

The Effectiveness of Blended E-learning Approach based Continuity between Autonomous and Collaborative Learning Models

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المستخلص:

إن للتصميم التعليمي المعتمد على الدمج بين أساليب تعليمية متنوعة فوائد عديدة في عمليتي التعليم و التعلم لدي الطلاب. حيث يستفيد المسار التعليمي الإلكتروني من دمج أساليب متنوعة في نفس المسار و لكل أسلوب فوائده و ميزاته على سبيل المثال نذكر المسار التعليمي المدمج المعتمد على التواصل بين التعلم الذاتي و التعلم المشترك. و يعتمد البحث التجريبي الحالي على إجراء مقارنة بين مجموعة تجريبية تستخدم المسار التعليمي الإلكتروني المدمج بين ذاتي و مشترك و مجموعة ضابطة تستخدم المسار التعليمي الإلكتروني الذاتي في عزلة بدون اشتراك بين الطلاب في تحصيل المعرفة. و قد استخدم الباحث المحتوى التعليمي للوسائط المتعددة. و قد أثبتت التجارب بصورة واضحة تفوق طلاب المجموعة التجريبية الذين تعلموا عن طريق نموذج التعليم المدمج بين ذاتي و مشترك على طلاب المجموعة الضابطة الذين تعلموا عن طريق التعلم الذاتي في عزلة دون تشارك. و قد كشفت التجربة عن وجود فروق ذات دلالة إحصائية على مستوى 0.05 لصالح المجموعة التجريبية في التحصيل الدراسي و الاتجاهات.

الكلمات المفاتيح: التعليم الإلكتروني، التدريس عن بعد، التعلم الذاتي، التعلم التشاركي، التعلم المدمج

ABSTRACT

The design of the blended e-learning approach benefits from the presence of multiple learning approaches (e.g., individual, collaborative) combined in a single e-learning process. Experimental research with a control and experimental group was conducted respectively in Illustrator and Flash online courses to explore the impact of blended e-learning approach with use autonomous and collaborative learning on the achievements and attitudes of students compared with those of students undertaking individual e-learning in isolation. The main results show the effectiveness of blended e-learning approach. The results of the experiment reveal differences between the two groups that are significant at the 0.05 alpha level in the achievement test in favor of the experimental group. The results also reveal differences between the experimental and control groups (at the 0.05 alpha level) with respect to attitudes toward blended e-learning. The value of eta squared (η^2) clearly shows a positive impact of the independent variable, "blended e-learning", on the dependent variables, "achievement test" and "attitudes of students."

Key words: *E-learning, online teaching, individual approach, collaborative approach, blended approach ;*

Introduction

The research on e-learning and Web-based educational systems (WBES) tradition-ally combines research interests and efforts from various fields (Aroyo & Dicheva, 2004). It is considered a new concept, covering a variety of applications, learning processes and learning

methods (Barhoumi & Rossi, 2013). E-learning provides students with individual, assisted, collaborative or blended e-learning environments. Online learning environments (OLE) are not to be viewed merely as tools to support learning. They are components of a wider approach that is more “theoretical” (Rossi et al, 2010). A well-structured learning environment must aid the user in combining different tools used to build, share and change his/her level of knowledge through individual, assisted or collaborative learning (Rossi, 2006). The researcher believe that learning is the outcome of social interactions between students through collaborative learning, such us discussion forums (Chan, 2005) that involve knowledge sharing (Gillingham & Topper, 1999). The construction of knowledge is based on social interactions between online students (Vygotsky, 1978). Knowledge is also constructed through the interactions of students with learning resources without social interactions in constructivist learning situation (Piaget, 1967) or through both at once. Learning can also be influenced by the cognitive and psychological state of student, teacher professionalism and the nature and complexity of the teaching approach. In the present article, the researcher aims to explore the impact of blended e-learning approach based continuity between individual and collaborative e-learning approaches, on the achievements and attitudes of online students compared with the individual approach applied to individuals in isolation. To achieve the objectives of this experimental study, the researcher compares the e-learning process designed under the blended e-learning approach (individual and collaborative learning activities) with another e-learning process designed under the individual learning approach applied to individuals in isolation. In other words, a more effective learning approach is needed for helping the students to acquire both cognitive and metacognitive skills (Kuo, Hwang, Chen, & Chen, 2012)

