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Blended Learning for Undergraduates in Nursing Profession: A Systematic Review of the Impact on Knowledge, Skills, Attitudes and Satisfaction

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Abstract In higher education, e-learning is gaining more and more impact, this new kind of traditional teaching and learning can be practiced in many ways. Several studies have compared face-to-face teaching to online learning and/or blended learning in order to try to define which of the formats provides, e.g., the highest learning outcome, creates the most satisfied students or has the highest rate of course completion. However, these studies often show that teaching and learning are influenced by more than teaching format alone. The review has a special interest in professional bachelor student's education, and it focusses on the impact of e-learning on knowledge, skills, attitudes and satisfaction of students. The findings from the research papers included in the review show that students should have e-learning courses in Learning Management System. These courses will help them understand the aims of e-learning and the benefits of using it in developing their skills in learning.

Keywords: skills, learning, attitudes and satisfaction

1. Introduction

The rapid development in information- communication technology including the web technology has brought a big impact in education world. Today, people are talking about e-learning, cyber- learning, long-life learning, virtual learning and a few more terms have been used to describe a new way of learning. These terms are used to serve a same goal that is to provide the possibility of open and lifelong education without temporal or spatial constraint. Education in Saudi public universities is based on the traditional didactic, lecture-based classroom with a few programs implementing web-based distance learning [1-3]. Due to the recent emergence of blended learning in Saudi higher education, there is an urgent need to investigate students' interaction and satisfaction with blended learning system. The capacity of universities and colleges in Saudi Arabia is limited compared with the rapid growth of students applying for college education [4]. To tackle this problem, the Ministry of Higher Education endeavors to integrate web-based instruction with traditional instruction in universities.

[5] points out that the essence of blended learning is the combination of face-to-face instruction and computer-mediated instruction. The goal of blended learning should be to unite the best features of in class teaching with the best features of online learning, to promote active, self-directed learning opportunities for students [6].

Key words: E-learning, online learning, blended learning, learning outcomes, student satisfaction, teacher education.

2. Methods

The literature search on which the present review is based [7], serves the purpose of identifying papers that may contribute to answering the following research question: which factors are found to influence e-learning and blended learning in relation to learning outcome, student satisfaction and engagement in collaboration in higher education and particularly in professional education? A systematic search in the Educational Resource Information Center (ERIC) and ProQuest databases was carried out in March 2020, using the search keywords ["e-learning" OR "online learning" OR "blended learning"] AND ["teacher education" OR "learning outcome" OR "satisfaction"]. To ensure that the latest findings are presented in the review, the systematic search was restricted to articles published between 2014-2017. The database searches generated a total of 135 articles. The authors read the full articles, discussed how to categorize them and, eventually, 93 articles were selected as relevant and grouped into 13 major categories that affect e-learning and blended learning in higher education. The 13 categories were further reduced to five categories based on an estimate of which categories were most dominant, i.e. the categories that involved the highest number of hits. Thus, the review draws on a total of 44 articles and addresses the following categories: spaces, learning community and student identity, course design and educator roles. More papers are published in 2015 (20 papers) than in 2016 (13 papers) and 2014 (11 papers), but all categories are discussed throughout the period. Below, we present the results from our reading and analysis of the articles included in the review by starting out with a discussion of the selected comparison studies on online, blended and face-to-face (F2F) formats.

3. Results

3.1 E-Learning Environment:

E-learning is the most recent evolution of distance learning—a learning situation where instructors and learners are separated by distance, time, or [8]. E-learning uses network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. [9] outlined major functions of the Blackboard as an e-leaning system including: blackboard homepage, teaching/ learning

materials, discussion board, quiz, and homework assignment. Furthermore, [10] listed the e-learning benefits as: any time, any place, asynchronous interaction, group collaboration and new educational approaches. [11] suggested that four elements should be considered when developing e-learning environments: environmental characteristics, environmental satisfaction, learning activities, and learners' characteristics.

