IJOCIT
ISBN: 2345-3877
www.ijocit.org
Volume 4, Issue 3

Original Research

An Experimental Study on Interactive Based Learning Environment States and Student Achievement in English as a Foreign Language

Saeed Ashrafi [1*]
Arash Hasanzadeh [2]
Gholamreza Sheikhi Hesar [2]
Zhila Ghahramani Jamadi [2]
Fatemeh Niksefat [2]
Somayeh Feizi [2]
Hasan Mohammadikhah [2]

Received: 07 May 2016
Accepted: 19 Aug 2016

Abstract
The fast growing accessibility and capability of emerging technologies have fashioned enormous potential of designing, developing and implementing innovative pedagogy methods in the learning environments. Utilizing interactive learning in current years has fantastic results on student learning and their achievements, because the global technological scenario has paved the way to new pedagogies in teaching-learning process. On the other side methods by focusing on students and the ways of learning in them can illustrate logical ways of improving student achievement in English as a foreign language. The sample of study was 60 students of 10th grade of high school located in Ardebil. A pretest-posttest equivalent group designed to compare the achievement of groups. Students were divided to 3 groups, Control based, computer based, Interactive based. Pretest and posttest contain 30items each from English textbook were developed and administrated, and then obtained data were analyzed. The results showed that there was an important difference .the 3rd group performance was best result in comparison. On the basis of this result it was obviously counseled that Interactive pedagogy has special roles in student's achievements and can be used in class environments or even in E-learning environments.

Keywords: environment, Computer based environment, English, student achievement, Pedagogy.

Citation: Ashrafi, S. et al (2016). An Experimental Study on Interactive Based Learning Environment States and Student Achievement in English as a Foreign Language, *Int. J. of Comp. & Info. Tech. (IJOCIT)*, 4(3): 79-84.

1 Department of Computer Engineering, University of Applied Science And Technology, Tehran, Iran
2 Department of Computer Engineering, Germi Branch, Islamic Azad University, Germi, Iran
* Corresponding Author: sa_586@yahoo.com

1. Introduction

Since humans try to understand objects and their relationship and after that try to transforming information to others, pedagogy begin. Pedagogy in its general sense is a form of learning in which knowledge, skills, and habits of a group of people are transferred from one generation to the next through teaching, training, research, or simply through auto didacticism [3].

The history of education according to Dieter Lenzen, president of the Freie Universität Berlin1994, "began either millions of years ago or at the end of 1770". Education as a science cannot be separated from the educational traditions that existed before. Adults trained the young of their society in the knowledge and skills they would need to master and eventually pass on. The evolution of culture, and human beings as a species depended on this practice of transmitting knowledge. In pre-literate societies this was achieved orally and through imitation. Story-telling continued from one generation to the next. Oral language developed into written symbols and letters. The depth and breadth of knowledge that could be preserved and passed soon increased exponentially. When cultures began to extend their knowledge beyond the basic skills of communicating, trading, gathering food, religious practices, etc., formal education, and schooling, eventually followed. Schooling in this sense was already in place in Egypt between 3000 and 500BC [6].

In this historical linear progression humans use different tools and equipment like boards, papers and etc. at the other side step by step ways of teaching and their philosophies developed. Now, because of the ICT revolution is a revolution in learning, it also has transformed available technologies, the mean and methods of studying, the modalities of school operations, the manner of investment and expenditure of resources and the very way we think about education could be and should do.

However, existing and emerging IT teaching tools provide further opportunities to enhance subjects and add value to teaching and learning. For example, the use of interactive whiteboards, video projection units, microscopes connected to computers, prepared spreadsheets to capture and model data, CD-ROMs, presentations with video and carefully selected resources from the Internet all provide examples of how IT can be embedded into subject teaching [1].

The use of IT by a teacher may involve little or no use of ICT by pupils and, consequently, may do little to apply and develop their ICT capability. However, use of ICT by the teacher can enhance and stimulate the learning experiences of pupils and contribute to the achievement of subject objectives. It is important to recognize the different contributions that IT can make to teach and learn efficiently.

In nowadays, due to enhancement of technology, educational institutions are serving more ethnically, and culturally diverse student body than ever before. Studies about education, Cognitive psychology, and neurology have offered new insights on how humans pedagogy. In addition, the infusion of technology has redefined work skills and society's expectations about what it means to be an educated person. Teachers are using different methodologies to teach their students in a better way.

