

A BLENDED EDUCATION PROGRAM BASED ON CRITICAL THINKING AND ITS EFFECT ON PERSONALITY TYPE AND ATTRIBUTION STYLE OF THE STUDENTS

Leili MOSALANEJAD
Department of Nursing
Jahrom University of Medical Sciences Jahrom, IRAN

Ahmad ALIPOR
Department of psychology,
Paymnoor University, Tehran. IRAN

Bahman ZANDI
Department of Educational Curriculum Development
Paymnoor University, Tehran, IRAN

ABSTRACT

Blended learning is a mixture of the various learning strategies and delivery methods that will optimize the learning experience of the user. This research evaluated psychological effect of blended learning on student. This research is a quasi-experimental study. 41 students participated in two groups and they registered in the course of psychological diseases in the first semester of 2008–2009. Then, they were randomly divided into groups of traditional and blended methods. Data were gathered through Attribution Measurement Test and Neo Personality Test (Neo FFI). Descriptive statistics were used to evaluate the patterns of data distribution. Analytic statistics such as paired-t test and student t-test were utilized to compare the differences of between the mean scores in pre and post tests. Then analysis of variance (Manova Test) and chi square tests applied to evaluate the effects of research variables on each other. The mean score of academic achievement in the blended education group (Mean=15.67, SD=1.65, T=3.06, p=0,004), was higher than that of the traditional education (Mean=13.88, SD=2.06). In surveying the interaction between attribution style, type of teaching, and scores of academic achievement, it was revealed that there was a significant relationship between global–local favorable condition ($P=0,04$, $F=10/52$). Evaluating the interaction between type of teaching, student's final scores and personality type based on MANOVA TEST revealed that, there was a significant relationship between all personality factors (openness, extraversion, agreeableness and conscientiousness), except neuroticism criterion. The use of this educational method with standard designing strategies is recommended for teaching medical sciences.

Keywords: Attribution style; personality aspect; blended learning; academic achievement.

INTRODUCTION

Development Scientific dimension and technology with rapid declaration in brief information & Finding need to train learner that involve in learning and problem solving process and enjoy to interfacing with changes. Today, teaching and learning are mostly supported by digital material and electronic communication.

World Wide Web (Web- based learning (WBL), problem-based learning (PBL), and collaborative learning are at present the most powerful educational options in higher

education and the usage of the new teaching methods and specially electronic learning and the methods based on web is on the top of the curriculums of all countries and mainly the advanced countries. Taradi, et al (2005), Henrich, et al (2009).

New pedagogical paradigm is replacing with its unique characters. Therefore , it gives priority to use some techniques which can develop maximum learning for the students and provide the deepen learning by using the benefits of both classical and new methods .

In orderliness to respond to these requirements Blended learning has become an increasingly popular form of e-learning, and is particularly suitable to the process of transitioning towards c-learning front traditional forms of learning and teaching. Hoic, et al 2009). In teaching the medical sciences we can not just use electronic learning because many medical sciences are taught parallel to other theoretical course. Using the integrated methods (blended) in teaching medical sciences by new pedagogical techniques will develop critical thinking of students and will deepen learning of the.

We can get some reasonable information about the mechanisms of the integrated learning through evaluating the research institutes and universities such as Stanford University and Tansy University. These researches report that the blended learning is better than the classical methods and the individual forms of electronic learning technology. These researches ensure us that the learning can not only transfer information more efficiently but it is also a more effective pedagogical method Alvarez (2005).

For example, Reynold (2008) maintains that the advantage of using blended learning for training dentists is their deepen understanding of subjects, so that most students prefer the blended learning and they consider the blended learning as an successful experiment for themselves. Purnima (2002) consider the blended teaching as a very successful method for teaching anatomy and they think that it is more effective than the classical teaching. So (2009) remarks that the blended learning derives its success from the acquaintance of students with electronic learning and collaborative learning. Sung, et al (2008) showed that information and knowledge of nurses increased remarkably, but this issue didn't have any significant effects on self-efficiency and practical use in the clinical skills. Retrouvey et al (2008) applied the blended learning to the dentistry students and they found that using this method could decrease the gap between theoretical and practical subjects.

We hope this research can provide a dynamic ground for studying the pedagogical researches in the field of medical sciences and also the results of this research can be used by our researches for attaining a better education. This research is meditating a proper design of blended learning and an evaluation of its effects on different psychological aspects of students including attributional pattern and personality type.