3.2 Blended learning:

Blended learning has been referred to as the "third generation" [12] of distance education systems. The American Society for Training and Development identified blended learning as one of the top 10 trends to emerge in the knowledge delivery industry. It's characterized as maximizing the best advantages of face- to- face learning and multiple technologies to deliver learning [13]. [14] pointed out that this means traditional face-to-face teaching or lecturing with additional materials and learning assignments online, using different learning management systems. [15] conducted a study in a Saudi Arabian university to find out whether or not integration of online learning with face-to-face grammar instruction significantly improves English as a foreign language freshman college students' achievements and attitudes. The study concluded that in learning environments where technology is unavailable to English as a foreign language students and instructors, use of an online course from home as a supplement to in-class techniques helps motivate and enhance English as a foreign language students' learning and mastery of English grammar. [12] defined blended learning as any combination of learning delivery methods, including most often face-to-face instruction with asynchronous and/ or synchronous computer technologies. Blended e-Education (Be-E) refers to an integrated environment, which combines the advantages of e-Learning and traditional classroom teaching [16].

Online learning environments have been criticized for its lack of human interaction and, for this reason, there has been an increasing movement toward blended learning approaches where students can have opportunities for both online and offline interaction with their instructors and classmates [17]. Thus, BL helps to overcome the limitations of face-to-face and online education, blended learning not only offers more choices but also is more effective. The purpose is to use different online environments, and tools of social software, actively during the face-to-face session in order to capture students' thinking and their work [18].

In order to improve the quality of learning, some important elements have to be managed, such as technology, the structure of the course, the instructor, technical support, assignments student engagement and learning flexibility [19]. Blended learning has been implemented with various designs and has shown a considerable positive effect on the learning process.

[20] identified six reasons why one might choose to design or use a blended learning system: (1) pedagogical richness, (2) access to knowledge, (3) social interaction, (4) personal agency, (5) cost effectiveness, and (6) ease of revision. In the BL literature, the most common reason provided is that BL combines "the best of both worlds"

Harvard Business School faculty [21] reported that students not only learned more when online sessions were added to traditional courses, but student interaction and satisfaction improved as well. So and Brush (2018) added that, blended learning environments, increases students' self-motivation and self-management because there is less in-class time and more emphasis on self-regulated learning.

[22] explored and described different viewpoints on blended e-Education by using Q methodology to identify students' perspectives and classify them into perceptional types. It is also designed to examine possible relationships among learner's perceptional type, characteristics (i.e., academic self-efficacy, interest in blended e-Education, and extraversion) and academic achievement levels. Fifty undergraduate students taking blended e-education courses at a Korean university were chosen as participants in this study. As a result of the study, four types of learners were identified and given the following descriptive labels: (I) e-Education Interested Type, (II) Traditional Lecture Friendly Type, (III) Social Interactionist Type, and (IV) Yes-But Mixed Type. Further, it was found that those who have either higher academic self-efficacy or extraversion achieved higher academic achievement. It is also shown that female students in general have less interest in blended e-Education. Implications of these results are discussed in the context of blended e- Education course design.

[23] investigated the effectiveness of online discussion use in blended courses at Saudi Arabian Universities. The study presented issues that have to be considered before employing online discussion in blended courses. Using qualitative research, a rigorous data collection procedure was developed by employing multiple data collection methods that included observations, focus groups and in-depth interviews. The participants were female undergraduate students and instructors of different courses. The results highlighted the issues to be considered in utilizing efficient online discussion, which are: e-pedagogy, e-plagiarism, infrastructure, Learning Management System tools, and demands on time.

According to [24], the simplest model of blended learning "is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences" aiming at taking advantage of a synchronous face-to-face situation and the asynchronous, text-based Internet.

[25] listed some of the benefits of e-learning as follows; It provides time and location flexibility; it results in cost and time savings for educational institutions; it fosters self-directed and self-paced learning by enabling learner-centered activities, it creates a collaborative learning environment by linking each learner with physically dispersed experts and peers; it allows unlimited access to electronic learning material; and it allows knowledge to be updated and maintained in a more timely and efficient manner.

For the effective implementation of this blended approach, educators should address the following desiderata: pedagogical richness (improving student learning), increasing accessibility to information, social interaction, personal agency (offering to students a means for directing their own learning), cost effectiveness, ease of revising a blended system [26].

Graham (2014) outlines six major issues that are relevant to designing blended learning systems. The issues are: (1) the role of live interaction, (2) the role of learner choice and self-regulation, (3) models for support and training, (4) finding balance between innovation and

production, (5) cultural adaptation, and (6) dealing with the digital divide.

