# A COMPARATIVE ANALYSIS BETWEEN VIRTUAL AND TRADITIONAL LEARNING ENVIRONMENT IN PAKISTAN

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A thesis submitted in partial fulfillment of the requirements for the Degree of Master of Philosophy/Science in Management with specialization in Technology Management at the Faculty of Management Sciences
International Islamic University Islamabad.

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# DEDICATION

*I dedicate this thesis to*

*my beloved parents*

**(Acceptance by the Viva Voce Committee)**

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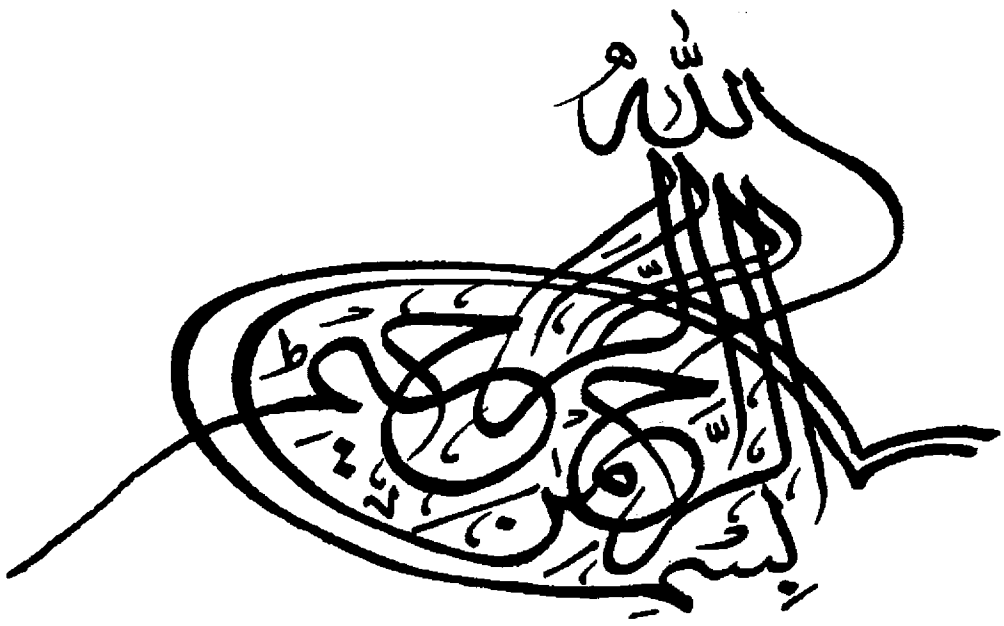
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# ABSTRACT

Online education is increasingly becoming common in higher education for supporting traditional education as well as emerging as an opportunity for delivering entire education online. In online education multimedia materials are used to support learning and the ability to adapt the course content to meet a wider range of learner interests and abilities. This study investigates the satisfaction and performance of students in TLE & VLE and also finds differences in gender based students' satisfaction and performance. Further, the preferences of students in selecting their Learning Environment are analysed. Data collected from four educational institutions with a sample of size 200 is taken for consideration. The findings portray that maximum students are satisfied with their learning environment and performing well in their respective environment. However male students especially of TLE want to switch from TLE to VLE due to certain reasons. Management or higher authorities in TE may try to launch an optional parallel VE to attract more students and to give an alternate option for their traditional students to perform better.

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Ayesha Mehboob

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## LIST OFABBREVIATIONS

**AIOU:** Allama Iqbal Open University

**VU:** Virtual University

**IIUI:** International Islamic University Islamabad

**MUST:** Mirpur University of science & Technology

**VLE:** Virtual Learning Environment

**TLE:** Traditional Learning Environment

**VE:** Virtual Environment

**TE:** Traditional Environment

# CHAPTER 1

# INTRODUCTION

## 1.1 INTRODUCTION

Computers have become one of the essential elements of our modern lives where information and communication technologies (ICT) have captured the interest of many people from different fields. There are number of studies on technology integration for educational purposes and it gives the impression that there is an emergent agreement on the benefits of consuming the Virtual Learning together with the Traditional classrooms interaction.

