Fourth Study

Cairo University

Faculty of Graduate Studies for Education
Dept. of Curriculum and Instruction

The Effect of Blended Learning Model on Secondary Stage

Students' Achievement

By
Selim Shawky El-Sayed Tealib
Senior English Teacher & Teachers' Trainer

Prof. Dr. Awatef Ali sheir
Professor of Curriculum and EFL Instruction
Faculty of Graduate Studies for Education
Cairo University

Abstract.

The purpose of this research was to determine the effect of blended learning model on the Secondary Stage students' achievement. This research used experimental research method with randomized control group pretest-posttest design. The study was carried out with (60) students at Giza Governorate Secondary Schools, where (30) of whom were in the experimental group and (30) of whom were in the control group. In the experimental group, teacher used blended learning as instructional model, while in the control group, the course was taught based on the regular teaching model. Data collected from the result of learning objective test with 35 questions. The findings of the research revealed the significance of the t-test values for the difference between the pre- and post- administration of the blended learning model. Based on the result of this research, it can be concluded that the blended learning model contributed more to the students' achievement. The study recommended using blended learning to develop students' achievement.

 Keywords: blended learning, instructional model, students' achievement

الملخص:

كان الغرض من هذا البحث هو تحديد تأثير نموذج التعلم المدمج على تحصيل طلاب المرحلة الثانوية. استخدم هذا البحث أسلوب البحث التجريبي مع تصميم مجموعة ضابطة عشوائية قبل الاختبار البعدي. أجريت الدراسة على (٦٠) طالباً في مدارس محافظة الجيزة الثانوية حيث كان (٣٠) منهم في المجموعة التجريبية و (٣٠) منهم في المجموعة الضابطة. في المجموعة التجريبية ، استخدم المعلم التعلم المدمج كنموذج تعليمي ، بينما في المجموعة الضابطة ، تم تدريس المقرر بناءً على نموذج التدريس العادي. تم جمع البيانات من نتيجة اختبار موضوعي التعلم مع ٣٥ سؤالا. أظهرت نتائج البحث أهمية قيم اختبار t للفرق بين الإدارة السابقة واللاحقة لنموذج التعلم المدمج. بناءً على نتيجة هذا البحث ، يمكن الاستنتاج أن نموذج التعلم المدمج ساهم بشكل أكبر في تحصيل الطلاب. أوصت الدراسة باستخدام التعلم المدمج لتطوير تحصيل الطلاب .الكلمات الرئيسية: التعلم المدمج ، النموذج التعليمي ، إنجاز الطلاب.

INTRODUCTION

Blended learning is the combination of traditional (face-to-face) and online learning so that instruction occurs both in the classroom and online (Garrison &Vaughan, 2008). Blended learning integrates the advantages of online learning with some advantages of face-to-face learning. Then, it maximizes the efficiency of classroom training and provides better reinforcement in the web-based elements. Through blended learning, the students had prepared for the course in the classroom and it can be more efficient because the students may discuss with their teachers and their friend that they could not do during classroom interaction. (Horton, 2002).

Instructional model is an important component that can affect the effectiveness and efficiency of teaching and learning process. An instructional model serves a good master plan for teaching. Besides, it is also a conceptual framework which describes a systematic procedure in organizing learning experiences to achieve certain learning goals and serves as a guide for the teachers in planning and implementing learning activities (Jakarta, 2005). To implement an instructional model, the teachers provide various learning aspects to achieve learning objectives (Branch & Kopcha, 2014) Furthermore, instructional model encourages students to get involve in teaching and learning process. By doing that, student centered learning can be realized.

On the other hand, there is still a learning process which is done by emphasizing the method of lecturing and memorizing. By using this old method, the students have less experience in getting information in the learning activities. In this globalization era, it is easy for the teacher and the students to find the internet connection because of spread of computer and the existences of internet connection. (Yapici & Akbayin & JET, 2012 p. 11).

Statement of the problem

The problem of the study can be stated that students of the secondary stage lack the experience of using blended learning.

Purpose of the study

This study aimed to:

1- Identify the adequate advantages of using blended learning.

2- Indicate the features of the proposed program based blended learning for developing the secondary school students' achievement.

3- Explore the effect of the propose program based on blended learning for developing the secondary school students' achievement.

