Effect of Blended-Learning on Academic Achievement of Students in the University of Jordan

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***Abstract*—The purpose of this study is to evaluate the effectiveness of blended learning on the academic achievement of students in the University of Jordan. To gain in depth understanding of the phenomena under investigation, survey method is employed to collect natural data. For the sake of respondent convince all the questions asked in this survey are directed in Arabic language. Conventional sampling technique is employed due to the subjectivity of the issue. A sample of (427) students from King Abdulla II School for Information Technology at Jordan University are randomly selected. SPSS10 software is used to make statistical analysis. The robust checks of the result are made through arithmetic average, standard deviation statistics and Pearson correlation matrix. Statistical results of the study report that there is a significant and positive impact of blended learning on academic achievement of the students in university of Jordan.**

***Index Terms*—Blended Learning, E-Learning, Academic achievement, Survey**

I. INTRODUCTION

According to Ref. [1], Blended learning is a term concerned with transmitting knowledge. Previous theories expounded in the literature had defined blended learning as "the learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with a course". Blended learning is also used interchangeably as hybrid learning or mixed learning in academic theories. However, all of these concepts broadly refer to the integration "blending" of e-learning tools and techniques.

Blended learning generally has many advantages over traditional way of learning and transmitting knowledge (Face-to-Face); the cost effectiveness is one of the most advocated advantages for both the accrediting learning institution and the students. This advantage will improve the education process. Flexibility and time management of blended learning is perceived as another main advantage of the blended learning. On the other hand, some of the severe limitations of the blended learning will be also considered before initiating such type of learning method. These considerations are various in natures but controlled such as computer and internet access, limited knowledge in the use of technology, and study skills.

Blended learning has many advantages over E-learning; the most important one is that Blended learning participants being able to socialize face-to-face interaction in order to motivate the less independent student. In relation to learning styles, a dependence on the conversation within the learning process may become an obstacle to those students who are not capable of discussions. Effective discussions are an important element of Key Skills courses (Verbal Communication), which in turn are indispensable for apprentice employability. Adoption of the conversational framework would require interactive lectures that are extended to online discussions. Students are expected to do more reading outside the face-to-face sessions and interact with their peers online. For example, the discussion about answers related to homework questions.

Figure 1 represent a theoretical framework of the Blended learning summarized by The New South Wales department of education and training [Ref. 2]. The model clearly shows the time effectiveness of blended learning by using the technology for the purpose of learning. It can be advocated that there are overlaps between the pure face to face sessions, and the pure online learning. In both of them some aspects of the other are used. Blended learning is the effective combination of different modes of delivery, models of teaching and styles of learning.

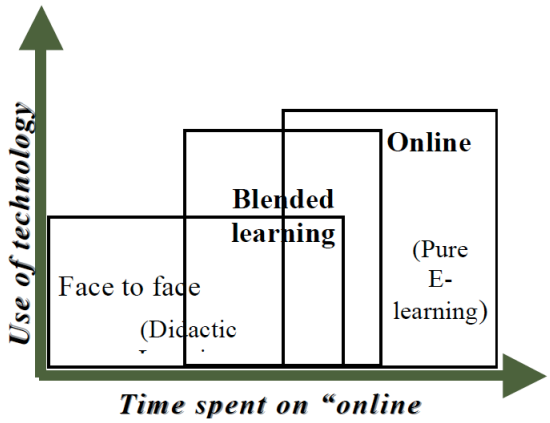

Figure 1. Model of Blended Learning

II. BACKGROUND OF THE STUDY

Blended learning is researched by various scholars for identifying the effectiveness of its role in learning and transmitting knowledge. Ref. [3] presents one of the research study conducted by (Hawkey.R, & Beresford.N, 2009) which searched for Blended-learning in an English Course held at the University of Fberara Italian in collaboration with the University of Cambridge. The results of

the study conclude that blended-learning has a significant impact on both teachers and students. Blended- learning involves a combination of self-learning computer-based courses with classroom organisms. The study employed a sample of 92 teachers and students who voluntarily took part in this study. The result of the study showed that blended learning was positive and significant for both students and teachers. Majority of students perceived that the session helped them to improve their skills in the English language and make progress in self-evaluation. Study also indicates that teacher's role and their experience in the session will make them more effective.

