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Comparison of Effectiveness of Blended Learning Strategy and Traditional Learning Strategy on the Academic Performance of the Students in the Subject of Economics at Higher Education Level in Pakistan

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Keywords:
Blended Learning Strategy, Experimental, and Control Groups, Curriculum Developers, and Traditional Lecture Method, (WIHIC) scale

ABSTRACT

The study sought to investigate the impact of the Blended Learning Strategy on the subject of economics at the university level. The primary goals were to (1) compare the performance of students taught using traditional and blended learning strategies, and (2) investigate the effect of the blended learning environment and traditional classroom using the WIHIC scale. Fifty students from Northern University (Nowshera) were chosen as a sample for the study as a rule of thumb. Experimental and control were made. Each group consisted of 25 students. For the experiment, two different treatments were used. The experiment was carried out using an experimental pre-post-equivalent group design. For the trial, there were two different treatment strategies used. The same course materials and lesson plans were given to both groups, however, the experimental group received a "blended learning strategy" for six academic weeks while the control group received the standard lecture-demonstration method. Both the experimental and control groups received a post-test following the procedure. The learning environments in the classrooms of the two groups were compared using an observational "What is Happening in this Classroom" (WIHIC) measure. A t-test was used to assess the data. Findings showed that the blended learning technique had a substantial impact on students' performance following the intervention. The blended classroom's learning environment was more collaborative than it was in the non-blended classroom. It was advised that a blended learning method be incorporated in teacher preparation programs' curricula to prepare future instructors and improve the academic performance of the majority of students. The research will be useful to students, teachers, curriculum developers, and policymakers.

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INTRODUCTION

In the twenty-first century, several aspects of life, including education, have undergone significant change. (Almaiah, Al-Khasawneh, and Althunibat, 2020; Meyer and Norman, 2020; Rahman, Singh, and Pandian, 2018; Velle, 2020) Blended learning is a type of education that combines online learning resources with traditional face-to-face classroom instruction. Accepting either e-learning or traditional education does not necessitate their complete abolition; rather, it is a hybrid of the two (Elfaki, Abdulraheem, and Abdulrahim, 2019; Sicilia, 2018; Wright, 2017). Blended learning, for example, is a type of e-learning in which e-learning is combined with traditional education in a single system. According to Shang and Liu (2018), Lessons, lectures, and training sessions are frequently conducted in real classrooms with the ability to connect using e-learning tools, whether computer-based or network-based. Adiguzel, Kamit, & Ertas, (2020), argued that the community-centered approach, which places a strong emphasis on collaborative and community-oriented learning activities, is the final effective standard learning environment. All of the participants in the classroom setting are encouraged to collaborate in these collaborative and community-focused classrooms. This could be achieved in a mixed learning environment by encouraging a supportive environment that encourages learning rather than rivalry and conflict of interests. With the use of modern technology that is accessible for improved learning, hypothesizes that we might increase learners' willingness to learn and engage them in constructive endeavors.

Therefore this research aims to investigate the Comparison Of the Effectiveness of Blended Learning Strategy and Traditional learning Strategy On The Academic Performance Of Students In The Subject Of Economics At the Higher Education Level In Pakistan

RATIONALE OF THE STUDY

The researcher has been through, a traditionally rich society of Australia where several exceptional circumstances allow blended learning as the foundation of the educational system of Australia. Here in Pakistan some of these dominant highlighted approaches are being used by some prestigious educational settings. To overcome these gapes an investigator needs to search the new principled teaching methods. These newly emerging techniques and strategies may be very useful according to ongoing technological advancements, it will play an effective role in transmitting unique knowledgeable activities. Therefore, this study will examine the effective role in the learning of pupils through BL strategies. This design of Blended learning in a theoretic approach may improve the intercommunicating learning environment.

STATEMENT OF THE PROBLEM

Pierce in (2009) argued about the non-interactive classrooms where students may not be engaged in any activity, was of the view that this may not be learning at all. A very revolutionized educational system has emerged through the advancement of technology. In addition to this, the convergence of the global economy and information technology had laid the foundation for the change of medium of instruction and narrowing the gap of communication. (Wagner, 2008). The internet carried out a scalable method to plan the learning atmosphere that allows the pupils to take more possession of being learned and the responsibility of their learning (Setiawan, R., Devadass, M. M. V., Rajan, R., Sharma, D. K., Singh, N. P., Amarendra, K., ... & Sengan, S. ,2022). Teachers can perform the role of directors and leaders, contrary to pusher of information to pupils (Malhotra, M., 2022). The teachers and trainers should have the capability to understand the whole procedure, groundbreaking advancements, and the global economy. Today's innovators look inside the practicality in conveying administration and utilizing time to assist the way of harmonious effort. Therefore, this study w aimed to identify the effect of Blended learning approaches in the subject of economics at higher education level in KPK.