MATERIALS AND METHODS

This research is a quise-experiment study. Forty-one students participated in this study and they took the unit of psychological diseases in the first semester of 2008 –2009. Then the students randomly divided into two groups and they were taught by classical and blended methods. The population included all the students of Jahrom Medical Sciences University with the degree of B.A. The curriculum based on critical thinking was prepared by an integration of different teaching methods such as face-to-face, various methods of teaching to improve students' critical thinking (group discussion , learning based on problem solving, simulations , practical projects) and electronic learning (asynchronous), Then on the one hand , some of psychological factors of students were studied such as attribution pattern and personality type and academic achievement.

In pedagogical designing of this integrated method of teaching, the way of organizing the classroom was emphasized for encouraging critical thinking. Its main objective was to balance content and process of teaching, to balance lecture and interaction, to discuss in the classroom, to use student-centered methods for learning through designing homework and academic projects and the standards of pedagogical designing and planning were considered in it. Different assumptions proposed about blended learning can be divided into three categorizes:

- blended learning through personal method supported by the educational mediator for development of special skills and knowledge (needed skills)
- Integration of different learning methods into communicational means for development of special behaviors and perceptions (needed perceptions)
- Integrated learning with knowledge management and leadership for development of capabilities of work environment (needed capability). Harvey (2003).

It is obvious that a change of individuals' attitudes and conceptions has priority in the medical sciences, and then it is completed by development of capabilities and skills needed for learning. Therefore; it will be a suitable process to provide different kinds of teaching.

MANY MODELS ARE USED IN THE BLENDED LEARNING INCLUDING

Model A

This model is applied in the skills of mastery learning. Some factors like key-learning, online-learning, learning through personal interactions, and learning through sources are considered in this model.

Model B

This model contains different layers of learning and using various sources to reach the given goals. In this model, teaching begins with the classroom level and face-to-face method and then includes new teaching methods such as elearning and other sources.

Model C

This model is named the learner channel model. It begins with elearning and then presents learning based on case study and problem solving. And after those practical workshops are used to stabilize the findings and improve the students' skills Valitan (2002), Alvarez (2006) has introduced five models of the blended learning which can be used practically.

Model (1)

Self-taught electronic learning blended with other pedagogical methods and using other pedagogical methods

Model (2)

Instructing the teacher to present blended teaching with using self-taught methods of electronic learning

Model (3)

Live electronic learning with self-taught electronic learning

Model (4)

Self-taught learning through occupational reeducating by web

Model (5)

Self-taught electronic learning with using computer simulations.

The below eight stages have been considered in designing learning blended method and the aforementioned principles.

These eight stages include a general structure which presents both formal continuous pedagogical events and informal continuous blended learning activities:

Stage (1) Assurance of learner readiness

Stage (2) Representing the subject matters: Representation by teacher or on-line representation offers an opportunity to show the subject matters by a play or to distribute information among the learners.

Stage (3) Showing the work process: This stage explains learners how to accomplish a task as well as it is showed; and why, when, and where to do it.

Stage (4) exercise: This stage is a dynamic strategy to offer learners an opportunity for development of their skills.

Stage (5) Evaluation: It provides a proper feedback about learners' understanding of contents and education.

Stage (6) Giving support: When formal education is ended, the support stage starts. So giving enough support and providing needed sources can hold the balance for more effectiveness.

Stage (7) Lectureship: It offers learners an opportunity to heighten level of their learning about others' experiences of real world.

Stage (8) Cooperation: it offers learners an opportunity to completely participate in collaborative activities Key (2006).

Considering the integration of theoretical and practical units in the medical sciences and the necessity to change attitude and behavior and to improve skills and to encourage active self learning, we use an integration of the above assumptions with the blended methods and techniques. It should be also noted that presenting live classes is difficult in many cases, because of limitation of electronic teaching bases. It seems that the two first models are used more for teaching.

Data was gathered by Attribution Measurement Test. This questionnaire evaluates individuals' causal attribution for negative and positive consequences in the dimensions of causality, stability, and generality. The original form of this questionnaire assesses ten putative positions including five positions for evaluating individuals' causal attribution about negative and positive consequences (favorable and unfavorable condition). Cronbach's Alpha Coefficient of this test is reported /75 for bad internal consequences, /74 good internal consequences, /43 for bad stable consequences, /56 for good stable consequences, and /76 for bad general consequences. Peterson, et al (1982). Several researches also showed that this test had high validity in Iranian society Abolghasemi, et al (2005). Neo Personality Test (Neo FFI) with 60 questions reviews five criteria including neuroticism, extraversion, and openness to experience, agreeableness, and conscientiousness. McCrae, et al (1989, 1990).