There are a number of techniques and methodologies for diverse situations in the classrooms, and also many learning theories given by different psychologists. One of these is 'Constructivism,' which provides a valuable Framework for using computers and other technologies in interesting ways. With the help of the technology, students gain understanding about their world, and enhance their learning and work by increasing their connections with resources outside school walls. However, computers are not inherently instructional tools, and most teachers need suggestions for using them. Computers can support the variety of ways learners construct their own understanding. Students who gather information from the Internet can be self-directed and independent [2].

In between the methods and technology Interactive based learning environment show a new approach and direction in traditional and modern pedagogies. Teachers can choose what sources to examine and what connections to pursue. Depending on the parameters set by teachers, the students may be in complete control of their topics and their explorations. Of course, there has been some concern that educational institutes are investing in such delivery modes as a response to a 'technological imperative' [3] or as a cost-cutting exercise [4], rather than for good educational and pedagogical reasons. Further, it has been argued that such educational delivery neither is what students want [5], nor delivers a good learning environment [6].

Without any doubt, such concerns need to be addressed, but [7, 8 & 9] all indicate that it is not the actual technology of delivery that is important, but rather it is how the teacher/lecturer uses that technology to create new experiences for the learner that are important in creating a good learning

experience. There is also a growing body of literature arguing the need to create Internet-based learning solutions that are explicitly grounded in learning theory [10, 11, &12] to ensure a high-quality learning environment.

Researches have shown that the learning environment is an alterable educational variable which can directly influence cognitive and affective outcomes [13& 14]. Langford pointed out that 30–60% of our learning was due to our brain's wiring and 40–70% was a result of the environmental impact [15]. From this suggestion, it is obvious that, while the environment is not the only variable which affects learning outcomes, it is a very important one. Cooke pointed out that all innovative approaches, no matter how simple or complex should be designed with the students in mind. Students' perspective on such innovations is critical [16].

For many high school students, systematic integration of web-based applications into teaching routines is still in its infancy, so most of teachers and students couldn't use technologies but in this time by applying some of the research techniques associated with learning environments, the success of such innovative practices can be adequately ascertained.

2. Related works

The use of modern technology in teaching languages has been dramatically increasing worldwide over the past decade [17]. With the creation of the World Wide Web, it has become possible and feasible for language teachers to make effective use of instructional materials, especially in teaching language and culture [18].

Teachers play a crucial role in the adoption and implementation of IT in education since they are the key to making learning happen. Earlier studies for example, Pelgrum have reported, teacher's lack of IT knowledge and skills to be a major obstacle to implementation, and consequently pointed to the need for further training for teachers [19].

It is important to recognize that the introduction to computers into schools is much more complicated than the introduction of new educational technologies. It is a complex innovation, which poses considerable challenges to teachers into daily work. Education reforms require teachers to adopt new roles as more responsibilities for learning are given directly to the students. This change require that teachers be proficient in advising and guiding students through more autonomous, self-directed learning processes, while the same time monitoring curriculum standards achieved by students. According to Zandvliet and Fraser, students' satisfaction with their learning and classroom independence and task orientation are related to teachers' behaviors, instructional strategies, learning processes and learning settings. Although these factors are related to classroom psychosocial environment, no direct association between student satisfaction and measures of the physical classroom aspects (such as work space and visual environments) was found [20].

When new information technologies were used, significant associations between physical and psychosocial learning environment variables in the classrooms were reported by those authors. According to this point of view, students comprise the main facet of a classroom because their perceptions of the class's reality and their subjective interpretation of that reality constitute what determines their learning behavior in the classroom. Some studies found a strong correlation between academic achievement and the classroom learning environment of high-school biology students taught in an inquiry teaching/learning mode in classroom and laboratory settings, and they reported significant differences between chemistry students taught using inquiry and more conventional, expository methods. The constructivist conception of learning and its pedagogical application go hand-in-hand with the learning environment [21].

Krashen and Terrel suggest that, when teaching a second language, it is better to use language to transmit messages rather than to teach it explicitly for conscious learning [22]. It has been suggested that, whenever possible, teachers should show objects, draw pictures or act out meanings of what is said when trying to communicate with non-English speaking students [23].

Shomoosi and et al express that in an experimental study in Isfahan University ICT equipment can help to improve web based English teaching and virtual class situations. [24]Samadi and Bazargan prove than one of the most important elements of e-learning is IT and things that related to them and both of teachers and tutors should know how it works for their purpose. [25]

At the other side Seraji believe that teacher's role because of non-face to face commuinication with tutors is so important in virtual English classes and they should use special methods and strategies .[26] Asemi emphasize IT based English teaching can be more better than traditional ways if we consider correct methods that's base are on web or IT technology.[27]

3. Methodology

The sample of this study consisted of 60 male students of 10th grade studying at Shahriyari high school, Ardebil, Iran. Because of locating high school in downtown and being public students from various socio-economic backgrounds joint it. Most of the public sector institutions use traditional method of instruction in which teacher delivers lectures and students listen passively.