OBJECTIVES OF THE STUDY

1. To compare the performance of students taught by traditional classroom strategy and blended learning strategy.
2. To investigate the effects on the blended learning environment and traditional classroom methods with the help of the WIHIC scale.

HYPOTHESIS OF THE STUDY

Accomplishing the cited objectives, the following Null Hypothesis were tested:

Ho1: There is no significant difference between the performance of the experimental and control group on the pretest and posttest.

Ho2: There is no significant effect on the classroom learning environment of both experimental and control groups with respect of the WIHIC scale.

Ho3: Blended learning strategy has no significant effect on the classroom learning environment of both blended learning and Traditional learning concerning the WIHIC scale. (Comparison of the performance of blended learning and traditional concerning instructor's support)

SIGNIFICANCE OF THE STUDY

The significance of the study shows the development of policies about the new applicable teaching strategies- the Blended Learning Approach. It is also significant for up-level students and teachers. This study lays the foundation for the upcoming investigators to

conduct more experimental researches relevant to learning in different subjects and different grades. This is an obvious guideline for all educational institutions to implement blended learning plans in their classrooms.

LITERATURE REVIEW

Teaching Methodology for Business Students at Higher Education Levels

The current portion includes different surveys that had been reported upon some of the world‘s high-ranked business teaching institutes and modes of teaching in these schools. Park, J., & Savelyeva, T. (2022) assumed that pedagogy is a blurred notion and is hard to describe. While Uthra (2013) ―Pedagogy is to be the foundation block of vocational teaching and art. Pedagogy was assumed by Semel, S. F., & Sadovnik, A. R. (2022). a learner-centered or teacher-centered. Tran, N. T. (2022) demarcated teacher-centered pedagogy stands upon a classical active coach, on the other hand, learner-centered pedagogy is grounded on the active student impression. However, the argument by Mascolo (2009) about pedagogy may be a combination of learner-centered and teacher-centered approaches. A good instructor is a person who quickly transforms the content of a learner’s skills and data.

oyatzis, R. E., & Mainemelis, C. (2000). assumed through findings of a study about the diversity of Pedagogic methods in any MBA program, that is a case-based method, team-based focus approach, empirical learning, and lecture-based learning approaches. However, some students carry different approaches to the learning process. There must be a high-frequency connectedness between academics’ identity and induction style (Li, S., Deng, S., Xu, R., Liu, D., Nan, Y., Zhang, Z., ... & Wang, Z. L. ,2022). The enlisting of case studies about experimental learning and team projects including a combination of pure induction and discussions as a pedagogic approach was done by GMAC in 2015. Numerous investigators elaborated on lecture-based instruction, experiential learning, case-based learning, and team-based projects. These are explained below:

Case Studies

One of the most common and important methods is the case study that focuses on the process of teaching/learning in the business program particularly and management generally. Likewise, oyatzis, R. E., & Mainemelis, C. (2000). argued that learning that is a case-based process proved to be the major method to teach within a program of business study. E.g. 80% of MBA students learn through the case study estimated by HBS. Similarly, IESE Business School, in the capital of Madrid, Spain, judged that 70% of the instruction in the MBA was done by a case study.

On the contrary wise, the Stanford GSB, and IE Business Schools USA testified that 40% of the content case study, with INSEAD France and ESADE Spain, indicated 30% each. Similarly, 23% practice case studies in their learning (2015 Global Management Education Graduate Report) even though this is diverse by programmed type (GMAC, 2015. Concluding the facts on what extent case-based learning profits the teaching/learning course, Lee et al., (2022) effort, who mentioned some clear compensations using the case-based framework in business education, likewise:

Lecture Method

One of the oldest teaching methods is the lecture-based approach which is regularly applied in even modern business schools (Hrepic et al., 2007). According to a report of INSEAD France, and Spain about 30% of MBA learning is based on the traditional method, Bloomberg Business week (2011). Likewise, roughly 20% of their MBA teachings were lecture-based indicated by IE Business School and Stanford GSB. And almost 50% of all pedagogy in their MBA program

Inducted by the traditional standup face-to-face learning, exposed by The Tepper School of Business at Carnegie Mellon University.