Theoretical Framework

The Autonomous e-learning approach based constructivist philosophy

The notion of individuation of learning is derived from the constructivist learning model of Piaget (1967). Knowledge is not an artifact and thus cannot be conveyed from one person to another. It must be constructed by student without social interaction with other students. The paradigm of moderate constructivism, in which instruction and construction complement each other, appears to be especially appropriate for e-learning. In this context, individual learning should be understood as a generative process, one that nonetheless requires that guidance be initiated by a teacher (Piaget, 1967). To support the constructivist learning theory, learning resources must be customized to the individual student. Complete individual content is, of course, not viable. A grouping of the learning community into various stages of advancement is necessary to reduce the number of versions of learning material that must be produced. Possible criteria of classification may include ability to concentrate, previous knowledge and interests. Dreyfus (1986) and Baumgartner (1993) offer a system of classifying students into five levels. The system represented in Figure 1 classifies students into five levels (Expert, Proficient, Competent, Advanced Beginner, Novice), levels that differ in terms of intellectual and practical mastery of student. Thus, systems to grade students into various levels to define target groups for the deployment of instructional materials of differing degrees of difficulty already exist in the e-learning community. While the model described above provides a one-dimensional classification, we argue that a one-dimensional model is insufficient, i.e., more than one criterion, of various degrees of intensity, are needed to obtain specific categories that are optimal for given students (Lucke & Tavangarian, 2002).



Figure 1. Student Levels (Dreyfus, 1986)

The Collaborative e-learning approach

Collaborative learning is a mode of learning based social constructivist philosophy of Vygotsky (1978) and supported by a set of activities undertaken by groups of students who construct and share knowledge through synchronous or asynchronous communication (chat, discussion forums, etc.) in the presence of an online tutor. Among new technologies, e-learning is one of the fastest and most effective means of communication between students. In contrast with traditional means of communication, Internet-based communication transmits information either synchronously or asynchronously (Zengin, Arikan & Dogan, 2011). Students with different skills and backgrounds interact together to construct and share knowledge (Duffy & Jonassen, 1992). Social constructivist models, such as that suggested by Duffy and Jonassen (1992), stress the need for collaboration between students in learning environment.

Some researchers, discuss the type of learning community to develop for knowledge construction and sharing between individuals (Bell, 2001; Harris & Higgison, 2003; Kollock & Smith, 1999; Preece, 2000; Riel & Polin, 2004).

Social networks also play an essential role in learning environments as a key channel for knowledge sharing and as a source of social support (Cadima, Ojeda & Monguet, 2012).

Many researchers in the field of online education report that the use of discussion forum technology in online learning contributes to the development of communities of common interest and purpose and to the creation of communities of practice, in addition to supporting the learning process (Bober & Paz Dennen, 2001; Browne, 2003; Bodzin & Park, 2002; Rich & Hibbert, 2004; Rogers, 2000).

Blended e-learning approach using both autonomous and collaborative learning approaches

Blended e-learning approach is the form of integration or continuity between individual and collaborative e-learning approaches. Every student has a task to achieve. S/he is responsible for his or her individual knowledge production but can then interact with the group to share knowledge and insure coherence of the final learning product during collaborative learning, thus contributing to the final product in collaboration with the learning community. In collaborative activity, students discuss the work achieved by individuals in the first stage to construct and share experiences. The tutor distributes the individual and collaborative tasks to students, helps them answer questions and facilitates learning (Trentin, 2001). Interactions between tutors and students are not always in consensus reciprocally but are instead a process of confrontation and negotiation. In the interaction process, both teachers and students utilize various strategies in an attempt to confirm their own ideas (Liang, Huang & Tsai, 2012).

A sense of learning community in the blended e-learning approach is necessary to sustain the educational experience over time so essential to move students to higher levels of thinking. This is important as “students with stronger sense of community tend to possess greater perceived levels of cognitive learning (Rovai, 2002).

Based on researches of Vonderwell's (2003), the collaborative learning through asynchronous discussion is very effective for knowledge construction and require reflection from students, the asynchronous environment allowed students to write carefully about their ideas. For example, one participant stated: “the discussion questions were not just for writing the answers; they required reflection”.

