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THE STUDY OF BLENDED LEARNING MODELS WITH AN EMPHASIS ON IDENTIFYING THEIR DIMENSIONS AND COMPONENTS (CASE STUDY OF CARMEN, GARRISON AND ANDERSON, QU AND KASE MODELS)

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ABSTRACT

This study aimed at the study of blended learning models and their main aspects and components in order to introduce the application of these models to improve learning and teaching phenomenon with a blended approach in the countries' education system as a new and relatively successful approach in the world. The methodology of the present study was descriptive and data were collected through library research by using various resources including books, magazines and websites. Due to the variety of blended learning models and based on one of the specific common sampling methods in qualitative research, Criterion-based purposive non-probability sampling, four models were selected based on criterions such as the extent of the application, academic records of the designer of the model, attention to various aspects of blended learning, the references to the model in credential scientific resources (ranging from articles and books). In this investigation, the researcher, first, studied these models and then extracted main aspects and components based on the study of various resources and finally, discussed prominent points of each model. The results of this study were identification of main aspects and components of these models and their characteristics.

Keywords: *Carmen, Garrison and Anderson, Qu and Kase Blended Learning Models.*

INTRODUCTION

With the arrival of the era of ICT, education is among the first institutions that has undergone major changes. The use of ICT in education has brought about virtual learning environments. Despite the countless opportunities that it creates, a major problem in education in general and specifically in e-learning is also created, that is, lack of communication and interaction between the tutors and the learners. Since personal interaction is necessary in e-learning, especially in some practical lessons that seriously rely on laboratories and various media, this problem is more prominent. E-learning solution for dealing with this problem is "blended learning approach". Blended learning generally means using more than one method, strategy, technique or media in education, to provide content and educational material. This mode of education, as a second wave of virtual education, has been proposed by Marsh and others in 2003 and it is proposed as a new approach in educational planning in which a combination of electronic and in-person student-centered and teacher-centered and combinations of methods are used for training. In

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other words, this approach is able to create separate multi-dimensional structures in harmony with all factors of education along with using theories and the new techniques of education, educational software, web, etc., for creating remote collaborative learning-teaching collections. Applying this educational method in e-learning will bring about advantages such as access to high quality learning by integrating information within a diverse learning collection to support virtual and real education, reducing the cost of access to communication technologies, to basic and expensive information required in technical research, making the process of organizing and presenting educational materials flexible by teachers, putting the learner as the center of the learning process by creating a series of mental challenges, involving learners in organizing educational affairs, clear explanation of the content of courses, evaluation criteria, creating shorter learning curve for all learners, strengthening learner activities by enjoying the method of problem solving and questioning by using group interaction and healthy competition in a dynamic structure. Therefore, with reference to the changes in open and distant learning methods and models and the use of different blended learning in these educational centers and with the purpose of reformation and the improvement of learning models and their elements in distant education of the country, this study was done to introduce and identify well-known blended learning models to better introduce blended learning as a modern and relatively successful approach in the world educational systems.

METHODOLOGY

The present study has a descriptive method in which data gathering has been done through library research by using various resources including books, magazines and websites. In this study, according to the number and diversity of blended learning models, based on a specific sampling method commonly used in qualitative research which is criterion-based purposive non-probability sampling, four models were selected based on criteria such as the breadth of application, academic records of the model designer, attention to the various aspects of blended learning, the number of references to the model in scientific resources (ranging from articles and books).

BLENDED LEARNING

Blended learning is a relatively new term but the concept has existed in the field of virtual education for several decades. (Akkoyunlu, 2008) In general, so-called blended learning is used for the third generation of distance learning systems, the first generation included correspondence education which was a one-sided method and used educational tools such as email, radio, and TV, the second generation of distance education is based on computer and web-based learning and the third generation which is blended learning is described as a way to maximize the benefits of face to face teaching methods and multiplexing technology for learning (Akuz & Samsa, 2009). Thus, blended learning is growing fast in industrial and educational fields and most of the educational institutions use blended learning for providing better services to their learners. (Bank and Graham, 2009) Blended learning is also referred to as hybrid learning or mixed learning (Yerasimou, 2010). And generally there are various definitions of the term, Garrison and Vagen (2007) defined blended learning as thoughtful integration of e-learning and face-to-face learning. Encyclopedia of Science and Technology also defined