According to the G M E G Survey in 2015 just 5% of the students preferred a pure lectures-based (GMAC, 2015). Further elaborated by Davis (2009) that in a lecture-based method speech, facial expression, and gesturing may match or diminish from the content. These Old-style lectures are called didactic lectures that are generally inducted in large classrooms But it may stand valid as an instructional alternative, rather than various applied modes of teaching semugenyi, F. (2022).

Experiential Learning

A rising adopted teaching/learning approach proved to be experimental learning Byrne (2015). In a report by LBS about UK business institutions, 15% of MBA learning was founded on the technique of experimental learning. In a survey conducted in 2015 by MEGS (management education graduate survey) 10% of the time and a considerable 24% of the students were inducted by the experimental learning method. It proved to be a leading and guiding viewpoint that gathered most of the universal approval among the management faculty. Looking at the work of Levin (1970) Dewey (1938) and Kolb's (1984) theoretic approach to experiential learning four stages are known as the cyclical theory of learning: active experimentation, abstract conceptualization, reflective observation, and direct experience. Where students may produce specific explanations of new measures. Looking into the facts the advocates of empirical learning the reflection center in the learning procedure, and the skilled actions are the components of a continuous process of conversion

that may not be chased, essentially with the help of knowledge-based procedure (Varela et al., 2013).

Team-based Learning

A prospect of solving problems through the use of concepts of learning the basic knowledge in a team-based work that may pose by students. Michaelsen. (2009) an activity that is designed to clarify the content. Hebert-Maccaro (2012). Also favored the activities that insist on the exchange of views among the learners of an MBA. Furthermore, to expertise in some fields students are encouraged actively. Likewise, Krathwohl (2002)

Insisted a team learning process should be adopted to boost students' abstract and practical learning. Whereas, semugenyi, F. (2022).indicated that team-based learning is to be focused and stressed because of group assignments using problem-solving contents. To master these types of contents, take a partial or secondary outlook of classroom settings in that team-based learning process. While copying these highly energetic and high-pressure MBA program team assignments must be followed.

Primary stress is to be placed on team assignments that concentrate on problem-solving contents in class that may be faced by the students in the future; all about the team-based learning process. semugenyi, F. (2022).. Some very important and need-based effective team learning elements should be adopted those are, by Michaelsen. (2009): 1. These group projects encourage both learning and practical application. 2. Accountability on the part of the students to assess individual/group work quality. 3. Formation of Proper Management of groups. 4. Reception of timely frequent feedback to students. In a survey report of the Global Management Education Graduate in 2015, 23% of teamwork learning was processed in MBA classrooms at the time. Therefore, regarding the certainty of research and findings, these approaches have not been evaluated critically in UK colleges. These may be in terms of resources, inductions, learners, MBA promoters to manage blended learning, students' progressions, and teacher/learner association. These were discovered through the case studies in three UK-based institutions to undertake the current research project.

BLENDED LEARNING STRATEGY

One of the very common definitions of blended learning is to recognize several mixtures of simulated and physical settings. Kayseroglu, M. A., & Samur, Y. (2018) labels the merging of face-to-face situations, synchronous and communication. Also, the technological invective information-based settings, and text-based where people work self-reliantly. Mason and Rennie's (2006) expanded, to include more combinations of technologies, pedagogical methods, and locations. Additionally, Garrison and Vaughan (2008) assume it is a considerable mixture of face-to-face and online learning activities that focuses on the

reflections of traditional methods. It also reshapes the teaching/learning process. Alltree and Bullen (2006) were of the view that a mode of induction where a sophisticated online learning opportunity and traditional learning-based techniques get blended in clear, innovative, and reflective modes. This may be a very effective mode of teaching that changes the attention in the learning process through the simplicity of face-to-face to a very high technological online environment.

DESIGN OF BLENDED LEARNING

Wang & Huang (2006) specified Figure (2.4). Blended learning must be planned sensibly. The major three phases:

1. Pre-analysis. This phase contains three more factors: Consistently taking assessments, previous knowledge, learning strategies, and styles

i. Analysis of syllabus regarding a certain principle.

ii. Analysis of features concerning the environment.

iii. Activity and Resource Design

2, design of activities and resources. This very phrase may circulate the activities and e-learning-related sources to fit the contents of traditional classrooms.

3. Instructional Assessment Design. The already designed assessments rely on the objectives concerning activities, performance, and the BL general environment. It may adopt the criteria to use the assessments of the learning procedure. E.g. using online portfolios, the examination in syllabus-based knowledge i.e. online testing. Furthermore, the organization and management of learning activities.