The age of 10th grade students ranged between 16 to 17 years and they had completed first fifteen lesson of their English textbook. Sample students were randomly divided into three groups i.e. control group and 2 experimental group, each consisting of 20 students on equivalent basis. The class sections were allotted randomly to control and experimental (computer base, Interactive base) groups.

To measure the achievement level of students, two different types of tests (pretest and posttest) were developed by the researcher which were administered after validation. The tests consisted of multiple choice items, short questions and comprehension exercise and listening and speaking quiz. The students of first experimental group were taught through using computer technology only by using just a computer in class for teacher and the students of second experimental group were taught through using Microsoft Kinect technology. they were provide a learning environment based on computer lab, internet usage, role playing, chatting, game, online material availability and web based instruction[Fig.1].

Kinect is a motion sensing input device by Microsoft for the Xbox 360 video game console and Windows PCs. Based around a webcam-style add-on peripheral for the Xbox 360 console, it enables users to control and interact with the Xbox 360 without the need to touch a game controller, through a natural user interface using gestures and spoken commands. [28]

Figure 1. Microsoft Kinect [29]

Table 1. Experimental Group and Control Group on Pretest P> 0.05 df=29

Group	N	df	Mean	SD	SE_D	t-value
1st experimental	20	29	24	8	6.70	0.653
2nd experimental	20	29	25	8	**6.80**	**0.678**
Control	20	29	22	8		

In this way of interactive pedagogy teacher explain all of essential cases of unit that he want to teach, then students after teacher's explanations start to interactive with Kinect by supervision of teacher in a network based classroom. Teacher chooses unit's application by his system and controls the students systems and their performance [Fig.2].

After collecting the data, the responses were scored; means and t-values were calculated for determining the significance. On this pre-testing the students were divided into three groups' i.e. first and second experimental groups and control groups. The test for achievement was conceptual in nature. Seven lessons were taught in the pre-testing ad similarly seven lessons were taught in the post testing. But these lessons were different from the pre-test. The split half method (odd-even) was used to test the reliability of post-test scores obtained by the students who formed the sample of the study. The coefficient of reliability was determined through the use of Spearman Brown Prophecy formula estimating reliability from the comparable values of the post-test. It was found to be 0.83

3.1. Research questions

1. Is there any significant difference between the achievement of students who got and who did not get instructions in interactive based learning environment according to their pretest and posttest results?
2. Is there any significant difference between the achievement of High achievers who got and who did not get instructions in interactive based learning environment according to their pretest and post test results?
3. Is there any significant difference between the achievement of Low achievers who got and who did not get instructions in interactive based learning environment according to their pretest and post test results?

Table 1 depicts that the calculated value of t = 0.678 and t = 0.653 are less than the table value =2.02 at $\alpha = .05$ level. It explains that there is no significant difference between the achievements of Experimental group and Control group at the time of pre-test. Hence, the null hypothesis is supported.

Table 2. Experimental Group and Control Group on Posttest P> 0.05 df=29

Group	N	df	Mean	SD	SE_D	t-value
1st experimental	20	29	33	8.21	1.52	2.35
2nd experimental	20	29	35	9.01	**1.76**	**2.53**
Control	20	29	31	6.24		

Table 2 shows that the calculated value of t =2.53 and t=2.35 are greater than the table value =2.02 at α =.05 level. It explains that there is a significant difference between the achievements of Experimental groups and Control group on posttest. Hence, the null hypothesis is not supported. Research question No 2. Is there any significant difference between the achievement of Higher achievers who got and who did not get instructions in technology based learning environment according to their pretest and posttest results?

Table 3. High Achievers of Experimental Group and Controlgroup on Pretest P> 0.05 df=2

Group	N	df	Mean	SD	SE_D	t-value
1st experimental	3	2	33	1.5	1.12	0.453
2nd experimental	3	2	33	1.7	**1.2**	**0.491**
Control	3	2	32	2.5		

Table 3 explains that the calculated value of t =0.491 and t=0.453 are less than the table value =2.78 at α =.05 level. It indicates that there is no significant difference between the mean scores of Higher achievers of Experimental group and Control group at the time of pre-test. Hence, the null hypothesis is supported.