One of the major findings of the study is that blended learning has positive effect on students' study process. Another finding of this study is that teachers found it enjoyable and stimulating for them and would be happy to repeat this method of learning in the future.

Ref. [4] presents another study encouraging using blended learning. This study reported that blended learning has several advantages; teacher feels that his role in the educational process have not been taken away the cycle. Moreover, this study provides two ways for learning that teachers can choose between them rather than relying on one way. It also addresses the problems of the lack of possibilities for some students.

Blended learning has an advantage of commensurate with communities in developing countries that did not have the fully electronic environment. A specific time and place for learning and that what students prefer so far. Blended learning focused on the knowledge and skills aspects, conscience without the impact of one on the other. It also maintains a high level of original link between the student and the teacher which presents the basis of the educational process.

III. AIMS AND OBJECTIVE OF THE STUDY

The current research aims to study the impact of blended learning on the academic achievement of the students at Jordan University. Blended-learning that employs computer technology and the traditional methods of teaching may result to a quantum leap in the nature of output that can be achieved by the student. In the current study, the software known as "Blackboard" is used. It is a tool that enables the teacher to build teaching tools and computerized formative evaluation as easily being able to provide electronic material organized into folders which present educational material, announcements, assignments, as well as quizzes. University of Jordan launched a world wide website, "Blackboard Website" to facilitate the internet base learning. The main navigation feature of the website included within the university main home-page "www.ju.edu.jo", by clicking on the link "e-courses" or accessing the following web-site directly through (www.blackboard.ju.edu.jo). This main feature of the website is that it can be accessed by only authorized users who are registered for a specific course. User name and password are required to access e-courses. Each instructor has his own administrating account, and he/she has an account for his/her students to access the instructional tools provided for his/her courses. This tool enables instructors and students to communicate remotely. If all other remaining things remain same i.e. availability of internet, electricity, knowhow of using technology, e-learning has the potential to make an impression as a pulse for the education system of the country.

Exploring previous studies disclose that some studies have examined the impact of blended-learning on the interaction between students and teachers. Other studies aimed to measure the quality of e-learning. The most important point of the study is to gain insight on the effectiveness of blended-learning on academic achievement for students and their attitudes towards this type of learning.

The current research also aims to study the opinions of the students regarding the concepts of Blended learning, the accessing of the Blackboard website, and the effect of blended learning on their academic achievement. In order to satisfy this condition, a survey in Arabic language, which is the native language in the selected sample, was designed and spread among students attending certain courses offered in the King's Abdullah II School for Information Technology (KASIT). The free and informed consent of the respondents are taken into account by considering the importance of ethical consideration in conducting such type of survey studies.

IV. METHODOLOGY

A. Sample

Purposive conventional sampling technique is employed in this research stream. Students from different socio economic background with widely diverse skills and experience, enrolled in courses offered in KASIT during the first semester 2011/2012. To persuade this condition, many classes for courses of different levels were selected to examine the students who originally enroll in three colleges; science, KASIT, and engineering. It consists of mainly four study levels of students, starting from first-year to fourth-year level. But as the sample population also includes sample students from engineering faculty in which five years are required to finish faculty requirements. As there are three departments in KASIT faculty; Computer Science (CS), Computer Information System (CIS), and Business Information System (BIS) Departments. The study sample size is (427). All the questionnaires distributed to the respondent have been recovered which represented (100%).

B. Data Analysis

Before collection of data from students, they were informed about the objectives of the study. Data was collected from the answers of the students in the survey questioner which was distributed among students while they were in their lectures. Each participant was free to answer the survey's questions without any influence from instructors or university administration. Data collected from survey questioner is entered in SPSS10 software to run different empirical technique. The Pearson correlation and correlation matrix analysis are used in this study, they allow us to makes logical Descriptive state indicate about the size and demographic attributes of the sample.