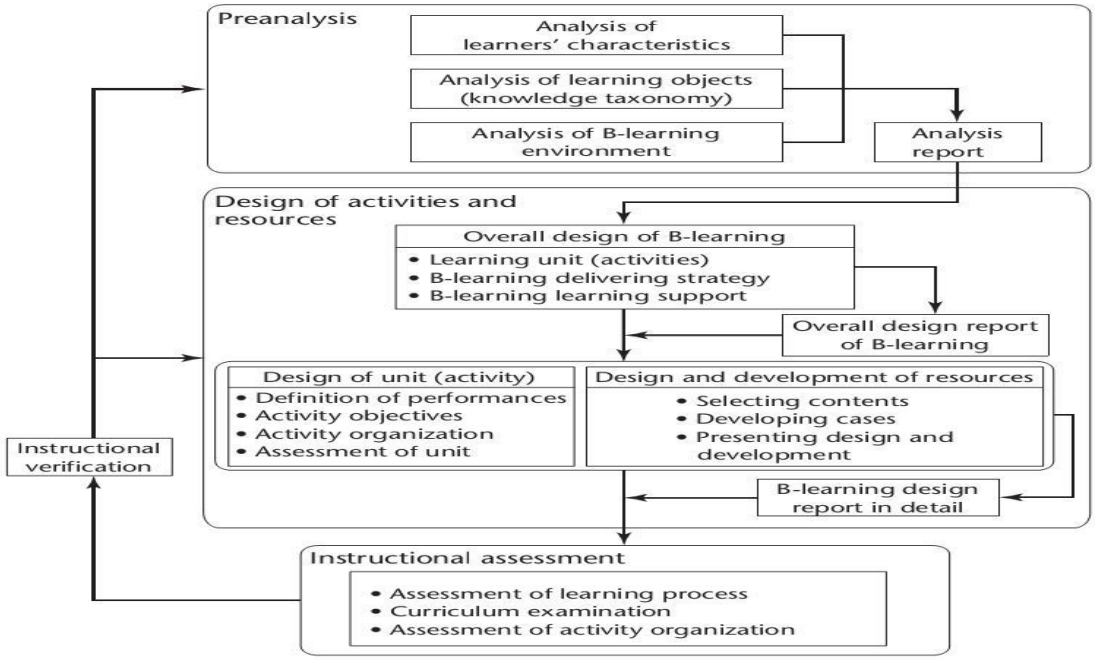


Figure 1: Huang Design Procedures for Blended Learning.

LEVELS OF BLENDED LEARNING

BL maybe happened on a variety of levels as indicated by Graham in 2004, for example, these certain levels are program level, school level, course level, and activity level. These learners required an instructor to assist them in any leering activity. In most cases, it had been experienced these instructors drew back and stress came upon the learners in regulating their activities. Al Fiky 2011 conditionalized it regarding the nature, degree, and quality of the Blend in major four classes.

1. Component level

This level may rely upon the connectivity b/w numerous factual data transmission media and the content to blend it into a whole that is composed of many detached elements. They may differ according to the learners' nature and old-fashioned achievable simulated or electronic sources.

Specimens of BL component level:

• Two-component model: the dependency on using electronic educational sources and apparatuses followed by a face to face learning in classrooms.

• Three-component model: Here the dependency might be over the identifying of learning of the students where the feedback strategy might help to adjust the balance with the help of traditional approaches and finally using the electronic learning to improve and develop the learning process in the classrooms.

2. Integrated level

This level comes up with the connectivity among various elements of electronic education that is composed of the internet. Where all the connected components assist each other and measure the capability and performance of the learner these unified elements evaluate the assigned required learning activity.

Specimens of the level are;

• Combined balance between 3 elements (accessible data sources using web networking, conversation on the web networking in groupings, and direct assessment of web networking)

3. Collaborative level

A merging balance b/w the instructor and a group that proved to be cooperative in a traditional classroom or unified team working group over web networking.

Specimens of the collaborative level:

a. Mixing balance b/w the traditional role of the instructor and the students or a simulated learning tutor on the Internet.

b. Mixing balance b/w traditional role of the unadventurous instructor and the students in learning space where teamwork learning activities practicing over the internet.

c. Mixing balance b/w the electronic tutor and the unadventurous students over personalized learning or the electronic teacher and the combined learning groups on the web Internet.

4. Expansive level

Here in this level of BL level, a maintained mixture of conventional classroom learning and simulated computerized sources may be offline at the time of use. (Online available books, articles, mobile applications, documents, and email.