Hypotheses of the Study

1. There is a statistically significant difference between the mean scores attained by the experimental group and the control group in the posttest administration of the blended learning model in favor of the experimental group.

2. There is a statistically significant difference between the mean scores attained by the experimental group in the pretest and posttest of the blended learning model in favor of the posttest mean scores.

Definitions of the Terms:

Blended Learning

According to Carbonell, Hebert, & Gijselaers (2013), "In the simplest form blended learning is a mixture of physical classroom activities and learning activities supported through online technologies" (p. 29).

Banados, (2006: 534). Stated that it is a combination of technology and classroom instruction in a flexible approach to learning that recognizes the benefits of delivering some training and assessment online but also uses

other modes to make up a complete training program which can improve learning outcomes and/or save costs.

For the researcher, blended learning is defined as the deliberate integration of online technology into a face-to-face learning environment to the end of enhancing the learning experience.

Instructional model

Jakarta, (2005) defined Instructional model as an important component that can

affect the effectiveness and efficiency of teaching and learning process. An instructional model serves a good master plan for teaching. Besides, it is also a conceptual framework which describes a systematic procedure in organizing learning experiences to achieve certain learning goals and serves as a guide for the teachers in planning and implementing learning activities.

Branch & Kopcha, (2014) defined it as a process in which the teachers provide various learning aspects to achieve learning objectives. Furthermore, it encourages students to get involve in teaching and learning process. By doing that, student centered learning can be realized. it should provide the pragmatic level and the practical tools for the learners to be able to put into practice what they have learned.

For the researcher instruction model is the blended learning process which makes use of the face-to- face learning process and the on line learning process to get advantages of both processes.

Review of Related Literature
Theoretical Background of the study

Blended Learning

Internet technology supports the learning process through online learning (e-learning). E-learning is distant learning environments in which internet and network technologies are used for presenting and receiving the content used (Horton,2002). E-learning ensures the flexibility and efficiency which cannot be found in classroom environment. It is allowed the student to learn everywhere and every time.

Moreover, learning is not only based on technology but also it is a process of interaction between teachers, students and learning resources. That is not all learning can be done by online environment (Bersin, 2004). Although e-learning has several advantages, there is also several limitations of online learning environment. It cannot replace learning in the classroom. Face to face learning provides the social interaction which is needed for learning. In other words, face-to-face processes are important and it should not be left behind in learning (Sukmadinata, 2007).

The two instructional models, online and traditional (face to face) model have several advantages and disadvantages. It is better to the teacher to combine the two teaching models. The combination of e-learning and traditional face to face learning may integrate in teaching and learning process. It is known as blended learning (Akkoyunlu, & Soylu,2008 p.11).

On the other hand, the formula for organizing a well-blended learning course is not easy. The teachers encourage to re-think and redesign courses that afford students more, and it requires to the teacher to practice how to teach by using blended learning in the classroom to get the good result (Jeffrey, Milne &.

Suddaby, 2014). In short, applying the blended learning as instructional model will take the teachers' serious effort in order to get maximum benefit. (p. 121-140).

Method

In this study applied experimental method. The randomized control group pretest-posttest design was used. Students were divided into two groups, experimental group and control group. Both of the groups were given different treatment. In experimental group teacher used blended learning model (part online, part face to face), while in control group regular learning model was used. Online learning available at *(http://measurement.netfast.org/syllabus/)* was designed by using Moodle, a Learning Management System (LMS). Figure 1 below.

Fig. 1. Homepage screen of online learning
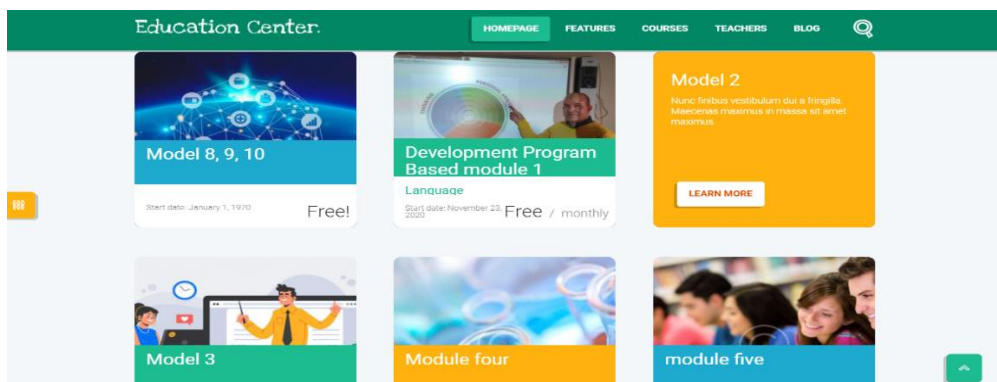
Instruments of the Study