Table 4. High Achievers of Experimental Group and Controlgroup on Posttest P> 0.05 df=2

Group	N	df	Mean	SD	SE_D	t-value
1st experimental	3	2	40	0.95		4.20
2nd experimental	3	2	46	0.81		**4.76**
Control	3	2	36	1.24	0.84	

Table 4 explains that the calculated value of t =4.76 and t=4.20 are greater than the table value =2.78 at α =.05 level. It indicates that there is a significant difference between the mean scores of higher achievers of Experimental group and Control group on posttest. Hence, the null hypothesis is not supported.

Table 5 explains that the calculated value of t =0.485 and t=0.458 are less than the table value =2.78 at α =.05 level. It indicates that there is no significant difference between the mean scores of Low achievers of Experimental group and Control group at the time of pre-test. Hence, the null hypothesis is supported.

Table 5. Low Achievers of Experimental Group and Controlgroup on Pretest P> 0.05 df=2

Group	N	df	Mean	SD	SE_D	t-value
1st experimental	3	2	14	1.25	1.43	0.458
2nd experimental	3	2	15	1.30	1.58	0.485
Control	3	2	13	2.50		

Table 6. High Achievers of Experimental Group and Controlgroup on Posttest

Group	N	df	Mean	SD	SE_D	t-value
1st experimental	3	2	18	1.14	3.02	2.50
2nd experimental	3	2	24	0.94	**3.79**	**2.98**
Control	3	2	13	6.39		

Table 6 explains that the calculated value of t =2.98 is greater than the table value =2.78 at α =.05 level. It indicates that there is a significant difference between the mean scores of Low achievers of Experimental group and Control group on posttest. Hence, the null hypothesis is not supported.

4. Discussion

The focus of the study was to determine the effectiveness of interactive based learning environment in which instructions are imparted through Information Technologies (ITs) and teaching methods and its impact on student achievement in English as a foreign language. Results in pretest indicated that there was no significant difference between the achievement scores of the control group and the experimental groups. It proves that the traditional teaching method does not enhance academic abilities of the students at desirable level and obviously showed that only equipment can't make abilities so good.

When compared with the results in posttest, it is clear that the students performed better when taught in inactive technology and method based learning environment and it helps students develop the abilities of knowledge, comprehension and application as the items of achievement tests were based on these measures. Both the high achievers and low achievers of experimental group showed significant difference in the mean score of achievement on posttest that suggests the effectiveness of Information Technologies in teaching learning process as compared to traditional method. It is also evident that the existing methods of teaching English do not involve the usage and application of ITs and it also shows that teachers are not trained in modern instructional techniques. Consequently, the students of experimental group

showed significant better performance when compared with control group on scores of posttest.

References

[1] Salmon, G. (2005). Flying not flapping: A strategic framework for e-learning and pedagogical innovation in higher education institutions. ALT-J Research in Learning Technology, Vol.13, pp.201–218.

[2] Harmon, S. W., & Jones, M. C. (1999). The five levels of Web use in education: Factors to consider in planning online courses. Educational Technology, Vol.39, no.6, pp.28–31.

[3] Holt, D. M., & Thompson, D. J. (1998). Managing information technology in open and distance education. Distance Education, Vol.19, no.2, pp.197–216.

[4] Jackson, B., & Anagnostopoulou, K. (2001). Making the right connections: Improving quality in online learning. In J. Stephenson (Ed.), Teaching and learning online: New pedagogies for new technologies.

[5] Simonsen, M. (1995). Does anyone really want to learn at a distance? Techtrends, 40(5), 12. Learning Environ Res (2007) Vol.10, pp.189–206

[6] Reeves, T. C. (1994). Evaluating what really matters in computer-based education. In M. Wild & D. Kirkpatrick (Eds.), Computer education:New perspectives (pp. 219–246). Perth, Australia: MASTEC.

[7] Bennet, S., Priest, A., & Macpherson, C. (1999). Learning about online learning: An approach to staff development for university teachers. Australian Journal of Educational Technology, Vol.15, pp.207–221.

[8] Neo, K. T. K., & Neo, M. (2001). A constructivist learning experience:Reconstructing a web site using web based multimedia authoring tools. Australian Journal of Educational Technology, Vol.17, no.3, pp.330–350.