blended learning as an approach which combines different educational methods such as online learning and traditional learning (face to face) (Khosropour, 2009). Blended learning can be described as a learning program in which more than one method of presentation is used to optimize learning outcomes. (Sink and Red, 2001) In addition, according to Valitan (2002) blended learning is used for describing learning activities based on various events such as face to face training, live e-learning, and self-directed learning (Valitan, 2002). Also, blended learning is defined as effective combination of technologies, techniques, and ways of providing diverse learning to provide special communication, knowledge sharing and people's informational needs (Echo Lu et al., 2008) learners can access the information on the web at any time of the day and employ them when they need it. Rosette and Frazeh (2006) stated that blended learning approaches combine apparently contradictory formal and informal learning, business online and face-to-face, guided and self- directed routes, digital resources and college communication in order to achieve organizational and individual goals. The underlying philosophy of blended learning is that all people do not learn in the same way. Therefore, it seems necessary to teach by using different methods. (Karmanj, 2002) Blended learning is an intelligent combination of electronic learning (E-Learning) such as education via the Internet, multimedia and … with personal training (face-to-face classroom learning activities). This new approach is now used in most respected and successful companies like IBM (IBM, 2002). As it is clear from the above definitions, blended learning programs may include a variety of learning tools such as virtual classes, actual classes, using the assistive software for the learning process, self-improvement methods, Web-based training, electronic performance support systems, the combination of workplace tasks and knowledge management system. However, in its most general state, it can be said that blended learning is a combination of two kinds of learning, traditional and virtual learning. (Graham, 2009)

BLENDED LEARNING MODEL

1. The combination of web-based technology to achieve educational goals.
2. Incorporating a variety of pedagogical approaches for optimal learning outcomes with or without educational technology.
3. The composition of any form of educational technology with face-to-face training.
4. The combination of educational technology with the actual job tasks to create a harmonious effect between learning and work (Driscoll, 2002).

Carmen Model (2005)

Carmen pointed out the 5 elements or main dimensions in the design of his blended learning model. He stated that blended learning approach should combine both traditional and modern instructional design and the consideration of the principles of cognitive theory is at the core of this integration. In this model, also five instructive models were pointed out in the blended learning process:

Live events: learning events which are guided by the instructor are done simultaneously by the students, for example, a live virtual classroom.

Components and sub-element of Live Telecommunications (event): live telecommunications (event) are the main "element" of blended learning. For many learners, nothing can replace a live connection with the teacher. But what elements are more effective in live communication?

According to the theory of John Clare in the motivation model (ARCS), the four elements of attention, communication, trust and satisfaction are influential. In this section, the use and impact of each element of Claire model for creating attractive learning experience in live communications are shown.

Attention: the first aspect of ARCS model is attracting attention and involving the learners. For example, an experienced teacher at virtual classes may begin the class by telling a joke, or voting or a question. This involves the on-line learners and prepares them for learning.

Communication: after creating connection and attention, concentration on it and keeping the communication are very important and a virtual teacher may use examples and familiar comparisons for the audience. The teacher may also show how learners can apply the information they gain in the classroom to solve real problems.

Trust: Learners should be confident about their skills and abilities to create and maintain incentive. A virtual expert coach should determine expectations of the classroom assignments to create confidence in students, and then give them enough time to practice new skills to create a successful experience and gain confidence. Satisfaction: Finally, students should be satisfied with the results of their learning experiences and gain self-motivation which is necessary to continue their next activity. A skilled coach provides appropriate homework and assignments which match with the ability and skills of students and contribute to the students' achievement in obtaining the necessary success and will eventually gain their consent. While other theories may also be used, precise application of the principles of Claire creates a roadmap for success in one of the elements of the most important learning, blended learning, which is live communication element. Self-centered online-learning content: the experience of teaching that the learner completes individually, at their own pace and in their own time, are based on web- or CD-ROM such as interactive tutorials. Self-directed learning events add significant value to the blended learning process. In order to achieve maximum value of – the result of real business - a self-centered learning, this learning must be based on effective implementation of instructional design principles. More self-centered learning products claim to have the foundation of instructional design. The actual implementation of instructional design principles varies widely, with the results that are equally diverse. For example, two products may be based on the theory of Ggny nine step training events. The first product includes stated goals, scrolling text, and a few multiple choice questions. The second educational product also includes learning objectives and text, but adds actual photo animation technology, audio MP3, and mix search capabilities. The same foundation, but with the implementation and results that are widely different.