To fulfill the purpose of the study, the researcher designed the following instruments:

a) A need analysis

b) a pre-and post-test to measure the EFL secondary students' achievement.

participants

The participants in this study consisted of all of students enrolled in the information and communication technology course at the first grade of Giza Secondary School Students 2020/2021 academic year. Selecting of sample used random sampling technique. There were 30 students in the experimental group and 30 students in the control group.

The Pre-post Test

Description

The developed pre-post Test in its final form consisted of (40) questions and the total mark was 40 marks. The results of the pre-post Test were treated both quantitatively and qualitatively.

Validity of the teacher's competency pre-post Test.

In order to ensure the validity of the teacher's competency pre-post Test, the researcher used these types of validity measures:

Inter-rater Validity:

The initial form of the pre-post Test was validated by (5) professors of Curriculum and EFL Instruction in some Egyptian universities and (5) EFL governmental supervisors.

The initial form of the pre-post Test was presented to the jury.

The jury members were asked to:

1. Judge the questions of the test in terms the formation, suitability and appropriateness for the EFL teachers.
2. Determine if these questions were measurable and could be used to assess the secondary stage students.

The jury members disapproved the initial form of the pre-post Test and their major comments dealt with the following suggestions:

1. Reforming some questions to be clearer for the participants.

2. Modifications were made according to jury members' suggestions. So, the form of the pre-post Test deemed to be valid.

Constructive validity of the pre-post test

The test was administered to (30) students. Cronbach alpha correlation coefficient was calculated. A practice was considered valid if its correlation coefficient to the T-test was (.05) and had statistical significance. (Table 8).

Pre-Control & pre-Experimental

Table (8)
t-test for the experimental and the control groups

Variable		N	Mean	S. D	T-Test	Sig	Eta (R^2)
Domain 1	Experimental	30	12.32	6.32	.0506	0.954	0.013
	Control	30	13.01	6.58			
Domain 2	Experimental	30	9.25	4.26	.0220	0.892	0.005
	Control	30	9.95	4.95			
Domain 3	Experimental	30	19.45	10.32	.128	0.900	0.069
	Control	30	18.99	11.02			
Domain 4	Experimental	30	4.26	2.06	.0121	0. 632	0.085
	Control	30	5.01	2.25			
Total Test	Experimental	30	38.39	12.32	.059	0.869	0.019
	Control	30	39.01	11.95			

Reliability of the pre-post test

In order to establish the reliability of the pre-post test, the researcher used Cronbach 's Alpha using statistical package for the social science (SPSS). The reliability coefficient of the alpha Cronbach was (0.739), which is relatively high. Consequently, the test could be considered as a reliable one. The results are shown in table (10).

Table (10)

Cronbach's Alpha values for determining the pre-post test reliability.

Variable	Domain	Number of practices	Cronbach's Alpha	Intrinsic Validity	Significance
Domain 1	Grammar	10	0.78	0.88	Accepted
Domain 2	Idioms	10	0.92	0.96	Accepted
Domain 3	Vocabulary	10	0.89	0.94	Accepted
Domain 4	Skills	10	0.92	0.96	Accepted

The researcher found that the reliability coefficient of pre-post test ranged between (0.78 – 0.95) which was >0.5. This means that the pre-post test is considerably reliable. Also, the intrinsic validity values ranged between (0.88 – 0.98). These results in turn showed that the pre-post test had a high level of reliability and high level of intrinsic validity.