[9] Torrisi-Steele, G. (2002). Technology for the sake of learning—A planning approach for integrating new technologies in tertiary learning environments. The Eighth Australian World Wide Web Conference, 6–10 July, Twin Waters Resort, Sunshine Coast, Australia (pp. 349–362). Lismore, Australia: Southern Cross University. Retrieved January 23, 2008,fromhttp://www.ausweb.scu.edu.au/aw02/papers/refereed/torrisi/in dex.html.123 World Academy of Science, Engineering and Technology 61 2010

[10] McMahon, M. (1997, December). Social constructivism and the World Wide Web—A paradigm for learning. Paper presented at the annual meeting of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE), Perth, Australia. Retrieved January 23,2006,fromhttp://www.ascilite.org.au/conferences/perth97/papers/Mcmah on/Mcmahon.html.

[11] Pear, J. J., & Crone-Todd, D. E. (2002). A social constructivist approach to computer-mediated instruction. Computers and Education, Vol.38, pp. 221–231.

[12] Ring, G., & McMahon, M. (1997, December). Web instruction: Searching for a theoretical basis. Paper presented at the International Conference on Computers in Education (ICCE97), Kuching, Malaysia.

[13] Wang, M. C., Haertel, G. D., & Walberg, H. J. (1993). Toward a knowledge base for school learning. Review of Educational Research, Vol.63, pp.249–294.

[14] Waxman, H. C., & Huang, S. (1998). Classroom learning environments in urban elementary, middle and high schools. Learning Environments Research, 1(1), 95–113. doi:10.1023/A:1009940816549.44 Learning Environ Res (2009) Vol.12, pp.31–44

[15] Langford, P. (1989). The process of learning. In P. Langford (Ed.), Educational psychology: An Australian perspective (pp. 43–64). Melbourne, Australia: Longman Cheshire.

[16] Cooke, S. (2005, September). Theme speaker—Implementation. Paper presented at the Association of Learning Technology Conference, Manchester, UK.

[17] Tucker, B., Jones, S., Straker, L., & Cole, J. (2003). Course evaluation on the web: Facilitating student and teacher reflection to improve learning. New Directions for Teaching and Learning, Vol. 96, pp.81–93.

[18] Oliver, R., & Herrington, J. (2003). Exploring technology-mediated learning from a pedagogical perspective. Interactive Learning Environments, Vol.11, pp. 111–126.

[19] Pelgrum, WJ & N Law (2003). "ICT in Education around the World: Trends, Problems and Prospects." International Institute of Educational Planning, UNESCO. Paris. P. 17-122.

[20] Zandvliet, B.D., & Fraser, .B.J (2005). Physical and Psychosocial environments associated with networked classroom. Learning Environments Research, Vol.8, pp. 1-17.

[21] Schelfhout, W., Dochy, F., & Janssens, S. (2004). The use of self, peer and teacher assessment as a feedback system in a learning environment aimed at fostering skills of cooperation in an entrepreneurial context. Assessment & Evaluation in Higher Education, Vol.29, pp.177–201.

[22] Krashen, S. D., & Terrel, D. T. (1983). The natural approach: Language acquisition in the classroom. Oxford: Pergamon.

[23] Claire, E., & Haynes, J. (1994). Classroom teacher's ESL Survival Kit 1. Englewood Cliffs, NJ: Prentice Hall Regents.

[24] Nematullah Shomoossi, Ahmad Moinzadeh & Saeed Ketabi Web-based English language teaching: Preconceptions from university teachers in Iran Iranian Journal of Language Studies (IJLS), Vol. 1, no.4, pp. 249-266

[25] Vahid Samadi, Abbas Bazargan, Golamali Montazer, knowing key elements of success of e-learning arrangement in Iran Universities 2nd International conference E-learning and E-Teaching, Poly technique University, Tehran, Iran

[26] Farhad Seraji , Mohammad Ataran , Majid Aliasgari , Teacher's role in Virtual Universities 3rd National and 1st International conference E-learning and E-Teaching,Khaje nasir University, Tehran, Iran

[27] Mostaf Assi, Language teaching linguistics and Information Technology , 2nd International conference E-learning and E-Teaching, Poly technique University, Tehran, Iran

[28] http://www.microsoft.com/games/consoles/Xbox/Kinect [Accessed on 15 Feburary 2015]

[29] http://www.microsoft.com/2010/06/13/microsoft-kinect-official [Accessed on 8 September2015]

Contact to Author(s):
sa_586@yahoo.com
arash_hasanzadeh@ymail.com
hessar@gmail.com
alizhsport@yahoo.com
fatemeh.niksefat@gmail.com
somayeh.feizi@gmail.com
hasan.pirbalabighlou@gmail.com