Smyth (2010) listed some of the benefits of blended learning as follows; blended learning provided them with a unique flexible learning experience, because they could access and engage with their educational program from anywhere and at any time, the approach provides autonomy in learning, it enables problem solving.

The effect of blended learning on students' computer and mathematics attitudes in a Saudi Arabian university was investigated by [27]. Two modes of learning implemented during the experiment were face-to-face learning, three times a week, and online learning consisting of a weekly computer laboratory session with availability of online learning resources in the intranet and Internet to the students. The results indicated that the students have positive attitudes towards mathematics and computer.

[28] conducted a study to assess the impact of a novel teaching model on student learning and perception. A hybrid teaching model was implemented within the second professional year of the Doctor of Pharmacy curriculum at Northeastern University in Boston, Massachusetts. This Institutional Review Board-approved study enrolled 97 students who accessed online materials in place of traditional lectures over a total of six lectures and had that information re-enforced via in-class active learning. All student quiz scores were compared using a paired t-test. A post survey was sent to all students to capture their attitudes and use of this teaching model. Results proved that students performed statistically significantly higher on quizzes and examinations when using this hybrid teaching model. Student attitudes toward this teaching model were mixed, largely because of perceived increases in their (or student) workload. This study demonstrated that using technology, such as podcasts and electronic lecture delivery enhances learning and bridges gaps with this more technologically advanced generation of students.

3.2.1 Interaction in blended learning environment:

Interaction can be defined as a reciprocal communication process between human and human or between human and non-human. [29] pointed out to several published taxonomies [30-35] which give educators insight into nature and range of interactions that may occur in e-learning. [36] discusses published e-learning interaction taxonomies over four dimensions: Communication-based taxonomies specify sender and receiver of the interaction. Among the basic interactions are student- student, student-teacher, student-content, student- interface interactions. Purpose-based taxonomies codify interactions based on purpose. These are actions taken by learner like: confirm, pace, inquire, navigate and elaborate. Activity-based taxonomies specify the level of type of interactivity experienced by learners. Literature suggests number of activities that may be designed to promote critical thinking, creative thinking and online cooperative learning. Tool-based taxonomies focus on the capabilities afforded by various technologies facilitating e-learning. Among these technologies are e-mail, asynchronous messaging, remote access and delayed collaboration tools, real time brainstorming and conversation tools and real time multimedia and hypermedia collaboration tools.

[37] argues these taxonomies to be valuable but away from practice and proposes a framework positing three interrelated levels of interactions. Level I consist of cognitive operations that constitute learning and the metacognitive processes that help individuals monitor and regulate learning. Level II interactions occur between the learner and the other human or non-human resources. Learner- Instruction interactions (Level III) are considered to be a meta-level that transcends and used to guide the design and sequencing of Level II interactions.

According to So and Brush (2018), there are three types of interaction: (a) learner-content interaction, (b) learner-instructor interaction, and (c) learner- learner interaction. The interaction between learner and content takes place when learners gain content knowledge through one or more forms of media such as tutorials, CD-ROMs, or web-based courses. The learner - instructor interaction happens when an instructor delivers content knowledge, provides appropriate scaffolding, clarifies misunderstanding' and increases student motivation. Lastly, the learner- learner interaction occurs when learners in different geographical areas interact with each other to achieve a certain goal. The following figure shows the three types of interaction taken from [38]:

- Types of Interaction in Learning Environments

[39] stressed that "the learner must interact with the technological medium to interact with the content, instructor, or other learners" The aim of bringing in online environments is not just to provide extra materials or separate assignments but to add a new "layer" to the face-to-face teaching and learning situation [40]. Learner interaction in e-learning environments gives several clues about learner characteristics. [41] presented their experiences regarding knowing about learners via learner-environment interaction. Learner interaction was employed in two studies. In first study reporting capabilities of an LMS was used. In second study an innovative LOGO environment was created from scratch and learner interaction was employed to keep track of learners' problem-solving practices.