This test was normalized by Haghshenas in Iranian society (2006). The calculated alpha coefficient is reported /63 for neuroticism, /63 for extraversion, /50 for openness, /75 for agreeableness, and /60 for conscientiousness. Then their academic achievements were measured by comparing the scores of two groups.

Descriptive statistics were used to evaluate the patterns of data distribution. Analytic statistics such as pair-t test and student t-test were utilized to compare the differences of between the mean scores in pretest and posttest, Then analysis of variances to significance between means and chi square test were applied to evaluate the effects of variables on each other by spss software

We used a 41-student class for this study included six boys and thirty-five girls; 86/6 percent of these students were single and most of them were between the ages of 20-22.

Result specified that the mean of academic achievement scores in the blended group was more than the traditional teaching one as a blended teaching had more effect on the improvement of students' final scores.

Table: 1
Evaluating the effect of teaching on students' academic achievement.

Student's final score	Mean	Standard Deviation	Independent t	Degree of significance
Integrated teaching group	15/67	1/65	3/06	/004
Classical teaching group	13/88	2/06		

Evaluating the difference between means of attribution test in the teaching group specified that although the means of posttests changed remarkably, they were not statistically significant ($p > 0.05$).

The evaluation of mean of scores in pretest and posttest showed that in unfavorable condition, students receiving the traditional teaching considered the unfavorable more internal, more unstable and more general. They considered the favorable condition, more external, more unstable and more local.

The difference between means in the blended group specified that there was a significant relationship between general-local favorable factor ($2/27 \pm /32$ vs. $2/77 \pm /97$, $p = /04$, $T = 2/13$).

The evaluation of favorable and unfavorable factor showed that in unfavorable positions students receiving the blended teaching considered their unfavorable condition more internal, more unstable and more local and the favorable factor more external, more unstable and more local.

Table: 2
Evaluating the difference between mean scores of attribution test in the traditional group pretest- post test

Attribution style	Before	AFTER	T	P
Internal –external Unfavorable	30.05 ± 0.55	3.16 ± 0.38	0.80	0.43
Stable – nstable unfavorable	2.27 ± 0.39	2.55 ± 1/89	0.63	0.53
Global – local unfavorable	2.85 ± 0.62	3.15 ± 0.55	1/51	0.146
Internal – external favorable	2.44 ± 0.47	2.64 ± 0.50	1/35	0.190
Stable – unstable favorable	2.16 ± 0.34	2.25 ± 0.63	0.55	0.58
Global – local favorable	2.37 ± 0.39	2.42 ± 0.49	0.31	0.7

Result showed that there was not any significant differences between the means of data in both groups ($p>0.05$). However, a change of means showed that unfavorable and favorable condition were progressing more locally and specifically in both groups.

There was a significant relationship between type of teaching, scores of academic achievement, and attribution pattern in the factors of global–local favorable factor ($P=/.04$, $F=10/52$).

Table: 3
Evaluating the interaction between teaching, academic achievement, and attribution style in both educational groups

Attribution style	Mean	F	P	The evaluation of the difference between
Internal – external unfaverable	5.66	2.20	0.15	
Stable – unstable unfaverable	14.13	3.64	0.06	
Global – local unfaverable	13.78	4.27	0.05	
Internal – external faverable	11.67	2.51	0.12	
Stable – unstable faverable	7.92	2.61	0.12	
Global – local faverable	32.28	10.52	0.004	

means of Personality type in both educational groups showed that there was a significant difference between mean of scores in neuroticism in pretest and posttest . ($P=/.006$, $F=/.89$). Although mean of neuroticism scores in both educational groups increased in posttest , the mean of the aforementioned factor in the classical teaching ($22/85 \pm 5/22$ vs. $27/60 \pm 4/44$) was higher than in the blended teaching ($20/10 \pm 3/83$ vs. $23/70 \pm 4/07$).