METHODOLOGY

POPULATION

All two thousand eight hundred and ninety-six (2896) students registered for economics subject at higher education level in 2017-18 at the Universities of KPK were constituted population of the study. HEC, Pakistan (2017-18).

SAMPLE

Fifty students of MBA, MSC economics and M.COM (morning session) studying economics subject at Northern University was selected as sample. The sample students were divided into experimental and control group based on pretest scores. In order to equate the experimental and control group, a teacher made pre-test was administered. Then the sample students were divided into two groups through random sample technique. The total number of male participants were 40 while the female students were 10. Each group was comprised 25 male and female students.

RESEARCH DESIGN

The pre-test post-test equivalent group experimental research design was used for data collection. Following is the symbolic representation of design.

$D = d_{RE} - d_{RC}$

Where $dRE = O2 - O1$

$dRC = O4 - O3$

SYMBOLIC REPRESENTAION	ABRIVATIONS
R-E = O_1T O_2	R= Randomly selected
R-C=O_3–O_4	E= Experimental group
dRE= O2 - O1	C= Control group
dRC= O4- O3	O= Observation or Measurement

$D = d_{RE} - d_{RC}$	T=The experimental treatment to which a group is exposed i.e. Independent variable d_{RE} = The difference between the scores on pretest and posttest for the experimental group d_{RC} = The difference between the scores on pretest and posttest for the control group

Source: (Farooq and Tabassum, 2017)

"This design is one of the most effective in minimizing the threats to experimental validity. At the conclusion of the experimental period the difference between the mean test scores of the experimental and control groups are subjected to a test of statistical significance, a t-test or an analysis of variance ANOVA". (Farooq and Tabassum, 2017)

RESEARCH INSTRUMENTS

Teacher made pre-test and post-test were used as research tools. Both pre-test and post-test were prepared from the selected units of master course subject ―Principle of Economics. The pre-test was conducted for all sample students to divide them into two groups namely experimental and control. Treatment (blended learning classroom strategy) was provided to experimental group while control group was taught through lecture demonstration method. Immediately after the treatment post-test was administered to both experimental and control group.

Objectives and learning outcomes were developed along with lesson plans. The microeconomics section was consisted of multiple contents which were imparted during the experimental period to both experimental and control group, to measure the academic performance of the students. Tests were constructed after thorough study of literature, books, journals and online course formats for achieving better results. Furthermore, honorable supervisor and supervisory committee were also provided guidance and assistance for improvement. Questionnaire was administered to achieve one objective of the study, to discover the effect of blended learning strategy on classroom learning environment of both blended classroom and non-blended classroom with respect to WIHIC scale. For this purpose (WIHIC) scale ―What is Happening in This Class? was used.

Validity

Content validity of both pre-test and post-test was approved by the doctorial committee and subject experts. Items were chosen from learning materials which were taught during the period of experimental study. All the test items were based on the material of the units taught to the sample students.

TREATMENT

Before starting the experiment, pretest was administered to divide the sample into two equal groups _ experimental and control. Two different treatment patterns were applied for the purpose of experiment. Both the groups were provided with the same learning materials. Control group was taught through conventional method in the classroom while experimental group was taught through blended learning strategy. Recorded lectures of instructor and online videos were provided to experimental group. During session, the experimental group was engaged with multiple activities including classroom discussion (main element), web searching activities, group activities and problem solving. The instructor of the control group followed the conventional method of teaching and participants of control group attended the formal lecture and teacher made notes. At the end of six academic weeks both experimental and control group were given post-test.

Procedure of treatment is given in the following diagram.

