self-education skills and academic achievement in other courses.

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