In ideal learning environment, universities should figure out the awareness of basic specialized understanding and enlargement of new proficiency for suitable information. In this sane world Virtual Learning has means that the universities getting the most remuneration from the active use of internet. Such successions have major changes in the web from a typical text-only standard to increase multimedia communication system. This in turn provided impetus for essential changes in the delivery method of rational information, virtual courses and training programs as well.

The traditional face to face process of delivering lecture depends on communication from a teacher to a student by means of a medium to deliver the information. Teacher controls the process of instructions, the lecture is delivered to the whole class and emphasizes on precise information.

Literature provides quite a number of studies on technology integration for educational purposes and it looks that there is a growing consent on the benefits of using virtual learning together with face-to-face classrooms interaction. Existing body of literature reflects significant soundness of Technology Acceptance Model (Davis et. al. 1989) with abundant examples of good practice in the use of ICT integration in universities and concerns about the level. Effectiveness of its integration is main concern in many countries.

Past few decades saw a marvelous enhancement in media technologies, possibilities of video recording, image compression, broadcast through satellite communication and its outstanding reception through TV, movies and video phones over the other parts of the world. These developments also directly influenced teaching and learning methodologies all over the world.

Virtual learning environment (VLE) is currently a hot research and development area. A large number of universities and institutions have started providing VLE to students around the world. The dimensions of distance and time both have been reduced. The students can now stay in their job or home and can still achieve their desire of seeking knowledge from anywhere. VLE is much more convenient and fast. The main concern which is required for VLE is the use of electronic media (Williams, 2002).

Benefits of Virtual learning environment are classroom independence and platform independence. Online course installed and supported in one place can be used by thousands of students all over the world who are equipped with any sort of Internet-connected computer. Thousands of Online courses and other important applications for delivering the lecture are available on different web site. VLE is a non traditional system of education in which student and instructor both are separated by distance.

The vastness of knowledge acquisition has its own advantages as well as disadvantages. Therefore, an investigation into comparative analysis of traditional and virtual learning environment by itself has become a source of research all over the world. Pakistan is a developing country. Limited research is available on the learning approaches in Pakistan. A couple of studies exist on VLE and TLE. But no study has yet been conducted to determine a comparison between them. Present research is narrowly being focused on student's satisfaction and performance in virtual or traditional learning environment; and how they feel which course system is more satisfactory and efficient

Traditional learning environment (TLE) practices have been in vogue since time immemorial. An ever increase in technological development reduced the distance between Continents and Nations, Countries and regions and above all the teachers and students. But the learning environment still remained the same i.e., a close vicinity of presence of teachers and learner.

TLE is no longer the only typical delivery style. New developments in technology have developed new ways of education and educationalist, with an inclusive impact (Antony Stella & Gnanam, 2004).Environment and satisfaction are vital variables of this study. In this study the main focus is learning environment and students' performance.

## 1.2 Objectives and scope of the research

The objectives of the study are:

1. To find out which learning environment is preferred by students.
2. To check whether students are satisfied with their respective learning environment.
3. To examine whether the performance of students depend upon the learning environment.

## 1.3 Problem statement and Research questions

Following are the research problems that will be investigated in this study.

(I) Is there a major impact of learning environment on Performance of student of a particular learning environment?

(II) Whether students' satisfaction influences their performance?

## 1.4 Significance of Study

This study was conducted in Pakistani universities. A guideline will be given to authorities in educational institutions that they should try to increase the satisfaction level of students so that it may have positive impact on their performance. This will be an important step for enhancing learning environment on the basis of students' responses. The study will also be helpful in giving a broader idea of student preference and satisfaction required for better performance that may increase an institutions' prestige.

# CHAPTER 2

# LITERATURE REVIEW

## 2.1 LITERATURE REVIEW

A general factor for learning in a usual classroom environment is a group and communicative relationship between student and teacher, and vice versa. The ability to ask a question and share a view with a fellow student, or to disagree with the point of view in an assignment are all fundamental learning activities (LaBay, 2003)

Present society is now termed as an information society with increasing use of emerging digital technologies providing e-learning for a growing number of educational sectors (Brandl, 2002; Kagima & Hausafus, 2000). According to Gordon Davies (2006) E-learning is not the same as distance learning, although e learning can be used to teach at a distance. E-learning is used on campus and here the important factor of providing support to students becomes much easier to manage.