Table I shows the size and demographic feature of the sample selected for the study. The percentage of males was (32.8%) and females (67.2%) of the study sample. With regard to social situation, the most students are not married and at a rate (98.3%) of the study sample. The highest age group was (17-22 years old) to hit (95.6%) of the study sample and the lowest percentage of the class

(33-37), reaching (0.2%) of the study sample. The highest proportion of students from the class was the second year in terms of (58.3%) of the class, where the least of the fifth year or more and at a rate (2.3%) of the study sample. The highest cumulative grade point average for students of the study sample who have a good hit rate (44.5%). The highest percentage of Academic Specialization is BIS was (29.3%) and the lowest percentage is engineering was 12.4%. The percentage of the Internet home connection was only 16.9%.

The frequency of the Internet usage per day was 3-6 hours was 27.4% and the lowest percentage is more than 10 hours was 5.2%. The highest percentage of the use of Blackboard is Marks and evaluations were 69%.

V. TOOLS AND TECHNIQUES OF THE STUDY

A survey method is employed to fulfill the aims of the current study. A survey questioner with acceptable Cronbach`s Alpha of 0.697 is distributed among the respondents. The detailed survey for data collection consists of two major parts which are given below accordingly.

Part one of the study was about the features of the sample population selected for the current research. Socio economic and demographic attributes of the sample are: gender, social statues, age, academic year, academic specialization, internet usage, daily internet usage average, blackboard usage, and measure of the academic evaluation which is GPA.

Part two of the study enclosed 39 sections that cover the variables of the independent study (Blended Learning) and the education variable that follows the academic evaluation on the Blended Learning. Likert scale is used to allow a freedom of choice to get in-depth understanding. The answers were sorted regarding the Likert Scale and defined by five-point scale (strongly agreed, agreed, mediate-agreed, disagreed, strongly disagreed).The survey covers three dimensions, they are:

1. The E-Learning Management Website (Blackboard)
2. The concept of the Blended Learning
3. The use of the Blended learning
4. The academic evaluation (Independent variable)

A. *Significance and Effectiveness of the tool*

For reasons of the effectiveness of the content of the study, the survey was given to some experts in the field, and that was for the ensuring of the validity and accuracy of the survey, whereas regarding their opinions some phrases were omitted and others reshaped to get to be more understandable and more achievable for the aims of the study.

B. *The Stability of the Measuring Tool*

The stability of the measuring tool was verified by Cronbach`s Alpha Static test, specifically the tool's phrases internal consistency. Cronnbach Alpha is a measure of evaluating the validity and logical empiricism of the content reported in survey questioner. A value beyond the 0.50 is ideal for the validity of gauging the questioner. The result of the Cronbach's Alpha test in this research stream is 0.697, and the coefficient of the internal consistency was larger than six, which is a significant indicator about the validity of the questioner adopted for the current study.

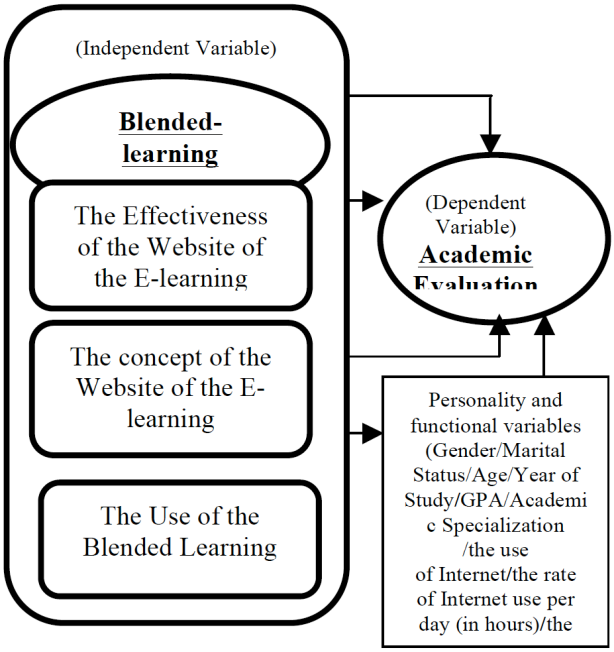

Figure 2. Theoretical framework of the study

VI. THEORETICAL FRAMEWORK OF THE STUDY

Figure 2 illustrates the main theoretical framework of the study. Based on the literature review, the following theoretical framework of the study is deduced to better understand of the problem under investigation. As shown in the figure, Blended theory is considered as independent variable and has further three dimensions mainly Website management, concept of website and the use of blended learning. The regress or dependent variable of the study is academic evaluation of the student.