Figure 2 presents a possible taxonomy of blended e-learning approach based continuity between individual e-learning activities and discussion related to the production realized individually to share knowledge and insure coherence of the final blended e-learning.

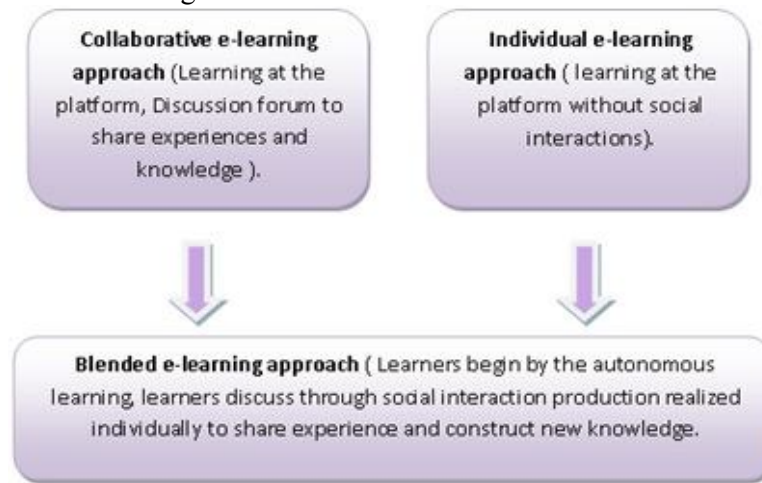


Figure 2. Possible taxonomy of the blended e-learning approach

Implementation of the e-learning processes

The individual e-learning process

For individual learning, we inserted on the Moodle e-learning platform an interactive multimedia learning resource composed of videos, images, multimedia animations and a PDF file. Students can access the learning process for individual construction of knowledge without any interaction with other students or with the instructor. The learning resources are based on hypermedia and hypertext documents and suggest to students an individual learning plan in isolation. An evaluative test is administered at the end of the learning process to evaluate knowledge acquisition by students.

The blended e-learning process

Under the blended e-learning approach, we placed in the e-learning platform a structured learning resource for students. We then implemented an individual activity, followed by a discussion forum, so that answers obtained by individuals could be compared with those of other students, thereby constructing knowledge and correcting individuals' answers in the presence of an online tutor who facilitates learning. There is continuity between the individual

e-learning approach and the collaborative e-learning approach. Indeed, students exchange knowledge about their individual activities prior to the discussion forum.

Research hypotheses and aims of study

The individual constructivist learning approach is commonly used in learning and teaching in a variety of instructional disciplines. Collaborative learning is also used by instructors in teaching and learning to improve social interactions between students engaged in constructing and sharing knowledge. The blended e-learning approach follows an instructional design that integrates individual and collaborative learning. Under the blended e-learning, students engage in social interaction, discussing knowledge gained individually and sharing experiences. Discussion must be related to the work of students undertaken individually. This blended e-learning solution combines advantages of individual constructivist learning and collaborative learning. The aim of the present research is to explore the impact of blended e-learning, characterized by continuity between individual constructivist and collaborative learning, on the achievements and attitudes of online students.

Three hypotheses guide the present study:

Hypothesis 1: There is no difference in the arithmetical means of the experimental and control groups (at the 0.05 the alpha level) in the achievement tests of online students following the experimental period.

Hypothesis 2: There is no difference in the arithmetical means of the experimental and control groups (at the 0.05 alpha level) in their respective attitudes toward individual and blended e-learning approaches.

Hypothesis 3: The independent variable, "blended e-learning approach using both autonomous and collaborative learning," has no positive impact on the dependent variables, "achievement" and "attitudes of students" (based on the value of Eta squared (η^2)).

Method of research

Population and sample

The population for the present study consists of students who have obtained a first level diploma in information technology at the advanced institute of technological studies. The sample for the study consists of two groups. The experimental group is composed of 30 students. The researcher administered to this group the blended e-learning solution with continuity between individual and collaborative learning. The control group consists of 30 students.

The equivalence of the groups

Members of the control and experimental groups are similar in their abilities to use educational technology. An achievement test was conducted prior to the experimental process to divide the sample into two similar groups with respect to cognitive performance.