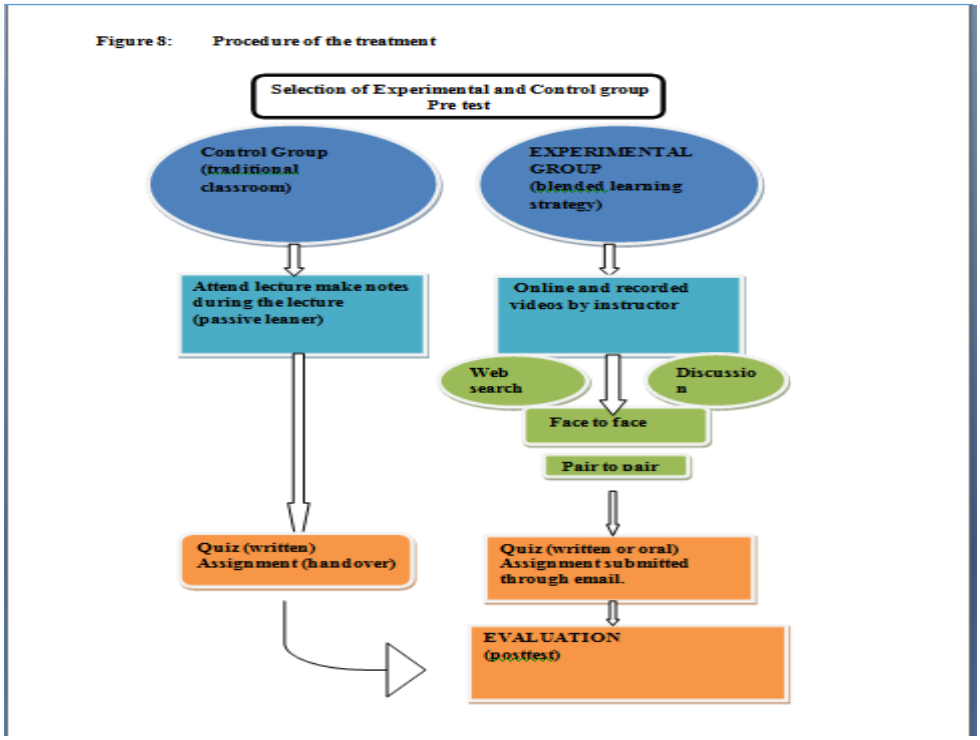


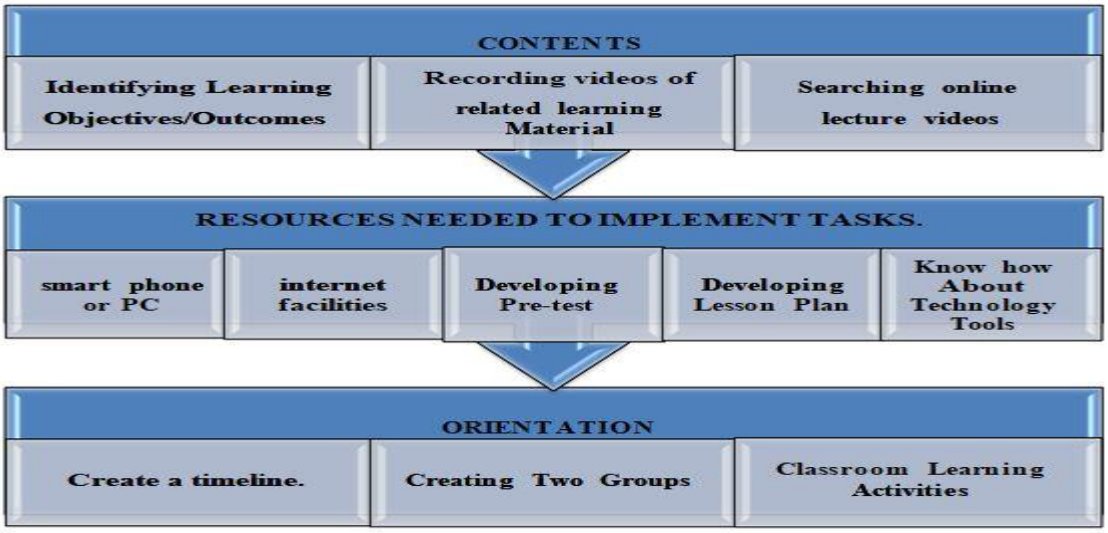
Figure 1: Procedure of Treatment

Figure 1 shows a clear picture of the procedure adopted during the treatment to both experimental and control group. The overall process was consisted of following steps.

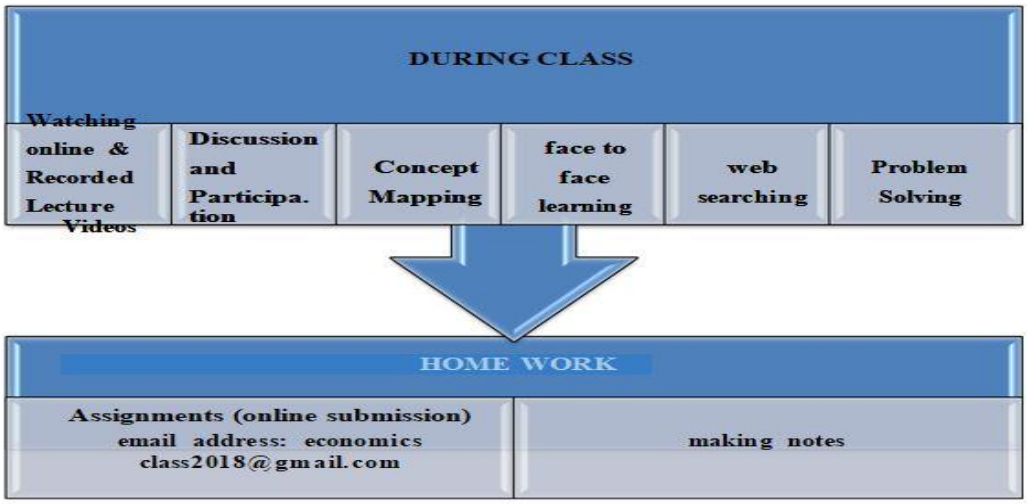
- Pre-test, Implementation of independent variables Post-test