[42]asserted the important role of interaction in quality learning stating that "interaction is the key element and quality standard of a quality learning experience in higher education". [43] empirical study examined the influence of interactive video on learning outcome and learner satisfaction in e-learning environments. Four different settings were studied: three were e-learning environments- with interactive video, with non-interactive video, and without video. The fourth was the traditional classroom environment. Results of the experiment showed that the value of video for learning effectiveness was contingent upon the provision of interactivity. Students in the e-learning environment that provided interactive video achieved significantly better learning performance and a higher level of learner satisfaction than those in other settings. However, students who used the e-learning environment that provided non-interactive video did not improve either. The findings suggest that it may be important to integrate interactive instructional video into e-learning systems.

3.3 Collaborative learning:

By collaboration, we mean "sharing experience", hence blended learning provides collaboration where students learn from the ideas and mistakes of others and share their experiences to create a rich knowledge resource. Collaborative learning is a form of learner and learner

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interaction and it has been considered as an effective instructional method in both traditional and e- learning settings. [44] pointed out that collaborative learning allows students to interact with others, which stimulates higher-order thinking skills in face-to-face learning settings. He added that the process of social and cognitive interactions with group members is the key to making successful completion happen in group collaboration.

Promoting collaboration among learners has been regarded as a challenging instructional strategy [45]. Some studies found that students who participated in online collaborative tasks expressed higher levels of satisfaction with their learning process compared to students who didn't participate in online collaborative learning. [12] inferred that collaborative learning structures allowing more control and dialogue among learners could reduce transactional distance. When designed and applied appropriately in distance learning environments, collaborative learning strategies can provide learners with several advantages, such as opportunities to experience multiple perspectives of other distance learners from different backgrounds, and to develop critical thinking skills through the process of judging, valuing, supporting, or opposing different viewpoints. Several studies utilized handheld devices and wireless connection in group collaboration to promote students' learning performance and increase knowledge. It appears that blended learning methods are effective in facilitating the process of online collaborative learning.

Face-to-face situations are important for successful virtual work. The participants who do not know each other will easily drop out of virtual work. Face-to-face situations make it easier to work collaboratively and help to create virtual interaction.

[10] examined the possibilities of mobile technologies and social software in the contexts of blended learning and collaborative learning theories. The paper also provided two concrete examples of how these possibilities have been put into practice in higher education, namely teacher education. It provided ideas for the use of mobile technologies and social software in teaching and learning.

2.5. Students' satisfaction with blended learning environment:

When an e-learning environment is applied, student satisfaction should be considered in evaluating the effectiveness of e-learning. The degree of student learning satisfaction with an e-learning environment plays an important role in the adoption of e-learning or blended learning and in evaluating the effectiveness of distance learning. [21] asserted that continuous and careful monitoring of learner's satisfaction is important for the success, feasibility and viability of e-learning. student satisfaction in e-learning environments is a critical issue and has been questioned in some. Regarding student satisfaction and collaborative learning, [18] found that the majority of participants in their study rated their collaborative learning experiences as good or excellent. Similarly, [12] reported that students who participated in online collaborative tasks expressed higher levels of satisfaction with their learning process compared to those who engaged in task-oriented interaction with their instructor. Clarity of design, interaction with instructors, and active discussion in the context of the course, will enhance students' satisfaction toward e-learning.

[11] conducted a study that aimed at examining student satisfaction and performance in online collaborative learning involving students in two different cultural contexts. A parallel e-learning environment with online collaborative group work was implemented for a group of Chinese first-year students from a national comprehensive university in Beijing, China and a group of Flemish first-year students from a regional comprehensive university in Flanders, Belgium. Differences and similarities with regard to student (dissatisfaction and their performance are analyzed and discussed from a cross-cultural perspective.

In the same context, [19] investigated learners' satisfaction, behavioral intentions, and the effectiveness of the Blackboard e-learning system. A total of 424 university students were surveyed using a standard questionnaire. The results showed that perceived self-efficacy is a critical factor that influences learners' satisfaction with the Blackboard e-learning system. Perceived usefulness and perceived satisfaction, both contribute to the learners' behavioral intention to use the e-learning system. Furthermore, e-learning effectiveness can be influenced by multimedia instruction, interactive learning activities, and e-learning system quality. This research proposed a conceptual model for understanding learners' satisfaction, behavioral intention, and effectiveness of using the e-learning system.