Table 1 shows the results of the achievement test conducted prior to the experimental process. The number of students in each category ("excellent", "very good", "good", "average" and "poor") is divided by 2, with half of each group placed in control group and the other half placed in the experimental group. Placement of the individuals in the experimental and control groups is based on a random method of classification.

Table 1. The results of achievement test 1

	Frequency	Percent	Valid Percent
Excellent	16	26.7	27.4
Very good	14	23.3	20.5
Good	10	16.7	9.6
Average	12	20.0	27.4
Poor	8	13.3	15.1
Total	60	100.0	100.0

Data Gathering Tools

The data gathering tools were chosen based in part on the achievement test administered following the experimental period. Additionally, the questionnaire method was used to explore the attitudes of students toward the blended e-learning approach and the individual e-learning approach.

Scores of students in achievement test are used to assess the validity and credibility of the approach, with the test covering the e-learning content. In the present study, the scores of students in the achievement test are indicative of the cognitive performance of students.

Following a content validity assessment with a group of teachers at the institute, the questionnaire was constructed to evaluate the attitudes of online students in the experimental group toward the e-learning solution with continuity between individual and collaborative learning approaches. The same questionnaire is used to evaluate the attitudes of online students in the control group toward the e-learning approach without any social interactions with the community or with the instructor.

Justification of measures

The following criteria are used to evaluate the experiment.

- ◆ The cognitive performance of students in acquiring knowledge in the e-learning environment through e-learning processes, based on the achievement test results of students, is used to test hypothesis 1. Cognitive performance is discussed by Spiro and his co-workers in their treatment of cognitive flexibility theory (Spiro, 1996).
- ◆ The attitudes of students in the experimental and control groups toward e-learning approaches are used to test hypothesis 2. Such attitudes are an important indicator of the importance of the adopted instructional design for the online course. In the present research, the attitudes of students in the control and experimental groups are assessed using the questionnaire method. The questionnaire was distributed in face-to-face encounters. In constructing the questionnaire, the researcher used the Likert scale (1932), a psychometric scale commonly used in questionnaire based research. When responding to a Likert questionnaire item, respondents specify their level of agreement or disagreement on a symmetric agree-disagree scale to a series of statements. In the present study, the researcher used a five-level Likert scale: strongly agree, agree, neutral, disagree, strongly disagree. Statistical Package for Social Sciences (SPSS) was used to analyze data (distribution frequencies and cross tabulation results were obtained).

Justification for the use of independent simple T-test and not another statistical test

In the present study, the dependent variables are (Score of students and attitudes toward e-learning approaches) and independent variables are (the e-learning process based blended e-learning approach, the e-learning process based individual e-learning approach). The researcher chooses to analyze data using independent simple t-test after making sure that the data passes all assumptions that are required for and independent t-test.. In the present study, researcher chooses independent simple t-test and not ANOVA test because tow independent groups (control and experimental) are required for a t-test than a one-way ANOVA to give for researchers a valid result.

Typically, a one-way ANOVA is used when we have **three or more** categorical, independent groups (but an independent-samples t-test is most commonly used for two groups). For this reason, we choose the independent simple t-test.

The E-learning environment

The experiment with the blended e-learning approach and the individual e-learning approach was conducted using the Moodle e-learning platform.

Results

Result of the achievement test after the experimental process

Table 2 presents the means and standard deviations of scores of students in the experimental and control groups on achievement test 2, administered following the experimental processes.

Table 2. Means of the experimental and control groups

	Group Statistics				
	Group	N	Mean	Std. Deviation	Std. Error Mean
Achievement test	Control group	30	2.23	.858	.157
	Experimental Group	30	3.03	1.189	.217

The results of the achievement test administered following the experimental e-learning processes show that the mean of the experimental group is 3.03, while that of the control group is 2.23 (see table 2). Thus, the mean of the experimental group (3.03) is higher than that of the control group (2.23). This difference will be examined in the t-test for equality of means presented in Table 3.