Reusable learning tool: self-centered learning products often referred to as "reusable learning tool" (RLOs) are sold today. Once again, it is a common phrase, but the actual performance quality is dramatically different. Merrill (2002) advised caution when working with learning objects. In order to achieve the desired results, he says, you can not just chop objects and expect them to have meaning. To be provided in e-learning, learning objects must be with strong instructional design, such as Merrill's theory on components' representation.

Multimedia and modern design theory: the modern theory of instructional design also applies the use of multimedia as a means to promote knowledge transfer. Three principles of Ruth Clarke (2002) deserve special attention:

1) The principle of Multimedia: Research has shown that adding graphics to text can help improve education. It is important to ensure that the graphics directly relate to educational messages which means that they "teach", not decorate.
2) The principle of proximity: putting the text near graphics helps to improve training. In five out of five studies, multimedia researcher Richard Meier (quoted by Clarke, 2002) showed that learning from the screen in which the words are near the images resulted in 68% average improvement.
3) The principle of how to improve learning by explaining the graphics with sound: audio entries must be used in a situation where too much material is likely to exist. For example, if you're watching an animated application with five or six steps, you need to focus on visual animation. If you're forced to read text and at the same time to watch the animation, it is more likely to be overload than the time when you can listen to the animation that is read to you.

   Learning products that combine the traditional theories, such as Gang nine instructional events with modern principles of blended learning design, such as those designed by Merrill Clark, constantly provide a higher quality learning product more efficiently. And while many self-paced learning products claim that they are correct in terms of training, only the effective implementation of the principles of ID gives consistent business results.

   Cooperation: the environment in which learners interact with others, for example, e-mail, threaded discussions and online chat.

   The power of a live event or self-paced learning experience will be multiplied when there is a significant opportunity for cooperation.

   Brown (1998) says: "Human beings are social creatures, and as a constructionist learning theory assumes, they develop understanding and new knowledge through social interactions with society." In addition, Tinzman argues that "Cooperative learning has huge benefits for the students and traditional education does not make them available to learners because a group can do meaningful learning and solve problems better than one person alone."

   When creating a blended learning offering, designers should create an environment where learners and educators can chat simultaneously or asynchronously using e-mail and threaded discussions, collaboratively. Two types of cooperation that will produce effective results are learner-learner and learner- teacher.

   Learner-learner cooperation: allows students to discuss important issues with other learners, and sometimes, even teach to them.

   Learner- teacher cooperation: makes it possible for teacher to provide education, one by one, the right question, and respond appropriately to the needs of each individual learner. Expert instructors also provide additional tips to students in the form of tips through e-mail, reminding, and proposed action items.
4) Evaluation: measurement of the students' knowledge. Pre-assessment can precede self-centered or live events to determine prior knowledge, and post-assessment can occur after the planned events or online training to measure the transfer of learning. Evaluation is one of the most critical ingredients of Carmen blended learning, for two reasons: 1) enables learners to test the content that they already know, fine-tune their combined

learning experience, and 2) it measures the impact of all other learning methods and events.