Results and Discussions

To fulfill the purpose of the study and answer the study question stating, "What is the effect of the proposed program based on blended learning for developing EFL secondary stage students' achievement?", the researcher tested the following two hypotheses:

The first Hypothesis stated that " *There are statistically significant differences in the mean score of the pre-post-test implementation on the experimental group in favor of the post implementation".*
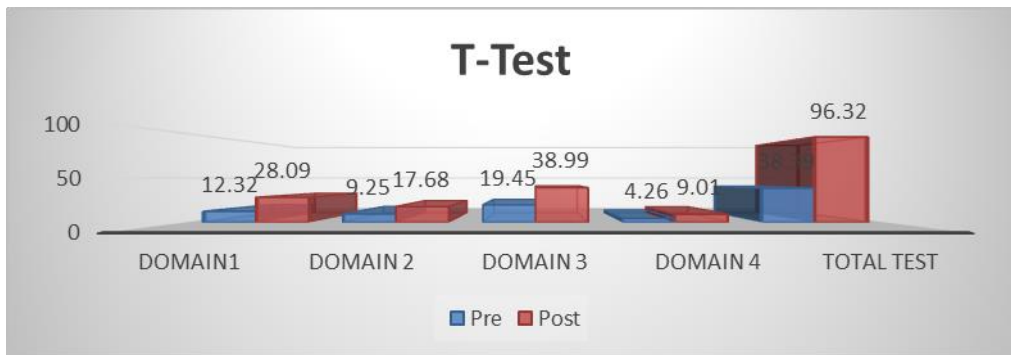
To verify this hypothesis the researcher administered the pre- and post- test and on the EFL secondary stage teachers of English and the results were as follow:

Table (16)

The T-test comparing the pre- and post-administrations Mean Scores of the Experimental Group in the EFL teachers' competencies

Variable		N	Mean	S. D	T-Test	Sig	Eta (R^2)
Domain 1	Pre	30	12.32	6.32	12.306	0.001	0.842
	Post	30	28.09	8.21			
Domain 2	Pre	30	9.25	4.26	9.520	0.001	0.822
	Post	30	17.68	6.85			
Domain 3	Pre	30	19.45	10.32	14.328	0.001	0.739
	Post	30	38.99	9.28			
Domain 4	Pre	30	4.26	2.06	6.211	0.001	0.790
	Post	30	9.01	3.81			
Total Test	Pre	30	38.39	12.32	32.392	0.001	0.900
	Post	30	96.32	14.63			

The results prove to be statistically consistent with the above stated hypothesis. Thus, the second hypothesis is supported. Furthermore, the growth of the experimental group teachers concerning their competencies before and after the implementation of the proposed blended program is compared in figure (18)


The Second Hypothesis stated that " *There are statistically significant differences between the experimental and the control group in the post administration of the test in favor of the experimental group".*

To verify this hypothesis the researcher calculated the t-test table (17)

Variable		N	Mean	S. D	T-Test	Sig	Eta (R^2)
Domain 1	Control	30	12.65	7.01	13.02	0.001	0.752
	Experimental	30	28.09	8.21			
Domain 2	Control	30	9.33	5.65	9.885	0.001	0.822
	Experimental	30	17.68	6.85			
Domain 3	Control	30	18.63	11.02	15.201	0.001	0.801
	Experimental	30	38.99	9.28			
Domain 4	Control	30	4.95	3.10	7.226	0.001	0.759
	Experimental	30	9.01	3.81			
Total Test	Control	30	39.01	13.00	33.962	0.001	0.809
	Experimental	30	96.32	14.63			

• The first the test 28.09 and a standard deviation of 8.21 while the control

means after 12.65 and a standard deviation of 6.32 and the value of t is 13.02,

which is statistically significant at 0.001 and the proportions of the effect size

were 75%, which is according to the criteria. Cohen is too high.
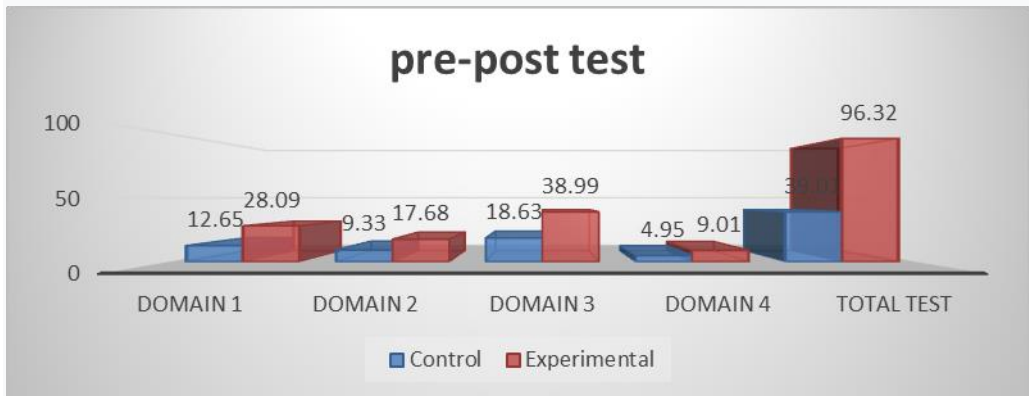
Implementation of a blended approach to the learning process