VII. EMPIRICAL ANALYSIS AND DISCUSSION

A systematic analysis and presentation of the data is used under quantitative techniques. Quantitative analysis involves crunching numbers and it is usually done for hypothesis testing. For the analysis of quantitative data, computer will be used which facilitates the researcher in more than one way such as time saving and reduction of large amount data to basic pattern etc. For this study the widely used Statistical Package for Social Sciences (SPSS) will be used. Descriptive statistical measurements will be employed to evaluate the sample of examinees in percentage, and to answer the study questions. The Pearson correlation and correlation matrix give further robust check about the findings of the study.

Table II shows that the general average of the Blended Learning has an effect on the academic evaluation was intermediate where it was (3.43) and had a standard deviation of (0.63). The dimension of the Blended Learning took the first rank with an average of (3.41) and standard deviation of (0.60). The dimension of the E-learning Management Website (Blackboard) came after with an average of (3.28) and standard deviation of (0.40), while in the third rank was the use of the Blended Learning with an average of (3.25) and standard deviation of (0.47).

A. Dimension: E-learning Management Website

Table III illustrate that the overall arithmetic average of this dimension of variable related to the effectiveness of the E-learning Management Website from the students' perspective is (3.28), and with a standard deviation of (1.11), however, the 10th section came at the first rank with an arithmetic average of (3.88) and a standard deviation of (1.029). The question that blended learning has an important role in the technical development is an arithmetic average of 3.86 and a standard deviation of (0.942), showing that blended theory plays an important role in technical development. The next important insight that blended learning allow flexible time and connivance for learning stand an arithmetic mean of (3.75), and a standard deviation of (1.397). However, the 4th section came at the last rank with an arithmetic average of (2.41) and a standard deviation of (1.052). Overall the result depicted in Table III report that blended learning has a significant impact on academic achievement of students at university of Jordan.

B. Dimension: Analysis of the Concept of the Blended Learning

Table IV reports the statistical proof about the significance of the second dimension of independent variable i.e. blended learning. The first question indicate whether blended learning moves the education towards the best has an arithmetic average of (3.66) and a standard deviation (1.004). The question that blended learning enhance the self-learning for the learners range the value of arithmetic average as (3.70) and a standard deviation (0.977). The question regarding the role of blended learning applications in covering the learning needs for the learners shows the value of arithmetic average as (3.48) and a standard deviation of (0.9175). The sum sections of the concept of the blended learning contains the value of arithmetic average as (3.41) and the value of standard deviation as (1.01) .Overall the questions responded by the respondent regarding the second dimension of independent variable i.e. concept of the blended learning shows a significant values of arithmetic average and standard deviation. Thus through substantive analysis of statistical values it can be inferred that blended learning is significant for the success of academic achievement targeted to student.

C. Dimension: The Use of the Blended Learning

Table V discusses the third dimension of independent variable of blended learning. Table V demonstrate that the overall arithmetic average of this dimension related to the use of the Blended Learning is (3.25) and a standard deviation of (1.057). The response rate of the question that blended learning has minimized the dependency of student on books has the value of the arithmetic average of (3.76) and a standard deviation of (0.963). The next most important question which is directed at the survey that blended learning applications save time and effort has the value of an arithmetic average of (3.62) and a standard deviation of (0.977) respectively. The next high frequency question asked from respondent about the better life we have with the connivance of blended learning ranges between the value of an arithmetic average of (3.55) and a standard deviation of (0.978). However, the most important note is that the response rate about the question that application of blended learning are only waste of time and resources indicate the lowest value of an arithmetic average of (2.33) and a standard deviation of (1.087). Overall the questions act in response by the respondent regarding the third dimension of independent variable i.e. use of the blended learning shows a significant values of arithmetic average and standard deviation. Thus through substantive analysis of statistical values it can be an indicator that blended learning is significant for the success of academic achievement targeted to students.