Accompanying this technology expansion general public has realized that computers are essential components of the educational and instructional systems (Oliver & Trigwell, 2005). Davis (1989) Technology Acceptance Model has weighted perceived computer-efficacy on technology integration beliefs of the business students in literature (Coffin &MacIntyre, 1999).

In this viable environment technology is important for better survival. It is very important for organizations to implement new technologies. Employees refuse to accept the changes in their environment by the implementation of new technologies. (Kwon &zmuds, 1987). By this opposition it is difficult for management to work or run their organizations consequently.

Virtual learning environments (VLEs) is defined as, "computer-based environments which are open systems, allowing interactions and encounters with the participants, accessing to a wide range of resources VLEs through computer aided instruction (CAI), or computer micro worlds" (Piccoli, Ahmad & Ives ,2001).

Stonebraker & Hazeltine (2004) defined Virtual learning as, "the delivery of learning through electronic mediation which bridges the gap caused when the instructor and student are separated in either time or place". Technology has improved quality and reliability, and right to use hardware and software. However technology has not completely changed educational environments. Until now most communication is carried out during class- room lectures or all the way through broadcast electronic mails from a staff member to whole students.

Late 1990s and early 21st century, saw increased activities in the field of technology in educational institutions. Technical innovations and use of internet became more extensive (Omar 1992, Gibbs 1999). Vannatta (2000) depicted that the teachers are comfortable in using word processing and emails but they feel difficulties in using multimedia because their IT experience is rarely used for instructional purposes.

Content of courses are developed on frequently use body of knowledge, not distinct procedure of educational programs of the university. Hazeltine (2004) said though the program and courses are somewhat more important. Numerous universities and colleges do give scholastic honor on passing assessment.

Engelbrecht (2003) also said that VL strategies make best use of technology to boost the ideas and learning procedure. Now-a-days Internet access has competition among universities on the bases of giving the best quality of learning skills, quality of online programs learning, that are supported by online information and technical support services. "Learning" in educational sector put emphasis on basic knowledge, theory and logical skills. VL may be used to support either traditional face to face education or distance education or it might be replacement of the usual traditional medium.

Sangi (2005) said that use of IT has created a major shift in educational services in distance as well traditional learning environment. Changes and improvements in IT

infrastructure, sported by multimedia computing and ICT will probably make lecture and computer laboratories much more effective and efficient. Although multimedia and internet has provided many opportunities but there are many challenges to the courseware developer. One should understand course development requires a methodology according to the subjects to be taught, the students to be addressed and for specific learning.

Satisfaction and achievements of student are not correlated with each other (Moore & Kearsley, 2005), but satisfaction is very important for completion of the course in time (Chang & Fisher, 2003). Additionally satisfaction leads to better performance, which is very important component for student's achievement (Bollinger & Martindale, 2004). The factors results in the dissatisfaction and frustration of online students include tough time table, workload, poor software, no face to face communication (Gaddis, Napierkowsk, Guzman & Muth, 2000).

Feedback, opinion and comments from students to measure their satisfaction level can be useful in many aspects of which some are very helpful. While using the feedback information of the students many flaws can be investigated and analyzed to get the instant upgrading and improvement of teaching. It can also be used to know how well the teaching material has been understood by the students. On the other hand an overview of teaching and course delivery techniques can be obtained by the satisfaction state of student with course. In many educational institutions web feedback is necessary in a variety of conditions from a single course in a program, evaluation of students and satisfaction from their learning environment (Kara &Kaynak 2005).

Zhao, McC &Jiang (2009) found that, for many Chinese teachers, the traditional face-to-face lecture lasting for two or three hours is still the privileged teaching approach. Even when students have good access to internet and possibly VL implemented. Many teachers from higher education interviewed, said they still considered traditional method of lectures

most likely to result in high level of quality and learning outcomes. It is just a delivery system through which the individual student can receive the course material, which they are expected to learn on their own. In the Western context, network learning practice involves.

Ken & Neo (2004) said the traditional face to face process of communication is based on sending information from teacher to student through delivery method. The teacher controls the process of providing instructions and accurate delivery of content to whole class. In other words, the teacher delivers the lecture and the students obediently listen to the lecture. Thus, the medium of learning tends to be passive and students play their part in the process of learning.