Table 3. T-test for equality of means

		T-test for Equality of Means					
		t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Attitudes	Equal variances assumed	2.989-	58	.004	-.800-	-1.336-	-.264-
	Equal variances not assumed	2.989-	52.781	.004	-.800-	-1.337-	-.263-

Figure 3 indicates the performance of students in the control group on the achievement test

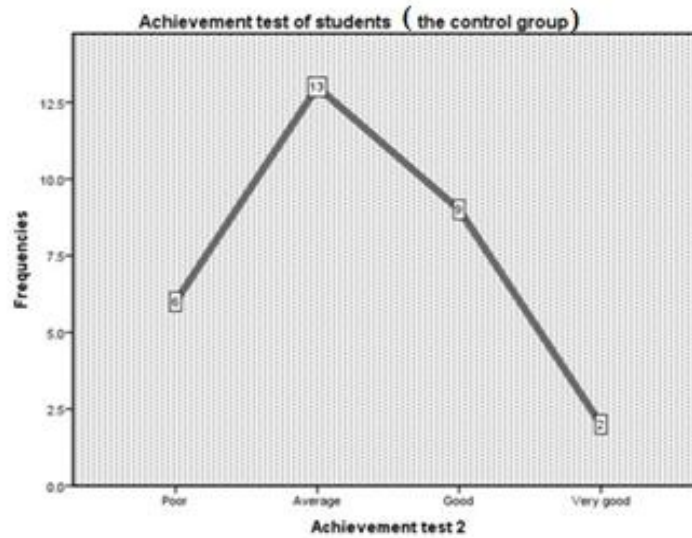


Figure 3. Result of achievement test of the control group

Figure 4 indicates the performance of students in the experimental group in the achievement test.

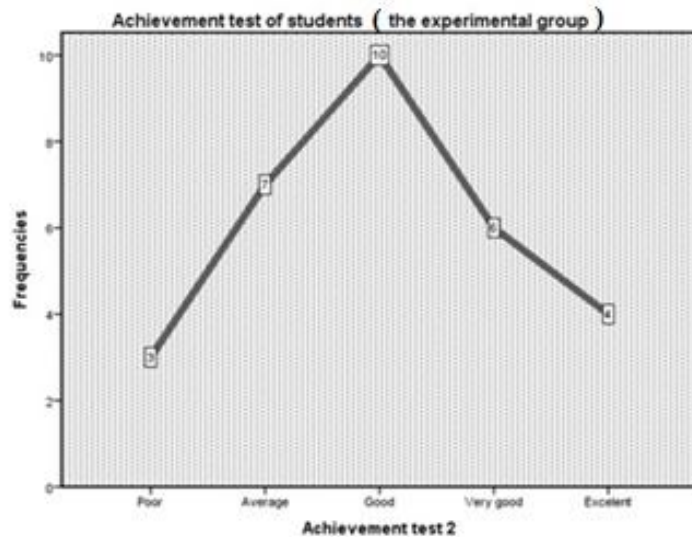


Figure 4. Result of achievement test of the experimental group

For the validation or rejection of the first hypothesis from the results of the achievement test, the researcher indicates that:

Hypothesis 1: There is no difference between the arithmetical means of the experimental group and control groups (at the 0.05 alpha level) in the achievement test of online students following the experimental period.

The results of the achievement test administered following the experimental period for the experimental and the control groups show that the mean of the control group is 2.23, while that of the experimental group is 3.03 (see table 2). We use a t-test to interpret the difference between the means of the experimental and control groups.

The value of the t-statistic in the test of equality of means of the experimental and control groups is 2.98 (see table 3), higher than the critical value of 2.00. Thus, hypothesis 1 is rejected, indicating a difference between the experimental and control groups that is significant at the 0.05 alpha level. The value of the arithmetical mean of the experimental group exceeds that of the control group. The difference between the experimental group and the control group favors the experimental group.

Results of the attitudes of students in the experimental and control groups

Table 4 describes the questionnaire used to explore attitudes of the experimental group toward blended e-learning with continuity between individual and collaborative learning approaches.

Table 4. Elements of the questionnaire of experimental group

Variables	The e-learning process used in Flash online course makes learning easy
	The e-learning process used in Flash online course favors problem solving
	The e-learning process used in Flash online course clarifies the learning resources
	The e-learning process used in Flash online course favors faster knowledge sharing.
	The e-learning process used in Flash online course favors the discovery of information
	The time required for collaborative activity in Flash online course is sufficient.
Items	I disagree, I disagree strongly, I agree strongly, I agree, Neutral
N	30

Table 5 describes the questionnaire distributed to students in the control group to explore their attitudes toward the individual learning approach using multimedia learning objects.