Table 1: Dimensions and components of Carmen blended learning model

row	Main dimensions of the model	Components
1	Live communications	1. Attention 2. Communication 3. Trust: 4. Consent
2	On-line content of self-centered learning	- The principle of reusable learning tool - The principle multimedia and modern design theory: 1) The principle of the multimedia 2) the principle of proximity: 3) The principle of how to improve learning
6	cooperation	Simultaneous cooperation Non- Simultaneous cooperation Learner-learner cooperation Learner- teacher cooperation
4	evaluation	- Self-regulation of combined learning experience of learners - Measurement of the impact of learning methods and events - Measurement of students' knowledge - Determining prior knowledge - post - Evaluation
5	Supporting the function of reference material	- Printable Resources: printable download of popular reference tools with regard to their portability and ease of replication. - Jobs aid: charts, graphs, summaries and check List - PDA Downloads (Personal Digital Assistants)

Garrison and Anderson Model (2003)

Garrison and Anderson suggest that interaction in all its forms (among learners, learners and educators, learners and content and information) is an essential element in learning phenomenon. E-learning has unique ability to support interactivity, in all its forms. This model focuses on online communications in electronic learning environments. To facilitate online interaction, the effective application of online communication tools, conformity of online communication and motivational methods are used to motivate learners to participate in the electronic learning environment. While teachers design their learning material according to a appropriate training design pattern, students may not participate in learning experiences, as we expect. Therefore, in the social model of learning, efforts have been made so that the teachers gain deeper and more comprehensive understanding of the characteristics of e-learning and effective interaction in the environment. In social learning patterns, the environment for students is prepared so that learners undertake the responsibility and control of their own learning through interaction. Social patterns of learning consist of three elements: 1 social presence of 2, cognitive presence and 3, educational presence. Out of these three elements, educational experience is obtained. This model gives special attention to the complexities of communication in virtual learning environments (Anglbrch, 2003)

Social presence: According to Garrison and Anderson, the social presence means that participants in a learning community have the ability to express themselves socially and emotionally, as real people (by showing their personality completely), through the medium of communication which is used. Establishing social presence can be difficult when media

communication is the written word. Movement toward written communication in the electronic learning environment, due to the lack of nonverbal communication, challenges the possibility of social presence seriously.

In the e-learning environment, a very important problem of people and those involved in the learning is creation and repetition of the real classroom experience for all students in the electronic learning environment.

An issue that has not been considered is creating communities of learners by synchronous and text-based communication, means qualitative change and separation from simultaneous, verbal and face to face communication. In strict sense, creating a cohesive learning community in the media in which there is no visual signs other than words and screen image, is a serious and very difficult challenge for teachers. The need to understand the nature of social interaction in a non-verbal environment, and the method of using it for creating a learning community is necessary. A cohesive society can be established based on developing friendships or other common purposes, such as specific training objectives. A community becomes entrenched based on responses to the needs of members and the groups and achievement of their goals. Each of these purposes creates a different environment and will be effective in achieving different results.

Cognitive presence: the nature of teaching is learning. It is a specific type of learning which is defined by the process and outcome. The cognitive presence deals with learning aim and practical outcomes. According to Garrison and Anderson, the cognitive presence is the border of establishing meaning through thought and dialogues in critical research community. Basically cognitive presence is one of the conditions of learning and thinking in high levels.

Cognitive presence is in the general pattern of critical thinking. The source of the formation of this pattern is the perspective of Garrison and Anderson (2001), but it is derived largely from the work of Dewey (1993) in the case of reflective thinking. In the electronic learning environment, the difficulty of exchanging ideas and visions of the people is not harder than creating social presence. Although social presence is an essential element in the learning community, the purpose of this community is more than social interaction. The purpose of education- research community has always been associated with expected cognitive outcomes; in other words, the process and cognitive outcomes are at the center of interaction. We should pay attention to the necessary learning experience and cognitive presence. We use the concept of cognitive presence to explain the intellectual environment that supports continuous critical dialogue and the application of knowledge in high-level education. More specifically, cognitive presence means to facilitate analysis, building and establishing meaning and understanding in a community of students and this is done through dialogue and continuous thinking that is highly supported by research community.

Educational presence: the third mutually reinforcing element in the learning community is the presence of the professor. One of the difficulties of conferences for the initial presentation was strengthening participation and high-level discussions. The root of low interest and low participation is the lack of structure and cohesion due to applying too democratic methods. In spite of full and free participation, targeted training and experience naturally need designers and facilitators for planning, directing and smart interactions. Role is valuable. Educational presence gives all the elements of the learning community a balanced and functional relationship that is consistent with the needs and abilities of learners and good results. Of course, doing this, even at best condition is very difficult.