From the review of literature there is a broad list of factors that have been used as the indicator of students' performance, including secondary school academic performance, admission qualifications, gender, attendance (full time/part time), capacity, traditions, culture and age. A study conducted by Eskew and Faley (1988) showed that scholastic aptitude test SAT is a test that is widely used in the United States that measures student's scholarly talent in different subjects.

Neill, Singh and Donoghue (2004) found from researches that virtual learning is not the only way to meet changes in education. Many students have no skills to study independently. One of its reasons is in their previous study they went through face to face medium. This aspect does matter in their better performance.

Parker (2001) described a brief description for the material to be learned. Material must be presented to someone for learning to take place. Students' level of interest has influence on their performance. It also depends on their ability, satisfaction, skills and motivation. Learning outcomes are not directly measurable so we rely on measuring the learning performance.

With respect to students' performance, a study conducted by Daymont and Blau (2008) found that age, grade extracurricular activities and achievement in course are the factors that have impact on better performance of students. Another study was done by Manan and Mohamad (2003) on students' performance. This study found a significant difference between the performance of male and female students.

The significant factors in VLE are different from those of TLE. For the providers of Virtual Learning it is important to facilitate students with little prior knowledge by offering help. This could be possible in the face to face teaching session. The lecturer or a course facilitator should be trained as a 'trouble shooter' at a basic level, and can determine basic hardware and software issues. The successful factor in VLE is instructor who have major contributions (Kayte, 2004; Gurmak; 2004)

Stella and Gnanam (2004) found that the students of virtual learning environment away from or in campus have less gap between on or off-campus students. This convergence of on-campus to off-campus has resulted in the use of more sophisticated term 'virtual learning'. In spite of whether students are on campus or on-line, by integration of IT into educational institution, learning becomes distributed. With the new developments in technology, the impact of virtual learning is not restricted to the country of origin. Developments in any state affect the higher education's scenario globally.

Institutions with good image and having better structure for delivering online courses provided better outcomes. Online environment also provide great opportunities of interactions for instructors and students. This increased the possibility of achieving expected goals and objectives (Daymont &Blau 2008). According to Vrasidas and McIsaac (1999) three types of interactions are more important for the quality of online education than others which are; interaction between student to student, instructor to student and student to its course content.

According to Banerjee and Brinckerhoff (2002), the technology must be available to all students for getting the good results from the online education, well-known hardware and software must be used, and students and faculty must have the required skills and expertise to perform in a virtual environment. The way of teaching and the better online access to students from teachers have increased the effectiveness of online education. Due to availability of broadband technology and electronic books, attractiveness of online education has increased. Along with the cost effectiveness, online education has more flexibility, convenience, easy accessibility, wide reach and consistency (Gunasekaran et al., 2002).

According to Gabriele and Rami (2001) online education requires consideration of a number of factors. These are commitments from administration and the faculty, the quality of lecture delivery, significant amount of time to develop the right course structure, communication among students and between students and the instructor, and different role of the faculty members. Richardson (2003) reported that there were no significant differences were found between the students of online and face-to-face education in term of course quality and delivery method, throughout the whole academic period. In order to make students successful in an online education instructor should be devoted, motivated and must be equipped with enough computer knowledge (Parkinson, et al., 2003).

As soon as the online teaching and learning atmosphere spread out and matures, innovative and advanced ways of interactions are substituting the face-to-face education. New communication alternatives have been developed. Advanced communication systems and web-based conferencing has provided an opportunity to students and teachers a convenient way of learning (Rovai, 2002). As the use of information technology become well-known in education, modernized way of communication came in to being, which changed the preference of students from face-to-face to online education. Now students feel that up to date technology will improve their learning (Zaidel, 2007).

Internet is commonly available in universities all over the world. And it is offering new ways of communication, collaboration and delivery methods to students and teachers. But internet has to be used seriously and practically towards the achievement of goals (Sankaran &Bui 2001). The speed of the internet and its connectivity has increased and improved day by day. Communication between students and teachers regarding class interactions, courses, projects, assignments and events will soon be so simple like talking on a wireless phone. Now-a-days the students can get benefits from the latest technology in many ways. They can access and use the course material repeatedly. Students can use this course material conveniently due to availability of internet (Abraham, 2002).