The major phases of experimental procedure are Planning, Implementation and Evaluation. The detail of experimental procedure is given below:

1. Planning



2. Implementation



Evaluation

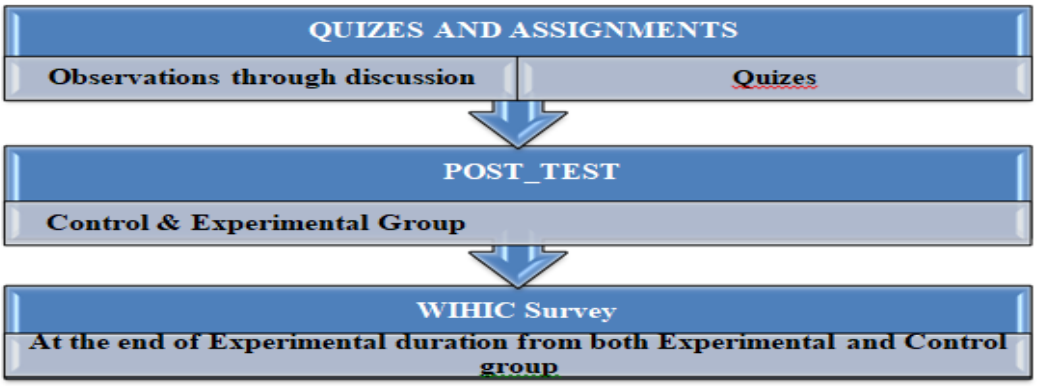


Figure 3: Process of Experiment

Planning consists of contents, resources needed to implement tasks and orientation of students towards blended learning.

During class the participants were engaged deeply and motivated by the instructor. The instructor started the class with video along with classroom discussion, face to face learning, web searching and problem solving etc. The students were given opportunities to maximize their learning during class discussion. The instructor was guided and facilitated the students where needed to. The participants were instructed to submit their assignments online email. (Email address: economicsclass2018@gmail .com) During this stage the instructor were ensured the performance of participants. The performance was observed through discussion and taking quizzes the class time was divided in the mentioned five phases;

1. Introductory and recall the previous lesson
2. Digital content
3. Face to face instruction
4. Collaboration
5. Evaluation

At the end of class, oral and written quizzes were taken from the participants. The following questions were assigned to the participants at the end of the session.

i. What was the aim of this video?
ii. Make a list of ideas you perceived,
iii. How much the discussion part is important? And
iv. Questions related to the units (as mentioned in lesson plan)

In the same manner the phase of evaluation was the productive one, the facilitator checked the performance of the student at the end of the session. In discussion questions were ask from the participants.

Control group was taught through traditional learning method. The traditional learning approach consisted of following steps.

1) Introductory and recalling the previous lesson
2) Lecture demonstration method
3) Quiz in written (at the end of the class)
4) Assignment (written)

At the end of the experimental period the instructor was administered post-test to accomplish the aim of the experiment that was to explore the effect of blended learning strategy on the performance of students. In order to collect data from experimental and control group, to find out the effect of blended learning strategy on classroom learning environment of both

Blended classroom and non-Blended classroom with respect to WIHIC scale ―what was happening in this class (WIHIC) scale was administered immediately after the experiment.

DATA COLLECTION

Data were collected through pre-test and post-test from both experimental and control group. Through (WIHIC) questionnaire data were collected from experimental and control group, to find out the effect on environment of blended learning method and traditional method with help of WIHIC scale.

DATA ANALYSIS

The results of the pre-test and post-test and observation scale were analyzed by *t*-test at a 0.05 level of significance.

ANALYSIS AND INTERPRETATION OF DATA

H_o1: There is no significant difference between the mean scores of experimental and control groups on the pre-test.