Table VI presents the value of arithmetic average and standard deviation about the dependent variable of the study i.e. Academic evaluation to insight the effectiveness of blended learning. The statistical values of the respondent response in this table are crucial to measure the effectiveness of blended learning on academic achievement of the students. The overall arithmetic average of this dependent dimension of this variable related to the Academic Evaluation is (3.42) and with a standard deviation of (0.937). The high frequency response about the material ranges the statistical value of an arithmetic average of (3.52) and a standard deviation of (0.935). The next high frequency response is about the usage of the learning statistical value ranges as an arithmetic average of (3.50) and a standard deviation of (0.912). The response regarding the underrating the content of the material used in blended learning ranges the value of an arithmetic average of (3.49) and a standard deviation of (0.935). The lowest frequency response is for the information about the assumptions of the theory ranging an arithmetic average of (3.32) and a standard deviation of (0.993). Generally the questions proceed in response by the respondent regarding the dimension of dependent variable i.e. the academic evaluation shows a significant values of arithmetic average and standard deviation. Thus through substantive analysis of statistical values it can be reliant that blended learning is significant for the success of academic achievement targeted to students.

Table VII reports the Pearson correlation coefficient matrix of the relationship between the dimensions of the independent variable and demographic variables and Academic achievement of the students. Pearson correlation coefficient matrix is a quantitative procedure to investigate the association between two quantitative continuous variables. It measures the tendency and type of relationship between the two set of variables. Correlation matrix is significant at the level of 0.01 and 0.05 two tailed respectively. Different values given in Table VII are either significant at the level of 0.01 or at the level of 0.05 accordingly showing the significant impact of blended learning on the academic achievement of the students. Table VII also detail the demographic information of the sample data e.g. the age, gender, academic status, net rate, BB use and academic achievement majorly. The significant value of the Pearson correlation matrix at the level of 0.05 given in Table VII is BB use and academic achievement respectively. The Pearson correlation matrix analysis of blended learning, demographic factors and academic achievement is significant at the level of 0.01 or either at the level of 0.05 correspondingly.

VIII. CONCLUSION

The aim of current research stream was to study the impact of blended learning on the academic achievement of the students at Jordan University. To gain in depth indulgent of the observable fact under inquiry survey method is used to collect likely data. For the sake of respondent con-

vince all the questions used in the survey are directed in Arabic language. The stability of the measuring tool was verified by Cronbach`s Alpha Statistical test, specifically the tool's slogan the internal consistency. Conventional sampling technique is employed due to the subjectivity of the issue. A sample of (427) students from King Abdulla II School for Information Technology at Jordan University are randomly selected. SPSS10 software is used to make statistical analysis. The robust check of the result is made through descriptive statistics, Pearson correlation matrix. Statistical results of the study report that there is a significant and positive impact of blended learning on academic achievement of the students in university of Jordan. The major finding about the dimension of the depended variable shows a significant level of significance at level α=0.05 correspondingly. All of the three dimension of blended learning reveal a significant correlation with the academic achievement of the students enrolled in the internet base learning. The Pearson correlation matrix is a quantitative course of action to examine the connections between two quantitative continuous variables. It measures the tendency and type of relationship between the dimensions of the independent variable and demographic variables and academic achievement between set of variables. The statistical result of the Pearson correlation matrix also indicates the significant impact of blended learning on the academic achievement of the students in university of Jordan. This is the substantive contextual restricted study to gauge the effectiveness of blended learning on the academic achievement of the students enrolled in this type of learning program in university of Jordan. By taking this consideration into account the result shows that there is a tendency of significant relationship between two subjective variables. The findings of the studies also report the substantive care of infrastructure necessary for such type of learning environment. The availability of the resources required are only possible in well establish internet base learning facilities.