In online education students can collect instructions, compose and put forward assignments, and raise questions to the instructor and fellow students at any time and at any place by using an internet connection (Olapiriyakul & Scher, 2006). Internet is a major technological advancement which has changed our society and also our universities worldwide. So universities have to take benefit from this technology for online delivery methods. Better use of technology is a critical success factors in online education (Volery & Lord, 2000).

Thurmond, Wambach and Connors (2002) argued that in online education most up-to-date technology is being commonly used according to the different needs of the student's and their satisfaction. But some students have very little know-how about the latest technology. Therefore technical support is important for student's to understand and better use of technology. Granitz and Greene (2003) reported that mostly the dissatisfaction of students occurred due to a lack of teacher training, technology problems, student inexperience with online education, and a failure in communication with faculty and others students. In this study, level of technology is as an independent variable. Level of technology includes convenient and up-to-date technology, which VU are using at this time.

# CHAPTER 3

# TREORETICAL FRAMEWORK AND HYPOTHESIS

## 3.1 Development of theoretical Framework

Self-efficacy theory appears to be particularly well suited to studying technology integrated institutions. Students who have accessibility of computers enjoy considerable study self-sufficiency that impacts their own motivation and beliefs in their abilities i.e., self-efficacy judgments can have on their outcomes may be considerably more than for students who have no interaction with technology (Gist, et al.,1989). Therefore, technology integrated institution that learns how to maximize students' self-efficacy with respect to technology may bring in greater benefits from a technology integrated environment (Hill, Smith & Mann, 1987).

Self-efficacy relates to awareness about one's ability to organize and realize actions to achieve a preferred performance skill for particular tasks. Self-efficacy theory is a vital component that suggests in an individual performance, and cognitive factors are all highly consistent (Compeau & Higgins, 1995). Wood and Bandura (1989) prolonged this definition by telling that self-efficacy beliefs have an essential role in a student's satisfaction and performance. Self-efficacy judgments also conclude how much effort students will spend on a task and how long they take that task (Staples, Hulland &Higgins, 1998). Students with strong self-efficacy thinking put forth greater efforts to achieve a challenge while those with weak self-efficacy beliefs are probable to decrease their efforts or yet give up (Bandura &Schunk, 1981).

From the study of previous literature researcher has proposed the following theoretical model as shown in figure 3.1. There are three variables learning environment, satisfaction and performance. On the basis of these variables the survey has conduct.