This shows a new and even larger challenge in e-learning environment. Educational presence is important for organizing learning activities, discussions relating to time and creating balance between quality and quantity of the sent and shared material and professors should play their role as facilitators by criticizing activities and presenting pattern for dialogue and critical thinking. However, unfortunately, a large portion of e-learning educational guidelines in this field is subjective and ambiguous and requires vast and wide research in this area. (Garrison, et, al 2004)

In this model, the focus is on understanding concepts and their relationships in the classroom learning environment and e-learning. If the learner is able to understand the connections between the concepts, information is classified and classified information is restored coherently and results in better understanding of learners. Cognitive principles like changing learning assignments into different steps for attracting the learners' attention, considering background knowledge of the learners, encouraging retention and long term transfer of studied content are followed in cognitive learning theory. (Hagruit 2007)

Table 2: dimensions and aspects of Garrison and Anderson's blended learning model

Row	Main dimensions of the model	components
1	Social presence: According to Garrison and Anderson, the social presence means that participants in a learning community have the ability to express themselves socially and emotionally	_ creating and repeating real classroom for all learners in an e- learning environment _ creating a community of learners through asynchronous communication methods which are based on text. _ qualitative change and separation from simultaneous, verbal and face to face communication method _ creating cohesive learning community. _ creating a community based on the way of responding to the members and group's needs. _ creating a community based on the way of achieving goals. _ creating a cohesive community based on creating friendship or other joint purposes like specific educational goals.
2	Cognitive presence	_ cognitive presence is the border of creating and consolidating meaning through thinking and talking in critical research community _ the purpose of this community is something more than social interaction. _ the purpose of research-educational community always relates to the expected cognitive results _ cognitive presence means facilitating analysis, making and consolidating meaning and understanding in the community of learners
3	Educational presence	_ The presence of the professor is mutual strengthening element in learning community _ Educational presence is important for organizing learning activities, discussions relating to time and creating balance between quality and quantity of the sent and shared material _ Professors should play their role as facilitators by criticizing activities and presenting pattern for dialogue and critical thinking. _In this model, the focus is on understanding concepts and their relationships in the classroom learning environment and e-learning. _ If the learner is able to understand the connections between the concepts, information is classified and classified information is restored coherently and results in better understanding of learners. _Cognitive principles like changing learning assignments into different steps for attracting the learners' attention

		_ considering background knowledge of the learners, encouraging retention and long term transfer of studied content in cognitive learning theory.

Qu, et, al (2008)

Qu, et, al (2008) offered a pattern in the area of learning materials and resources in blended learning approach. In their pattern, learning and teaching guidelines emphasizes on face to face learning along with on line learning resources. They believe that blended learning approach increases the amount, quality and efficiency of learning due to using blended resources. In this model, the first step in blended learning approach is the preparation of students for learning in the real classroom. In the preparation phase, before the establishment of classroom learning content the instructor should inform students about the required learning content to attend the class. Before the classroom, the students get the materials from internet or a specified site to have the required knowledge and awareness for the class. When this preparation is created in learners and teachers before the class, the real classroom will be hold at the due time.

The most important part of teaching and learning is face to face learning in this model. As it can be seen in this pattern, the other sections surround real classroom learning. When learners are already prepared for the classroom, they can ask the instructor during the class when they don't understand course materials. Teachers can emphasize on the content that has higher difficulty level to improve teaching and the learning performance of learners. Therefore, the discussions that the teacher raises in the classroom include basic and fundamental issues in a context. This method saves time for learners and they can have discussions with their teacher and other learners in their classroom. Class activities include lectures, guiding learners, laboratory exercises and the workshop, reviewing material and question and answer. The teacher uses not only the blackboard and textbooks as teaching tools, but also multimedia tools such as computers and related software to display content and presentations in the classroom. The teacher also uses online communications to keep alive and active classroom environment, improve students' learning, and prevent fatigue and illness, so this teaching method is followed in this model.