The instructional learning model provides instructors with the capability of generating personalised e-learning processes focused on some educational objectives and on the characteristics and needs of learners.

Orthogonally to this instructional view is the learner's perspective, in the sense of how the learning should take place for learners to optimally acquire the

knowledge. A series of specialists in the subject advocate a blended learning solution (Cross, 2003; Davies, 2003; Hulm, 2003; Thorne, 2003). Blended learning is used to describe learning that mixes various event-based activities: self-paced learning, live e-learning, and face-to-face classrooms.

Self-paced learning is what the learner does by executing the e-learning process. Self-paced activities can be taken at the learner's leisure, that is, can be taken anytime and anywhere. The important thing these days is not only to access knowledge but also to access relevant and interesting knowledge in time. The value of self-paced learning is not only that it can reach everyone at anytime and anywhere, but that it can teach the learner appropriately, providing the right skills at the right time.

Live e-learning takes place in a virtual classroom at a scheduled time at which learner undertakes to attend, just as they would a traditional class, minus the travel. Learners can collaborate, share information, and ask questions of one another and of the instructor in real time. Live e-learning is good for sharing information. This type of training works best if the class size is limited to 25 people to allow for optimal group interaction.

Traditional classroom training will always be, despite its defects, an effective means of learning. Classroom training is still unbeatable for the amount of face-to-face interaction with both the instructor and classmates that is necessary to learn certain management, leadership, and other highly collaborative skills (Michell 2001).

The self-paced learning and live e-learning facets of blended learning have the following properties:

- Dynamic: have experts online, the best sources and fast access to information for quick reaction.

- At real time: you get what you need, when you need it.
- Collaborative: because people learn from one another. Blended learning connects students with colleagues or experts both in and outside the organisation.

- Personalised: each student selects his or her activities from a personal menu of learning opportunities most relevant to his or her background, job, or carrier.
- Comprehensive: provides learning events from many sources enabling the learner to select a favoured format or learning method or training provider.
- Enabling the organisation: e-learning forms learning communities whose members forge ahead.

An efficient blended learning solution includes a mixture of the three learning types with the following ingredients:

1- An instructor that directs learning.

2- Email and telephone assistance for personalised learner support.

3- Virtual classes by means of computerised videoconference, in which the instructor explains specific learning subjects to the group and learners raise questions.

4- Interaction between learners and the instructor and between the learners themselves through the chat to stimulate group learning.

5-Support and query line for subjects related to learning management (enrolment LMS platform problems, etc)

6- Assessment examinations.

Discussion and Interpretation of Results

The results of the statistical analysis underscored the effectiveness of the proposed professional program based on blended learning on developing the secondary stage students' achievement.

In this instructional model, learning activities can be done by online and face to face learning, it takes advantages of both two teaching models. By combining these two models, efficient learning can be achieved [21,22,23]. In this study, the submission of material was done through online learning so that face-to-face learning can run effectively and efficiently. Learning can be done anytime and anywhere. It also reduces instructors' workloads and they have more time to work with other material.

Furthermore, blended learning helps the students in achieving learning objectives. This result is similar with the resembles studies [19,20].

Blended learning model encourages students to learn more actively. They have opportunity to learn on their own pace. They can prepare themselves for the course before coming to the class and it can realize student centered learning and reflect the value of 21 century education [5,23,24,25]. The research indicated that student who attended blended learning course had higher achievement scores than those who attended traditional teaching. The survey results are in line with other researchers [4,14], who also argued that blended learning effective for increasing students' performance. Most of those studies also found that blended learning improves the academic achievement averages [15,16,26].