Table 5. Elements of the questionnaire of the control group

Variables	The e-learning process used in the Illustrator online course makes learning easy.
	The e-learning process used in the Illustrator online course favors problem solving.
	The e-learning process used in the Illustrator online course clarifies learning resources.
	The e-learning process used in the Illustrator online course favors faster knowledge
	The e-learning process used in the Illustrator online course favors the discovery of
	The time required for individual learning activities used in the Illustrator online course
Items	I disagree, I disagree strongly, I agree strongly, I agree, Neutral
N	30

Table 6 presents the means of the control group and the experimental group in the attitudes of students respectively toward individual e-learning and blended e-learning approaches.

Table 6. Means of group statistics

Group Statistics					
	Group	N	Mean	Std. Deviation	Std. Error Mean
Attitudes	Control group	30	16.90	2.857	.522
	Experimental Group	30	23.57	3.997	.730

From table 6, the mean for the control group is 16.90, while that for the experimental group is 23.57. It is clear from table 6 that the mean of the experimental group members in the attitudes toward blended e-learning with continuity between individual and collaborative e-learning approaches is higher than those of the control group members toward the individual e-learning approach. To interpret the difference between the means of the experimental and control groups, we use the t-test summarized in Table 7. The difference between the means of the two groups is clear from table 7. The difference in the means is 6.66. This difference is examined through a t-test for equality between the means presented in Table 7.

Table 7. T-test for equality between the means

		t-test for Equality of Means					
		T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Attitudes	Equal variances assumed	7.432	58	.000	6.667	8.462	4.871
	Equal variances not assumed	7.432	52.497	.000	6.667	8.466	4.867

For the validation or rejection of second hypothesis, based on attitudes of students of the control and experimental groups, the researcher indicates that:

Hypothesis 2: There is no difference between the arithmetical means of the experimental and control groups (at the 0.05 the alpha level) in their respective attitudes toward individual and blended e-learning solutions.

The value of the t-statistic, calculated to test for equality of means in the attitudes of students, is 7.43, higher than the critical t-value of 2.00. Thus, hypothesis 2 is rejected; the experimental and control groups differ (at the 0.05 alpha level) in their respective attitudes toward blended and individual e-learning approaches. The attitudes of students of the experimental group are more positive and oriented to the blended e-learning approach than the attitudes of the students of the control group toward the individual e-learning approach applied with isolation of members of the group.

Figure 5 presents the attitudes of students in the control group.

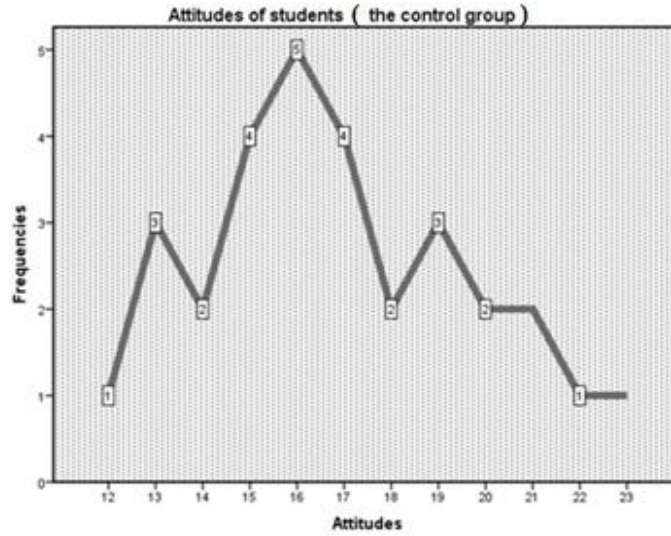


Figure 5. Attitudes of students in the control group

Figure 6 presents the attitudes of students in the experimental group.