As it shown in the model, learners also interact with the instructor and other classmates after the classroom. Background and arrangements that have been made in the classroom interaction and relationships will continue through online communities. Learners can engage in discussions with their peers on topics of interest, they can get help from the learners who are proficient in the subject matter. Learners can ask teachers and other learners questions in an on-line environment whenever they face a problem.

Learners can download e-content courses, lectures file, software needed in the field of electronic content at any time and any place through the websites introduced by the teacher. They will study the information and get useful knowledge which they can share with other classmates. Also learners communicate with their teachers and other learners in an on line environment to get instructions from teacher and others on the homework and assignments and achieve correct feedback at the specified time.

Table 3. Main dimensions and components of Qu, et, al model

Row	Main dimensions of the model	components
1	Learning materials and resources	Emphasis on teaching and learning guidelines Face to face learning

		On line learning resources The application of blended resources
2	Preparation of the learners (priority is given to real classes)	_ Before the establishment of classroom learning content the instructor should inform students about the required learning content to attend the class. _ Before the classroom, the students get the materials from internet or a specified site to have the required knowledge and awareness for the class. _ Before the class, the due time of the real classroom will be announced.
3	Face to face learning is the basis of the model	The most important part of teaching and learning is face to face learning in this model. The real classroom includes basic and foundational discussions in a subject matter
4	Learners communication and interaction	_ communication and interaction of learners with teachers _ communication and interaction of learners with learners _ The beginning of communication and interaction in real classroom _ pursuing communication and interaction through on line communications _ Asking teachers questions in an on line environment _ the possibility of continuous access to e-content, lecture files, required software through websites _ verifying assignments, checking them and getting feedback in an on line environment
5	Learning phenomenon	Preparations before the course: 1. Download the necessary information about classroom 2. Check homework 3. face-to-face learning (classroom activities, including lectures, guiding learners, laboratory exercises and workshop attendance, review and question and answer content) 4. The discussion in the classroom 5. After-class discussions in order to: 1. Get feedback online 2. Get references from electronic content presented through websites.

Kase model (2010)

Kase presented a model in the context of blended learning that includes three different stages of learning to achieve the educational goals. In this model, the first stage of learning begins with face-to-face training and continues with the online learning and leads to formative assessment. This cycle continues until the course is completed. Pattern details are shown in the following figure.

1. Stage of face-to-face learning: At this stage of the model, teacher presents a lecture about the importance of the course which is held for learners and then describes the course purposes for learners and provides course content through speech. At this stage, learners have a chance to meet other classmates and teachers face to face and arrangements will be made for establishing more serious and stronger relationships and interactions between them. Socialization processes of learners happen at this stage so the opportunity is given to them to discuss difficult topics, practical issues and assignments together. At the end of presentation of the lecture, the teacher assigns some homework to be done by

the learners together. After the teachers' presentation, educational course continues with on-line learning activities; however, real classroom sessions do not end and they will be hold weekly and regularly.

2. Online Learning Stage: At this stage, both learners and educators use online technologies and services to do their own training activities. These activities include collective learning activities and individual learning activities. The individual learning activities are activities that individuals do in order to achieve their educational goals individually. In this pattern, individual learning activities include blogging, using social network (Facebook), receiving audio and video files from the Internet, using RSS (receiving new and updated content from sites per day) and make use of shared video files. In this model, collective activities consist of collaborative and collective work of learners together. To carry out collective activities in this model, learning activities such as modifying Web pages and Wikipedia and holding videoconferences are used.
3. Evaluation phase: this model consists of two stages of evaluation of students' learning and the two-step is carried out within the school environment. In the first stage, assessment is carried out after the end of the second and fourth sessions. The second phase of evaluation is done after the end of the fifth and seventh sessions and both types of evaluation make use of multiple choice and open ended questions. In addition, all individual and collective learning activities that learners are doing have an impact on their academic achievement and learning and a certain score is considered for each activity. Finally, the sum of individual scores in individual and collective learning activities and the scores in the two-step evaluation deemed to be criteria for calculating the score of the academic achievement of students. (Kasy, 2010)