IX. RECOMMENDATION AND FUTURE DIRECTION

The findings of the study recommend that student perspective about the magnetism of the blended learning is significant and encourage the initiation of such type of internet base learning in their campus beside traditional way of learning method. Theoretically the findings of the study add in the growing field of literature about the effective style of learning and blending learning particularly. The practical implication of the study is considered to be beneficial for the higher education authorities to take the demand and consideration of the blended learning in the education system of the Jordan. The institutions and government authorities in Jordan should focus on the technological infrastructure which is prerequisite for blended learning method. Moreover it is advocated that navigation feature of the e- learning web site should be made more user friendly to add the simplicity in the understanding of the blended learning.

The study also acknowledges some limitations which should be taken in consideration while reporting or implementing in any setting. Only questioner based survey tools is employed to collect the data. However qualitative tool of unstructured interviews would be more efficient to gain insight about the subjective phenomena. Secondly only Pearson correlation method is employed. The econometric field of study provides more rigorous measure of relationship between two quantities such as T-test, Multivariate regression, Cross tab, ANOVA, ANCOVA well give more robustness about the validity and reliability of the phenomena. It should be advocated that future studies should take these consideration into account for understanding the phenomena clearly and logically.

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TABLE I.
DESCRIPTION OF THE CHARACTERISTICS OF THE STUDY SAMPLE ACCORDING TO THE PERSONALITY AND FUNCTIONAL VARIABLES

Variable	Categories of variable	Repetitions (N=427)	%
Gender	Male Female	140 287	32.8 67.2
Marital Status	married single divorced Widowed	7 417 2 1	1.6 97.7 0.5 0.2
Age	(17-22) (23-27) (28-32) (33-37) 38-more	408 17 1 1 0	95.6 4 0.2 0.2 0
Year of Study	First year Second year Third year Fourth year Fifth year or more	9 249 113 46 10	2.1 58.3 26.5 10.8 2.3
GPA	Accepted Good Very Good Excellent Undefined	63 190 117 37 20	14.8 44.5 27.4 8.7 4.7
Academic Specialization	CS CIS BIS Science Engineering	76 125 61 53 112	26.2 17.8 29.3 14.3 12.4
The use of Internet	Home only University only Internet cafes Wireless All above	72 16 0 10 329	16.9 3.8 0 2.3 77
The rate of Internet use per day (in hours)	Less than 1 hour 1-3 hour(s) 3-6 hours 6-10 hours More than 10 hours	61 175 117 52 22	14.3 41 27.4 12.2 5.2
The use of Blackboard	Scientific Material Course Announcements Marks and Evaluations All mentioned None mentioned	81 17 10 295 24	19 4 2.4 69 5.6

TABLE II.
WEBSITE OF THE E-LEARNING MANAGEMENT DIMENSION

Section #	The Variable Name	Arithmetic Average	Standard Deviation	The Order Regarding the Percentage Importance	The Level Regarding the Average
1-11	The E-Learning Management Website (Blackboard)	3.28	0.40	2	Intermediate
12-19	The Concept of the Blended Learning	3.41	0.60	1	Intermediate
20-27	The Use of Blended Learning	3.25	0.47	3	Intermediate
28-39	The Academic Evaluation (Independent Variable)	3.43	0.63	-	Intermediate

TABLE III.
THE EFFECTIVENESS OF THE WEBSITE OF THE E-LEARNING MANAGEMENT

Section #	Section Content	Avg.	SD	Order	Level
1	I feel that the applications of the Blended Learning are ,hardly, challenging for the learner	3.27	1.047	7	Medium
2	I believe the Blended Learning Applications have an important role in the technical development.	3.86	0.942	2	High
3	I believe the Applications of the Blended Learning are hard to be learnt.	2.54	1.025	10	Medium
4	I feel that I don't have control over the tools , the applications , and the software of the Blended Learning	2.41	1.0 52	11	Weak
5	I feel I can't concentrate while learning in the Blended Learning because of being busy dealing with the computer	2.97	1.194	8	Average
6	I feel that the Blended Learning and its curricular able me to learn a lot in short time	3.49	0.972	4	Average
7	I feel that it is easy to forgot what I learn through the Blended Learning vice versa in the Regular Learning	2.92	1.199	9	Average
8	I prefer the Blended Learning because it gives me the ability to learn at time and place I want	3.75	1.397	3	High
9	I found the material on the website organized and covers all my needs for the aim of studying the course	3.46	1.063	6	Average
10	The Blackboard website is useful in displaying and downloading (PowerPoint) slides and notes related to the courses' lectures	3.88	1.028	1	High
11	I face technical obstacles reaching the Blackboard website	3.49	1.297	5	Average
1-11	Sum-sections	3.28	1.11	-	Average

TABLE IV.