NGroups	N	Df	MMean	NSD	tt-value	"Effect size"	p-value
NControl	25	48	33.12	12.84	.011	0.003	0.99
Experimental	25		33.16	12.48			

"Not Significant"…. T Table Value at 0.05 = 1.68

At the 0.05 level of significance, the t-value. 011 was less than the table t-value of 1.68. As a result, "the null hypothesis was accepted". The effect size was determined to be 0.003, which is extremely small. It means that in the pre-test, there was no significant difference in academic performance between the experimental and control groups. The size of the effect is small.

H_o2: There is no significant difference between the mean scores of the experimental group and the control group on the post-test.

Groups	N	Df	Mean	SD	t-value	Effect size	p-value
nControl (post-test)	25	48	47.04	12.62	2.320	0.73	0.45
Experimental (post-test)	25		56.32	12.52			

"Significant" "Table Value at 0.05"=1.68

The evaluated t value, which was higher than the table value of 1.68 at a significance level of 0.05, was found to be 2.320. As a result, the alternative was picked rather than the null hypothesis. The effect's magnitude was estimated to be 0.73. The mean academic performance of the experimental group was 56.32 compared to 47.04 for the control group. It indicates that the experimental group's students did better than the control group's students.

H_{o3}: Blended learning strategy has no significant effect on the classroom learning environment of both blended learning and Traditional learning concerning the WIHIC scale.

(Comparison of the performance of blended learning and traditional concerning instructor's support)

hGroups	NN	Df	MMean	SD	t-value	Effect size	p-value
Blended class	25		26.00	2.21			0.00006
Traditional class	25	48	22.48	1.61	6.38	1.82	

"Significant". "tTable Value at 0.05"=1.68

Above table shows that t-value, which was bigger than the table's t-value of 1.68 at a significance level of 0.05, was 6.38. "The null hypothesis was thus disproved". The effect's size was calculated to be 1.82. In the Experimental group, the mean value for instructor assistance was 26, but in the Control group, it was 22.48. It indicates that the blended learning setting received more instructor support than the traditional learning setting did.

DISCUSSION

The results of the present study contrast with Rob Walker's (2002). Alijani, Kwun, and Yu (2014) conducted research that emphasized using blended learning for middle school writing instruction. In their study, the participants in a blended learning classroom showed a gain of 39.5% from the pre-test to the post-test, while the participants who received traditional instruction gain of 34.25%. The present study showed the positive effect of the Blended learning strategy. A similar experimental study on the subject of chemistry had been conducted by Keshk (2001) which also showed the positive result of the blended learning strategy. Camahalan and Ruley (2014) found that student learning increased due to a blended-learning environment. Additionally, Koedinger, McLaughlin, & Heffernan, (2010) According to the study, technology can differentiate education and provide students with quick feedback on their progress, leading teachers to utilize more productive instructional techniques in the classroom.

CONCLUSIONS AND RECOMMENDATIONS

Based on the result following conclusions were drawn:

1. There was no discernible difference in pre-test performance between students taught using the blended learning strategy and those taught using the traditional learning approach. The post-test revealed substantial variations in the performance of the two groups, with the students, taught using the blended learning strategy performing significantly better than the students taught using the traditional learning technique.
2. The study discovered a statistically significant difference between the experimental group's mean scores on the post-test and the pretest. Following treatment, the

experimental group performed significantly better on the post-test than it had on the pre-test. There was a significant difference between the performances of the control group in the pre-test and post-test. The student taught through the Traditional Lecture method improved their performance.

3. The research reveals a statistically significant difference between the two groups WIHIC-scale performances in terms of instructor support.

RECOMMENDATIONS

"The following recommendations have been prepared based on research findings":

1. The results of the current study showed that students who were taught using a blended learning strategy fared substantially better than those who were taught using a traditional learning approach". Therefore, it is advised that to improve student performance, the higher education commission should convince the administration of the institutions in Pakistan to use a blended learning approach to instruction.

2. The Higher Education Commission should be grateful for technological and professional advancements. Short courses, workshops, seminars, and "conferences for the professional development of university faculties should be encouraged in this way to help them compete in the current technological era".

3. The current study concentrated on conversations and digital content. The researcher can use a conversation to summarize the entire investigation into what students learn and how they improve their conceptual and procedural knowledge. Universities should therefore encourage fruitful debates "in the classroom" and through the "use of a blended learning model".

4. Providing effective exposure to the teachers to increase their level of deliverance in classrooms, some valuable additional digital curriculum courses should be offered.

5. The current study only included Masters-level students. Regarding the experimental group's performance, favorable results were seen. Therefore, it is advised that comparable research be done in various fields and degrees of schooling.

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