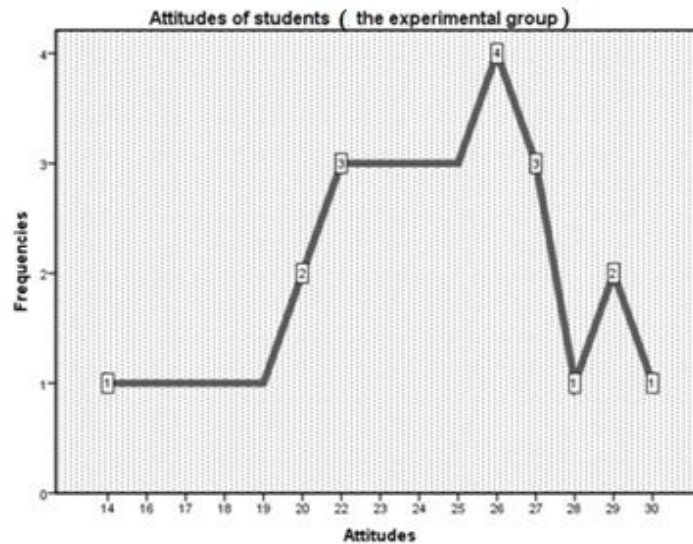


Figure 6. Attitudes of students in the experimental group

The Impact of the independent variable (The Blended e-learning approach) on the dependent variables (achievement and attitudes of students)

The impact of the independent variable (the blended e-learning approach) on the dependent variables (achievement and attitudes of students) is measured through the value of Eta squared (η^2).

Table 8 shows the value of Eta squared (η^2).

Table 8. The value of Eta squared (η^2).

Dependant variables	df	t value	(η^2) Eta squared	
			(η^2) Eta squared	Impact
Achievement test variable	29	7.43	65.55%	High positive impact
Attitudinal variable	29	2.98	23.44%	High positive impact

(η^2) Equation 1 present how to calculate the value of Eta squared

(η^2) Equation 1. The value of Eta squared

$$= \frac{t^2}{t^2 + df} \text{The value of Eta squared}$$

The positive impact of blended e-learning approach on the achievement and attitudes of online students is clear from table 8. Regarding the impact of blended e-learning on the achievement test variable, the value of Eta squared is 65.55%, demonstrating that the blended learning has an important positive impact on the scores of students in the achievement test. Regarding the impact of the blended learning solution on the attitudes of students, we observe that the value of Eta squared (η^2) is 23.44%, which implies that blended e-learning has a strong positive impact on the attitudes of students toward this instructional design.

If Eta squared (η^2) is equal to 15%, the positive impact of the independent variable on the dependent variable is high (with 15% of the variance of the dependent variable explained by the independent variable). If the value of Eta squared (η^2) is 20% or more, the positive impact of the dependent variable on the dependent variable is very high (with 20% of the variance of the dependent variable explained by the independent variable).

For the validation or rejection of third hypothesis based on the value of Eta squared (η^2), we notify that:

Hypothesis 3: The independent variable, "blended e-learning solution," has no positive impact on the dependent variables, "achievement" and "attitudes of students," as indicated by the value of Eta squared (η^2).

Based on the results for Eta squared (η^2) in table 8, we observe a high positive impact of the independent variable, "blended e-learning approach," on the dependent variables, "achievement" and "attitudes of students". Thus, hypothesis 3 is rejected.

Discussion and theoretical implications

The results of the present study show that blended e-learning approach with continuity between individual and collaborative e-learning approaches positively affects scores on the achievement test and the attitudes of students compared with individual e-learning applied to individuals in isolation. The design of blended e-learning benefits from individual and collaborative learning approaches.

The results of the achievement test administered following the experimental period clearly show the improved cognitive performance of students in the experimental group compared with students in the control group.

For the attitudinal data, we observe that the attitudes of students toward blended e-learning approach with continuity between individual and collaborative e-learning approaches show that the latter process facilitates learning, resolves learning difficulties, favors quicker knowledge sharing, favors the discovery of information useful for learning, and so forth, for a majority of students in the experimental group compared with students in the control group, who were taught through individual learning applied in isolation. The e-learning process designed for blended e-learning is more effective for learning and teaching than the e-learning process designed for individual e-learning applied to students in isolation.

The advantages of blended e-learning approach arise from the important role of social interactions between students in discussion forums, where the latter are structured to make learning and construction of knowledge easier, in accordance with Vygotsky's Social Development Theory (Vygotsky, 1978). The collaborative learning approach based on social learning technologies, such as discussion forums made available through the e-learning system (Chan, 2005), is found to be an effective and important tool for training student teachers and making learning easier for online students (Gillingham & Topper, 1999), both in developing their understanding of learning concepts and in modeling practices that they may adopt in online learning.