Section #	Section content	Avg.	SD	Order	Level
12	I think that Blended Learning with its applications changed education towards the best	3.66	1.004	2	High
13	I feel that the Blended Learning with its applications and tool enhance the self-learning skills for the learners	3.70	0.977	1	High
14	I feel that the Blended Learning and its curricular cover the learners' needs	3.55	0.956	4	High
15	I feel that the Blended Learning and its applications and curricular limit thinking	2.784	1.105	8	Average
16	I believe that the Blended Learning with its applications and software improve the learners' motivations for learning	3.37	1.007	6	Average
17	I believe that the Blending Learning takes in the eye of concern the individual differences	3.14	1.087	7	Average
18	I believe that the Blended Learning's applications cover the learning needs for the learners	3.48	0.9175	5	Average
19	I believe it is essential to popularize the experience of the Blended Learning with its applications and tools because of the significant advantages included in	3.57	1.030	3	High
12-19	Sum-sections	3.41	1.01	-	Average

TABLE V.
THE USE OF THE BLENDED LEARNING

Section #	Section Content	Avg.	SD	Oder	Level
20	I believe that the Blended Learning method is more useful than the lectures method	3.19	1.160	6	Average
21	I believe that the curricular and the applications of the Blended Learning lessen the student's dependence on books	3.76	0.963	1	High
22	I believe that the Blended Learning with its applications offered me a variety of options to do what I want	3.46	0.972	4	Average
23	I don't feel that the Blended Learning added any new skills to me	2.79	1.160	7	Weak
24	I believe that the Blended Learning with what comes along with of technology dragged us to a better life	3.55	0.978	3	High
25	I think that the applications of the Blended Learning is no more of a waste money of time	2.33	1.087	8	Weak
26	I believe that the Blended Learning with its applications save my time and effort	3.62	0.977	2	High
27	Learning the material by computer weakens the relationship between my teacher and I	3.32	1.165	5	High
20-27	Sum-sections	3.25	1.057	-	Average

TABLE VI.
ACADEMIC EVALUATION

Section #	Section Content	Avg.	SD	Order	Level
28	I have the ability to memorize the information I learn so I use whenever I need to	3.48	1.000	8	Average
29	I am able to gain the principles , methods , and theories , as so as mastering the subjects I learn	3.43	0.928	7	Average
30	I believe I am able to understand the material , comprehending the information, and realizing the facts	3.49	0.935	3	Average
31	I feel my ability to clarify meanings , demonstrate relations , conclude abstracts , clarify methods , and transferring the effect of learning	3.46	0.939	4	Average
32	I can use what I learnt in new situations	3.50	0.912	2	High
33	I can employ information and data learnt in an effective way	3.44	0.921	6	Average
34	I have the ability to analyze the material into elements for the understanding of its organizational structure	3.46	0.949	5	Average
35	I feel that I have the ability to analyze relations and evidences, organize parts ,and differentiate between ideas and parts	3.40	0.908	9	Average
36	I can put parts together to form a new form or pattern	3.39	0.905	10	Average
37	I have the ability to derive generalizations , suggest targets and instruments or methods , and plan plans	3.34	0.920	11	High
38	I can judge the material value regarding a certain target	3.52	0.935	1	High
39	I can tell the value of the assumptions or theories	3.32	0.993	12	Average
28-39	Sum-sections	3.42	0.937	-	Average

TABLE VII.
PEARSON CORRELATION COEFFICIENT MATRIX OF THE RELATIONSHIP BETWEEN THE DIMENSIONS OF THE INDEPENDENT VARIABLE AND DEMOGRAPHICAL VARIABLES AND ACADEMIC ACHIEVEMENT