Table 4: main dimensions and components of Kase model

Row	Main dimensions of the model	Components
1	Face to face learning	- The introduction of educational course goals (model) -presenting Content (through speech) - making arrangement for more serious and stronger relationships and interactions between learners and teachers - Socialization process of learners - Discussing difficult subjects, practical matter of course and homework together - Determining assignments related to classroom - Continuing education courses with online learning activities - Repeating real sessions constantly and regularly
2	On line learning	The use of online technologies and services by learners and educators to conduct educational activities - The use of online technologies and services in individual learning activities and collective learning activities
3	Evaluation	_ Two stages of evaluation of students' learning _ In the first stage, assessment is carried out after the end of the second and fourth sessions. _ The second phase of evaluation is done after the end of the fifth and seventh sessions _ make use of multiple choice and open ended questions.

		_ all individual and collective learning activities that learners are doing have an impact on their academic achievement and learning and a certain score is considered for each activity. _ Finally, the sum of individual scores in individual and collective learning activities and the scores in the two-step evaluation deemed to be criteria for calculating the score of the academic achievement of students.
4	Using technology in individual activities	_blogging, _ using social network (Facebook), _receiving audio and video files from the Internet, _ using RSS (receiving new and updated content from sites per day) and _ make use of shared video files
5	Using technology in collective activities	_ Collaborative and collective work of learners together. _ To carry out collective activities in this model, learning activities such as modifying Web pages and Wikipedia and holding videoconferences are used.

A Summary of the studied models based on main dimensions

Table 5: A summary of the dimensions of the blended learning

model	dimensions
Carmen	1. Live Communications 2. Online content - 3. Self-directed learning 4. Cooperation 5. Evaluation 6. Supporting Performance 7. Reference materials
Garrison and Anderson	1. Social presence (Assertive social and emotional abilities of participants in a learning community) 2. Cognitive presence 3. Educational presence
Qu et al.	Learning material and resources 2 Preparations of learners (priority is given to real classes) 3 face-to-face learning is the foundation of the model 4 learners interaction 5 learning process
Kase	1. Face to face learning 2. Online learning 3. Evaluation 4. Application of technology in individual activities 5. Application of technology in group activities

DISCUSSION

Finally, we study the prominent points of these models. Carman emphasizes and points out five essential elements in his blended learning theory. 1. Live events that are guided by the teacher; this stage is directed by the teacher or instructor. 2. Online content of self-directed learning which is done by the learner. 3. The third element is cooperation principle which relates to the environment in which learners communicate with others. 4. Evaluation: measuring the learners' knowledge and supporting the function of reference materials. Moreover, Carman emphasizes

that blended learning must combine both traditional and modern approaches of learning and attention to the principles of cognitive theory and orientation are at the core of this combination. Garrison and Anderson consider all forms of interaction (learner-learner, learner-teacher, learners and information, learners and educational content) as essential elements in learning process. This model focuses on online communications in electronic learning environments. To facilitate online interaction, the effective application of online communication tools, conformity of online communication and motivational methods are used to motivate learners to participate in the electronic learning environment. Therefore, in the social model of learning, efforts have been made so that the teachers gain deeper and more comprehensive understanding of the characteristics of e-learning and effective interaction in the environment. In social learning patterns, the environment for students is prepared so that learners undertake the responsibility and control of their own learning through interaction. Social patterns of learning consist of three elements: 1 social presence of 2, cognitive presence and 3, educational presence. Out of these three elements, educational experience is obtained. This model gives special attention to the complexities of communication in virtual learning environments.

Qiu based his model on learning materials and resources and in this model in the application of teaching and learning guidelines, in addition to face to face interaction, using on -line learning resources is also considered. The reason for the increase in learners' learning amount, quality and efficiency in blended learning is using blended resources. Finally, face to face learning is the most important part of learning and teaching in this model. Kasy presented a model in the context of blended learning that includes three different stages of learning to achieve the educational goals. In this model, the first stage of learning begins with face-to-face training and continues with the online learning and leads to formative assessment. This cycle continues until the course is completed. Pattern details are shown in the following figure. The prominent characteristics of this model are attention to face to face interaction on one hand and individual and group activities on the other hand.

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