[12] study focused on examining the satisfaction, online performance, and knowledge construction through peer interaction of students in different cultural contexts. For this purpose, a parallel e-learning platform and course design was set up in both a Flemish university and a Chinese university. The e-learning platform is an open-source platform based on Dokeos. Efforts were made to make the learning design as similar as possible in the two educational settings. The same lectures were presented and the same online tasks were assigned to both the Chinese and Flemish groups during one academic semester. Students were able to use different sources such as articles, books, websites, photos, newspapers, and audio/video fragments to explain the different elements theoretically as well as to provide examples. They also needed to try to make the wiki attractive/inviting for readers. Students were divided into groups of six members. Students were trained on how to use the e-learning system, how to participate in group discussions, and how to create wiki documents and pages. Differences and similarities of the two groups of students with regard to satisfaction, learning process, and achievement were analyzed. The Chinese students reported a higher level of satisfaction with the e-learning functions, online collaboration, and peer contribution

On the other hand, students in e-learning courses are likely to be dissatisfied and frustrated with the following factors: a) unclear expectations from instructors, (b) tight timeline, (c) workload, (d) poor software interface, (e) slow access, and (f) no synchronous communication.

[12] conducted a study that aimed at examining the relationships of the students' perceived levels of collaborative learning, social presence and overall satisfaction in a blended learning environment. This research studied the relationship of these three variables and identified critical factors related to them. The participants were 48 graduate students who took a blended-format course in health education and worked on a

collaborative group project related to the development of a comprehensive HIV- AIDS prevention plan.

Data was collected from the Student Perception Questionnaire and face- to- face interviews. The analysis of quantitative data indicated that student perceptions of collaborative learning have statistically positive relationships with perceptions of social presence and satisfaction. This means that students who perceived high levels of collaborative learning tended to be more satisfied with their distance course than those who perceived low levels of collaborative learning. Similarly, students with high perceptions of collaborative learning perceived high levels of social presence as well. Surprisingly, the relationship between social presence and overall satisfaction was positive but not statistically significant. Interview data revealed that (a) course structure, (b) emotional support, and (c) communication medium were critical factors associated with student perceptions of collaborative learning, social presence, and satisfaction. Explanations about findings and implications for instructional design are discussed in the conclusion.

By considering the responses of students who participated in e-learning courses, it is possible to better understand the reasons why students are often dissatisfied with the e-learning experience. [16] stated that students' e-learning dissatisfaction was based the following disadvantages: Lack of a firm framework to encourage students to learn, a high level of self-discipline or self-direct is required, absence of a learning atmosphere in e-learning systems, the distance-learning format minimizes the level of contact, as well as the level of discussion, among students. In other words, e-learning lacks interpersonal and direct interaction among students and teachers. The learning process is less efficient. When compared to the face-to-face learning format, e-learning requires students to dedicate more time to learn the subject matter.

Some researchers have attempted to identify particular student characteristics or other factors that can be used to predict whether a student might drop out of, or otherwise fail to achieve satisfactory results in an e-learning course. As the results of the learning activities in the e-learning system the students should feel the satisfaction in their learning. The designers - instructors can enhance satisfaction of students with following these strategies: Provide unexpected rewards (such as games), implement positive outcomes (Give results - feedbacks immediate), avoid negative punishments, scheduling - matching the course according to the students expectations, transfer knowledge into real world settings (Use simulations), be fair in the test results.

3.4 Content management for students with blended learning environment:

The use of e-learning environments to support teaching and learning has had great impact on the way content is developed and managed. In most cases, both teachers and students have had to re-adapt the way they prepare, access and engage with educational matter. Producing effective and interactive digital contents is a critical issue that challenges instructors of blended courses. Blended learning is the combination of both traditional instruction and e-learning. In this way not only students benefit from the interactivity in the classroom environment, but also they got familiar with the technology and easily manages their work. They are provided with the most features of e-learning like independence from time and place, communication with teacher and peers from anywhere and anytime by being in a virtual instructional environment. From the teachers' point of view, the integration of technology into the classroom environment should be successfully implemented.

Like in traditional learning, blended learning also requires organizing and structuring the content and makes content easily accessible. According [13], a CMS can be used to create, store, update, publish and present information. For educational purposes, a CMS can be used within a course in order to watch the workflow of tasks, to reach course content and to submit assignments. Furthermore, using CMS as a support to classroom instruction will form the structure for blended learning.