Correlations											
		gender	***Stat use***	***age***	***year***	***GPA***	***Major***	***Net use***	***Net rate***	***BB use***	***Academic achievement***
gender	Pearson Correlation	1	0.029	-0.245	-0.049	0.113178	0.128987	-0.06258	0.019605616	0.022999	-0.02464
	Sig. (2-tailed)	.	0.548938	2.84E-07	0.312442	0.019316	0.007614	0.1968	0.686226491	0.63556	0.611613
	N	427	427	427	427	427	427	427	427	427	427
Stat use	Pearson Correlation	0.029084	1	-0.147	-0.05697	-0.00914	0.030957	-0.05574	0.020452379	-0.0091	-0.01168
	Sig. (2-tailed)	0.548938	.	0.002324	0.240092	0.850595	0.523496	0.250432	0.673439119	0.851305	0.809771
	N	427	427	427	427	427	427	427	427	427	427
age	Pearson Correlation	-0.24534	-0.147	1	0.104745	-0.05132	-0.001	-0.02425	-0.057384639	-0.03922	0.045099
	Sig. (2-tailed)	2.84E-07	0.002324	.	0.030459	0.289997	0.983578	0.617222	0.236692555	0.418931	0.352539
	N	427	427	427	427	427	427	427	427	427	427
year	Pearson Correlation	-0.049	-0.05697	0.104745	1	-0.23483	0.114652	0.049076	-0.063127587	-0.10419	-0.04083
	Sig. (2-tailed)	0.312442	0.240092	0.030459	.	9.25E-07	0.017786	0.311664	0.192936181	0.03136	0.399981
	N	427	427	427	427	427	427	427	427	427	427
GPA	Pearson Correlation	0.113178	-0.00914	-0.05132	-0.23483	1	-0.05018	0.027767	0.082130015	-0.01726	0.099678
	Sig. (2-tailed)	0.019316	0.850595	0.289997	9.25E-07	.	0.300899	0.567185	0.090071144	0.722105	0.039511
	N	427	427	427	427	427	427	427	427	427	427
major	Pearson Correlation	0.128987	0.030957	-0.001	0.114652	-0.05018	1	-0.08153	-0.131015091	-0.14757	-0.01021
	Sig. (2-tailed)	0.007614	0.523496	0.983578	0.017786	0.300899	.	0.092458	0.006707014	0.002234	0.833337
	N	427	427	427	427	427	427	427	427	427	427
Net use	Pearson Correlation	-0.06258	-0.05574	-0.02425	0.049076	0.027767	-0.08153	1	0.092921914	0.031255	0.068514
	Sig. (2-tailed)	0.1968	0.250432	0.617222	0.311664	0.567185	0.092458	.	0.055027278	0.519501	0.157574
	N	427	427	427	427	427	427	427	427	427	427
Net rate	Pearson Correlation	0.019606	0.020452	-0.05738	-0.06313	0.08213	-0.13102	0.092922	1	0.002151	0.021674
	Sig. (2-tailed)	0.686226	0.673439	0.236693	0.192936	0.090071	0.006707	0.055027	.	0.964647	0.655163
	N	427	427	427	427	427	427	427	427	427	427
BB use	Pearson Correlation	0.022999	-0.0091	-0.03922	-0.10419	-0.01726	-0.14757	0.031255	0.002151229	1	*0.093848
	Sig. (2-tailed)	0.63556	0.851305	0.418931	0.03136	0.722105	0.002234	0.519501	0.964647189	.	0.052639
	N	427	427	427	427	427	427	427	427	427	427
Academic achievement	Pearson Correlation	-0.02464	-0.01168	0.045099	-0.04083	0.099678	-0.01021	0.068514	0.021673574	*0.093848	1
	Sig. (2-tailed)	0.611613	0.809771	0.352539	0.399981	0.039511	0.833337	0.157574	0.655162538	0.052639	.
	N	427	427	427	427	427	427	427	427	427	427

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).