The results show that online collaboration between groups of students through synchronous and asynchronous discussion have cognitive added value that allows students to share knowledge and provides them with greater opportunity to complete their activities in the allotted time. Web-based learning technologies such as discussion forums (Chan, 2005) are considered effective and important tools for learning (Gillingham & Topper, 1999), both for developing an understanding of learning concepts and enhancing the cognitive performances of students (Bell, 2001; Harris & Higgison, 2003; Kollock & Smith, 1999; Preece, 2000; Riel & Polin, 2004). Many researcher in the field of online education report that the use of discussion forum technology in online learning supports the learning process and helps students complete collaborative activities in the allotted time (Bober & Paz Dennen, 2001; Browne, 2003; Bodzin & Park, 2002; Rich & Hibbert, 2004; Rogers, 2000).

Today, the use of blended e-learning approach has clearly improved in the domain of teaching, learning and knowledge sharing between students through social interactions.

First, students' habits and past experiences using blended e-learning approach and its perceived ease of use shape their attitudes toward e-learning technologies. From our findings, we observe that the attitudes of students in the experimental group are positive and favorable toward use of blended e-learning with continuity between individual and collaborative approaches.

The discussion forum, an easier-to-use interface, enables participants to quickly become informed about new updates within the community and to respond in a timely manner. In this respect, the findings of this study confirm those of previous research projects that underscore the importance of a user-friendly Web-based platform (e.g., Cheung et al., 2008).

Students (subjects) hold differing beliefs regarding the affordances of the two e-learning processes, that is, the objectives that can be achieved through the use of these tools. The autonomous e-learning process is mostly used for disseminating information to individuals rather than enhancing social interactions. Interviewees acknowledge that the blended e-learning approach based continuity between autonomous and collaborative learning approaches is a valuable process for sharing knowledge useful for learning, exchanges of experiences and ideas, discussions of various academic and social issues and seeking help and

support during learning activities. It appears to be natural for them to create posts, share information and conduct online discussions.

The blended e-learning approach using both autonomous and collaborative learning improves community level interactions: social presence, roles and rules. Online participation is more oriented toward social interaction, and user-created content takes precedence over the presentation of information in a social context (Brown & Adler, 2008; Davies & Merchant, 2009).

Other studies in the field of social presence and online communities in e-learning context have found this to be a principal factor influencing students' motivations to engage in social interactions. The study of Cheung, Chiu, & Lee (2011) has confirmed the principal role of the online social presence of students in determining their engagement. This engagement of online students is directed toward the achievement of activities in the community. In this context, students are not only considered contributors of information but creators of a context that nurtures a vibrant online community.

Conclusion

The presentation of a structured and flexible learning process for students, followed by a set of individual activities and then grouping students together to discuss individual work and share knowledge through synchronous or asynchronous discussion is a blended learning solution, one that is more favorable to e-learning than the individual or collaborative approach undertaken by individuals alone.

We should not forget the added value of the online tutor in the learning process. The researcher believes that the tutor function is strongly bound to the devices in which the tutor's role is embedded. The study found that the quality of the mediation of the tutor in the context of individual, collaborative or blended learning has an added value for learning, favoring ease of learning when the tutor has the role of facilitator. We then observed that tutoring is not only a function of mediation but also of re-mediation. The tutoring function requires that the tutor have certain attitudes towards student and the teaching of new skills. The tutor thus plays an active role in the development of the learning device as well as in the process of learning. A characteristic that sets this model of learning apart from others is the possibility of changing learning resources on the basis of the needs of students, thus providing for flexibility and adaptability to the needs of students. However, in collaborative learning, we observe a new situation: the tutor is sometimes excluded from the workgroup by students themselves. This situation encourages us to examine coverage of the tutoring function by the group of students and perhaps explore the question of leadership. In other words, we may wish to examine in what ways students designated as leaders in the group may sometimes represent an alternative to tutoring.

We suggest that teachers, trainers, tutors and all actors in online education use blended e-learning, which combines the advantages of individual and collaborative learning, in other discipline to benefit from online learning and teaching in higher education.

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