When used for educational purposes, effective management of online information (text, audio, video, animation, interactive applications, question bank etc.) and applications (store, add, modify, update etc.) is very important for both instructors and students. A course management system (CMS) will typically promote communication and interaction by using a discussion board, chat, and course e-mail.

Traditionally, the task of managing educational content in learning institutions has been the responsibility of teachers and archivist or librarians. However, the current surge to implement information and communication technologies (ICT) within teaching and learning processes has created an inevitable need to store, access and distribute educational resources via technology-based systems, particularly databases and web-based systems.

[21] pointed out that identifying the lecturers' technical and teaching abilities that enable them to succeed in this new environment helps in implementing blended courses. Also, Negative attitudes towards teaching blended courses could be a result of inadequate skills, not believing in the effectiveness of blended learning, or avoiding the extra workload of transferring to blended courses.

In his study, [28] talked about how instructors and learners manage content in the Blackboard System. The blackboard homepage provides overall course information. It includes the syllabus, the textbook's information, assessment, and other information related the course. Teaching/learning materials in the form of PowerPoint slides, MS Word, Acrobat PDF documents, and video files can be presented through Blackboard to allow for anytime, anywhere access for students. The Discussion Board is a very useful tool for both instructors and students. The instructors can post instructions on how to prepare for an upcoming lecture, while the students can post any queries they have regarding the subject, from questions about assignments, to technical problems with the website. Responses from their peers, instructors, or technical staff can help to promptly clarify students' problems.

One of the solutions which can be helpful for both students and teachers in an e-learning environment is to use content management systems. A Content Management System (CMS) is defined as a combination of three distinct concepts by [22]: content, process and technology/software. Content is the text, graphics, animation, sound and video and all other media that comprise the base for the system. It is always crucial to be arranged in order to present more flexible, interoperable and manageable environments for users. A process is

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defined as the sets of activities which take one or more inputs and execute actions to produce outputs. These inputs can be performed by the system, the user, by someone else entirely, or by a combination of actors. For our purposes, a process refers to the ways integrated into the system in order for users to perform tasks like download, publish, and share. Lastly, you need technology/software to perform your process to control your content over the Internet. Furthermore, it is clear CMS has no meaning without users; people can be considered as another important concept for CMS.

Evaluate the tools' contribution to the system usage. Please write down your thoughts in detail.

Which features you favored the most? Please explain in detail.

Explain in detail the obstacles you faced while using the system.

What can be done to improve the usability of ENIYISI? Please write down your suggestions.

Please state your positive/negative ideas about features (my place, communities, communication, search and admin panel) provided in ENIYISI. The findings of this study indicated that participants-initiated collaboration and sharing within a community without prior instruction.

3.5   Learning Management System (LMS):

For the sake of improving the quality of learning and access to higher education in Saudi Arabia, the Ministry of Higher Education has established the National Plan for Information Technology which encourages e-learning and distance education in higher education. In 2006, the National Plan for Information Technology established the National E- learning and Distance Learning Centre. This Centre provides technical support, tools, and the means necessary for the development of digital educational content in higher education throughout the country, and is a vehicle by which all university sectors can become standardized. In addition, it has established a Learning Management System (LMS) called 'Jusur' promoting materials for university courses, learning management system (LMS) is a software application or Web- based technology used to plan, implement, and assess a specific learning process. An LMS is a system designed to automate the administration of training events. LMS functionality includes user registration, tracking courses in a catalog, and recording data from learners; it also has reporting features for analysis purposes. A learning management system provides an instructor with a way to create and deliver content, monitor student participation, and assess student performance. A learning management system may also provide students with the ability to use interactive features such as threaded discussions, video conferencing, and discussion forums.

The focus of an LMS is to manage learners, keeping track of their progress and performance across all types of training activities. It performs heavy-duty administrative tasks, such as reporting to HR and other ERP systems but isn't generally used to create course content. A good LMS provides an infrastructure that enables a company to plan, deliver, and manage learning programs in any format it chooses.