Table: 4
Evaluating the difference between personality mean of scores in educational groups

Personality test	Before Blended teaching	Before Classical teaching	T	P	After Integrated teaching	After Classical teaching	T	P
Neuroticism	20/10± /83	22/85±/2	1/89	0/06	23/70 ± 4/07	27/60 ± 4/44	0/89	0/06
Extraversion	22/30± /18	20/05±4/3	1/46	0/15	21/85 ± 3/46	23/63 ± 4/93	0/17	0/19
Openness	18/05± 5/02	17/57± /09	0/33	0/73	16/94 ± 3/89	18/83 ± 3/83	0/68	0/14
Agreeableness	12/52± 4/82	20/73± /17	0/47	0/63	22/80± 4/66	23 ± 4/73	0/58	0/89
Conscientiousnes	14/63±3/89	12/52±3/4	1/86	0/07	13/95± 3/51	13/36 ± 3/09	0/7	0/58

Evaluating the difference between mean of scores through pair-t-test in the blended teaching also illustrated that there was a significant difference in positive effect($P=/.01$), aesthetic interest ($P=/.008$), intellectual interests ($P=/.008$), unconventional ($P=/.000$), no antagonist orientation ($P=/.02$), prosocial orientation ($P=/.01$), orderliness ($P=/.01$) in pretest and posttest. Evaluating the difference between means in the traditional teaching also illustrated that there was a significant difference in the mean of subscale scores of positive effect ($P=/.004$), aesthetics interest ($P=/.0001$), intellectual interests ($P=/.005$), unconventional($P=/.0001$), nonantagonist orientation ($P=/.002$), prosaically orientation ($P=/.04$), self order linessliness linessline ($P=/.0001$) in pretest and posttest. So the traditional teaching had an effect on changing the aforementioned sub-scale. Based on the distribution of given scores and normalization of test, z score

was converted into t score (Mean=50, Standard Deviation=10), and the related profile was calculated . For representing the feedback of scores, we considered scores higher than 56 as high cases, scores between 45 to 55 as average cases , and scores below 44 as low cases Haghshenas (2006).

Evaluating the difference between means of the blended teaching group illustrated that there was a significant difference in the sub-scale of positive emotion ($P=/.01$), self-reproach($P=/.02$), negative affection($P=/.0001$) and nonantagonist orientation ($P=/.01$). Also the feedback received through the calculation of the profile confirmed that most of the given criteria were high. Evaluating the classical teaching group through the calculation of normalization profile also illustrated that there was a significant difference in the mean of students' scores with the factors of positive affection($P=/.006$), aesthetics interests ($P=/.0001$), intellectual interests ($P=/.005$), unconventionality ($P=/.0001$), nonantagonist orientation ($P=/.002$), orderliness ($P=/.0001$). Evaluating the interaction between teaching , student's final score, and personality type based on MANOVA Test also specified that there was a significant relationship between all personality factors except neuroticism criterion, as a extraversion ($P=/.02$, $F=5/90$), openness ($P=/.006$, $F=10/17$), agreeableness ($P=/.001$, $F=17/31$), and conscientiousness ($P=/.01$, $F=7/98$) criterion effected to student final scores.

Table: 5
Evaluating the relationship between type of teaching,
score of academic achievement , and personality factors
in educational groups

Personality subscale	Mean of square	T	P
Neuroticism	13.04	3.38	0.08
Extraversion	19.78	5.90	0.002
Openness	34.38	10.17	0.006
Agreeableness	49.15	17.31	0.001
Conscientiousness	24.15	8.02	0.01

DISCUSSION

The next research hypothesis effects of the blended teaching on students' academic achievement – was confirmed , that's the results of the research showed that the integrated teaching had more effects on it. And the results of the research mentioned below verified these statements. Taradi et al. (2005) researched on the effects of two methods of web-centered learning based on problem solving in comparison with the classical teaching based on problem solving in the unit of physiology. The results illustrated that web-centered teaching based on problem solving methods improved students' attitudes, and there was a significant difference between the scores of students' academic achievement. ($T=.3955$; $P=0.0009$)

Monguest, et al (2006) researched into the effects of blended learning on three different methods. They found that students of all three methods had a positive attitude toward their learning. Students gained the highest scores of academic achievement in the method of average integration. Campbell, et al (2008). Researched on the effects of two classical and online methods in the web-centered research unit of the graduated nurses. This research showed that the mean of final exam scores of students receiving the online method was 60/8, and it was 54/4 for students receiving the classical method. There was a significant difference between them ($t=3.13$, $df=102$, $p= 0.002$).

The research of Sung, et al (2008) into the teaching of pharmacology unit showed that the use of the blended method increased students' knowledge, shortened time span of learning, and decreased duplications. This research confirmed our results. Deliligo et al (2008) researched on the effects of the blended teaching in comparison with the classical teaching. It did not reflect any significant differences between knowledge, attitude, memory, and academic achievement of students of both groups.