The present study was not only given a concern about how to balance the online learning and face to face learning, but also give attention to content to be provided. Blended learning can help teachers to provide several formats of learning material [21]. Then, it can increase student motivation and they can get new experience on learning process. The other relevant study also stated that blended learning can help for enhancing students' motivation [19,24,27]. In this research, content was presented in various formats such as text and also video format. Each learning topic was provided with a quiz as an evaluation. Last, discussion forums were also available as a communication and sharing media between teachers and students and among fellow students.

Conclusion

The aim of recent study was to determine the effect of blended learning model on students' achievement. The scores obtained from the learning objective test that applied to the experimental and control group were compared. There is a difference in the learning outcomes of students, where the average learning results of

experimental group is higher than control one. Also, there is a significant increment in student learning outcomes on information and communication technology subjects after using blended learning. Based on the research, findings revealed that the blended learning model contributed more to students' achievement than the regular learning model did. Blended learning can be used as an alternative learning model for teachers in order to support students' learning achievement. To implement this model, teachers should develop their computer and internet literacy rate. School has the important role to provide training or workshop for the teachers in applying this model. This research is still limited to information and communication subject, it is hoped that further research will be conducted for other courses and also it is suggested to give a concern about how to blend professionally between face to face and online instruction.

References

1. U. Winataputra. *Model-model pembelajaran inovatif* (UT, Jakarta, 2005)
2. P.Eggen,D.Kauchak,*Educational psychology :windows on classrooms* (Pearson/Merrill/Prentice Hall, Upper Saddle River, N.J, 2007)
3. R.M. Branch, T.J.Kopcha, *Instructional design models* (Springer, New York, 2014)
4. V. K. Ceylan, A. E. Kesici, Journal of Human Sciences, **14**, 1 (2017)
5. I.U. Yapici, H. Akbayin, TOJET, **11**, 2 (2012)
6. W. Horton, *Designing web-based training* (John Wiley, New York, 2002)
7. J.Bersin, *The blended learning book; best practices, proven methodologies and lesson learned* (Pfeiffer Publishing , San Francisco, 2004)
8. N. S.Sukmadinata, *Landasan psikologi proses pendidikan* (Remaja Rosdakarya, Bandung, 2007)
9. C.J.Bonk, C.R.Graham, *Handbook of blended learning: Global Perspectives, local designs* (Pfeiffer Publishing, San Fransisco, 2004)
10. C.C.Chen, K.T.Jones, The Journal of Educators Online, **4**, 1 (2007)
11. B.Akkoyunlu, M.Y.Soylu, J. Educational Technology & Society, **11**, 1 (2008)
12. A.P. Rovai, H.M. Jordan, International Review of Research in Open and Distance Learning, **5**, 2 (2004)
13. D.R.Garrison, N. Vaughan, *Blended learning in higher education* (Jossey-Bass, San Fransisco, 2008)
14. S.B.Sjukur, Jurnal Pendidikan Vokasi, **2**, 3, (2012)
    N.Vernadakis,M.Giannousi,V.Derri,M.Michalopoulus, E.Kioumourtzoglou, *Procedia technology*, **1**, 439-443 (Elsevier, The Netherlands, 2012)
15. C. Akarawang, Edulearn, **10**, 1 (2016) 17. J. Poon, JOLT, **9**, 2 (2013)
18. L.M. Jeffrey, J. Milne and G. Suddaby, JITE: Research, **13**, 121-140 (2014)

19. D.R.Garrison, H.Kanuka, The Internet and Higher Education*, **7**,2 (2004)
20. B. Kistow, Caribbean Teaching Scholar, **1**, 2 (2011)
21. Husamah, *Blended learning* (Prestasi Pustaka, Jakarta, 2014)
22. A.M. Bliuc, P. Goodyear, R.A.Ellis, Internet and Higher Education, **10**,231-244 (2007)
23. P.Sharma, ELT Journal, 64, 4 (2010)
24. P.Zaka, Journal of Open, Flexible, and Distance Learning, 17, 1 (2013)
25. T.Aytac, UbiCC Journal, 4, 3 (2009)
26. Y.C.Lee, K. Lau, V.W.Y. Yip , AAOUJ, 11, 2 (2016)
27. A.Buran, A. Evseeva, *Procedia - Social and behavioral sciences*, 206,177-182 (Elsevier, The Netherlan