A learning management system plans, delivers and manages all the learning needs of an organization. An LMS is designed keeping an eye on the corporate learning market. It makes courses available, makes enrollments and develops its confirmation, checks learner eligibility, develops reminders of class schedules, records course completion, develops tests, communicates the completion of the course to the learner's employer and generates follow-up correspondence to the learner. It provides a platform to manage blended learning that includes conventional classroom learning and online learning. An LMS can also be used to record and assess training satisfaction. In addition, it can generate reports such as the number of students enrolling in particular courses, or aggregated records of student performance in particular courses.

4.   Conclusion

One major challenge to be considered in the implementation of blended learning in Saudi universities is the adaptation of this element in the traditional university culture. Some instructors are against new technological methods as a replacement for face-to-face instructions that revealed a type of instructor resistance that should be taken into consideration. Conservative elements of the society see the Internet as a danger to societal norms because of its unethical content, while faculty in science disciplines see it as a powerful tool for work enhancement, faculty perceptions of the potential use of the Internet influence their attitudes towards blended learning.

Several researchers found that students had difficulty adjusting to blended learning. Another problem in blended learning is that when several components in a learning environment are not well integrated, this can increase the extraneous or ineffective cognitive load in learning processes. These findings imply that simply turning classroom courses into blended formats do not necessarily provide students with more interactive and flexible learning experiences. More careful analysis of learners, contexts, and technologies are needed.

E-learning courses are recently used in King Saud university. Students may not be accustomed to this revolutionary system of learning. The blackboard system requires experience in using computer. Also, one or two e-learning courses are not sufficient to form positive attitudes among students towards this new system. Technical problems may affect learner's satisfaction and interaction with the e-learning environment because students may find it easier to interact face-to-face with instructors than to face these technical problems with the site or the computer sets. But on the other hand, the face to face interview revealed some important views towards e-learning environment in case these problems are solved.

The face to face interview revealed that students experienced a number of benefits from e-learning environment. They revealed that distance courses differ from traditional classrooms in the way of communicating assignments, receiving marks and the way they browse content. Also, in the blackboard system, communication and collaboration are faster. Others preferred communication in the traditional classrooms because communication and collaboration in the blackboard system are limited to sending and receiving assignments and content of the course. They are also not continuous. Most students expressed their satisfaction with the blackboard system because of getting any announcements concerning tests or sending others to all students at the same time. The

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flexibility of the blackboard system fostered a sense of autonomy and responsibility. Students' responses to the interview varied from their responses to the questionnaire. This variance may be due to the fact that they gave the interview more importance than the questionnaire. Face to face interviews can be interpreted to students in many ways to uncover anything that's obscure or not clear. But in the case of the questionnaire they may face difficulty in understanding items of it and consequently they may misinterpret the items and the aim behind each one.

Students said that the blackboard system improved their collaboration to some extent due to the help they receive during collaboration in addition to the support they get from the instructor and the facility in getting information from peers. Most students are faced with technical problems that resulted in their frustration during work. Some of these problems are represented in poor internet connectivity, changing the browser, net load that affects the site negatively, the process of signing in and other maintenance problems. Sometimes the system does not work on some computer sets or other computer systems. Most students also suffer from the difficulty of overcoming these problems at home or outside work hours.

When asked to express their opinions toward preferring the blackboard system or the traditional face to face interaction, students answered that the blackboard system is better in sending assignments and single communication with instructors. Besides, the blackboard system saves time and effort and it's exciting and interesting one. Above all their absence does not represent difficulty in getting the content or the assignment. But, on the other hand the blackboard system does not give immediate feedback from instructors and does not provide them with face to face interaction which is very important for the process of communication.

The availability of students' names and the content facilitates communicate. Generally, students pointed out that this system is important to cope with the global development.

In order to overcome the negative sides and the problems, students suggested some solutions such as decreasing the program steps, training on using the program, using the program in all courses, solving technical problems, changing the deadlines of sending assignments and training students in solving technical problems themselves. They also suggested keeping the system after study as a means of communication and as a content for study. When asked about the role of e-learning environment on the students' academic achievement, students answered, yes, it helps to cope with civilized development, getting to know new technological achievements that serve education and learning, in addition to using videos to facilitate communicating information. Most students (90%) evaluated the blackboard system and the interaction with e-learning giving 3-7 points out of 10.

4.1 Recommendations:

It's recommended that students should have e-learning courses in LMS. These courses will help them understand the aims of e-learning and the benefits of using it in developing their skills in learning.

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