The results of this research regarding the comparison of students' academic achievement were against the results of the present research. Both groups consider the attributional pattern internal, unstable, and local in failure; and they also external, unstable, and local in success. There was a significant relationship between kind of teaching, scores of academic achievement, and attribution mode in global-local favorable while differences between genres were not significant. Hoseini (1999), Soleymaninejad (2003) showed that significant relationship between internal-external attributional pattern and academic achievement. This research confirmed differences between genders were not significant.

As a Korman (1977) result, causal attribution to internality, instability and locality is the best attributional patterns that this condition is predictor of successes performance on future. Arkin, et al (1993) to assess success and unsuccessful student showed that success students internalized their attribution and Unsuccessful student externalized it. Schwartz, et al (2000) revealed that attributional pattern have related to student cognitive function. Voelz, et al (2003) survey to assess mild and moderate depress student, showed that students have more success condition, they have more stable and global attributional pattern.

Chuanping (2009) investigated the characteristics of causal attribution of academic achievement, expectancy change and emotional response in college students. Differences among students' grades and that between success and failure were significant while difference between genders were not significant.

The results of the present research are agreement with some stated researches

Result showed that there were not any significant differences between the means of data in both groups. This result verified by mosavi (2004) that there wasn't any relationship between educational method and attributional pattern.

The next purpose of the study to the effect of education on the personality components showed that the agreeable and conscientiousness is higher in blended instruction and extraversion, openness and nervousness are higher in traditional education, furthermore the score of nervousness in traditional education was higher than blended method.

Studying the results through Manova test to assessing the interaction between the kind of instruction and the components of personality showed that, there was a significant difference in conscientiousness scale. Wilson et al (2009) in studying the relationship between personality features, automaticity and sensitivity to stress in predicting the scientific function of nurses through multiple logistic regressions showed that automaticity and conscientiousness were the two most important features in predicting vocational function. Atapour (2009) found a significant relationship between academic achievement and internal locus of control. Atash Afrooz, et al (2008) revealed that academic achievement has a positive relationship with extraversion, agreeableness and conscientiousness and it has a negative relationship with neuroticism.

Other research to assessing relation between education and personality type by, Tuten and Bosnjak (2001) revealed that Openness to Experience and Neuroticism showed the greatest association to Web usage. Openness to Experience was positively related to using the Web for entertainment and product information, while Neuroticism was negatively related to Web usage. And Griffin & Mcdermot(1998) revealed that all six NEO-openness subscales correlated positively with self-reported creative activities; five did so

with creative interests. Specifically, openness to fantasy and openness to aesthetic experience correlated notably with creative activities ($r=0.45$, $p<0.0005$; $r=0.41$, $p<0.005$) and interests ($r=0.45$, $p<0.0005$).

CONCLUSION

The use of this educational method with standard designing strategies is recommended for teaching medical sciences. Owing to the positive effects of the blended teaching on students' learning, and positive effect to many psychological aspects in student and regarding the necessity to use blended techniques, and the impossibility of merely using the electronic method.

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BIODATA and CONTACT ADRESSES of AUTHORS



Leili MOSALANEJAD received B.A. degree on nursing in 1992 from Jahrom University of medical science and M.A. degree on mental health education in 1996 from shiraz University of medical science . Currently she is PhD student Distance Learning Educational Curriculum Development, in Tehran university of Payame noor ,she is also full time faculty member of jahrom university of medical science since 1997.her interests are eduction, e learning,distance learning and educational psychology.

Leili MOSALANEJAD Contact Author

Department of Nursing Jahom University of
Medical Sciences Jahrom, IRAN
Motahari street-Jahrom University of Medical Sciences, Jahrom-IRAN
Postal cod: 74148
Phone:0098-0791-3341508
Mobile: 09171912016
Email:mossila_1@yahoo.com



Dr Ahmad ALIPOUR is an associate professor of psychology at psychology department of Payame Noor University (PNU, a distance education university) in Iran. His research interests are Neuropsychology Health psychology and also E-learning

**Ahmad Alipor: Department of psychology
Paymnoor University, Tehran, IRAN**



Dr Bahman ZANDI was born in 1962.he is an associate professor of linguistic at Department of Educational Curriculum Development Paymnoor university. Tehran, Iran.His research interests are linguistic, educational curriculum development, educational psychology and distance learning.

Bahman ZANDI
Department of Educational Curriculum Development
Paymnoor University, Tehran, IRAN

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