PROPOSED THEORATICAL MODEL

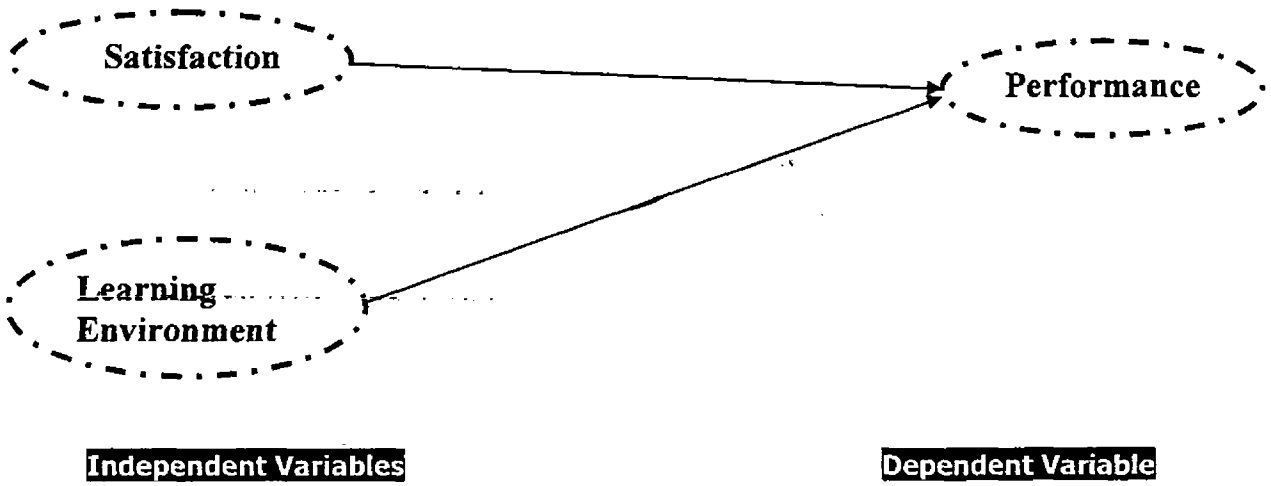



**Figure 1**

## 3.2 Variables

Three variables are taken Learning Environment, Satisfaction and Performance. Satisfaction and learning environment are independent variable where as Performance of students is dependent variable.

## 3.3 Research hypotheses

Different researches been conducted over the satisfaction and performance of students in different learning environment. Satisfaction shows a stronger relationship with the performance of students, but in certain situations the performance of a student may be negative, due to lack of expertise of teacher. Satisfaction and environment of students could be considered as a main factor to influence the performance.

These hypotheses were tested by the collection and analysis of survey data. Based on the purposed model and supported by the literature review.

## HYPOTHESIS OF THE STUDY

***Hypothesis 1:***

*Ho: There is no significant difference in the level of satisfaction among students of both in Traditional and Virtual Learning Environment*

*$H_1$: There is a significant difference in the level of satisfaction among students of both in Traditional and Virtual Learning Environment*

Research indicates that a significant relationship exists between the student satisfaction and the students' performance towards learning environment (Bollinger & Marlindale, 2004).

***Hypothesis 2:***

*Ho: The students' performance in both VLE and TLE is independent of gender.*

*$H_1$: The students' performance in both learning environment depends on gender.*

***Hypothesis 3:***

*Ho: There is no significant difference between obtained marks of students learning in VE and TE*

*$H_1$: There is significant difference between obtained marks of students learning in VE and TE.*

***Hypothesis 4:***

*Ho: There is no significant difference between obtained marks of students learning in VE and TE on the basis of gender*

*$H_1$: There is significant difference between obtained marks of students learning in VE and TE on the basis of gender.*

# CHAPTER 4

# METHODOLOGY

## 4.1 METHODOLOGY

### 4.2 Data collection and sample

The data collected through administration of survey from organizations in the educational sector of Pakistan. Stratified sampling method was used for conduct of survey. Two strata were made. Each stratum consists of two universities. In strata one the universities having Virtual learning system (AIOU and VU) were included in second strata the universities having Traditional learning system (IIUI and MUST) were included. Two hundred questionnaires distributed in these universities. An online questionnaire was also launched on website www.itzmeaamir.com/vle/index.php and got filled by the students' of AIOU whereas from other universities the researcher personally collected filled questionnaires. Students had fully freedom to reply as per their desire. There was not pressure on them. The questionnaire consisted of three sections (a) Learning Environment (VLE & TLE), (b) Satisfaction of students and (c) Performance of the students. The questionnaire was filled by the students during their class sessions. As already mentioned sample size consist of 200 respondents. These two hundred respondents were selected on simple random bases and a sample of 100 each was taken from both strata. The student enrolled in BBA, MBA, BS (CS) programmes were respondents.

**POPULATION**

| Universities | Sample |
|---|---|
| Allama Iqbal Open University Islamabad | 41 |
| International Islamic University Islamabad | 50 |
| Mirpur University of Science & Technology | 50 |
| Virtual University Islamabad | 59 |
| **Total** | **200** |

### 4.2.1 Questionnaire

The final draft of questionnaire consists of 30 questions. The researcher had planned to study the opinion of students regarding their satisfaction and performance while studying in a particular learning environment.

### 4.2.2 Field Experience

The students' behavior was very good. Some respondents initially were refused to fill up the questionnaire but by defining the objectives of the study, they agreed to cooperate. Some respondents said that the study topic was admirable because it was the need of present world to bring some new and scientific changes in old educational system. Some of the respondents were also interested in the results of the survey so they gave their e-mail addresses so that result could be conveyed to them after completion of study.

### 4.2.3 Web Based Survey

A web based survey was also planned and conducted for online students of department of Computer Science at AIOU. The questionnaire was developed through software and uploaded on the site "www.itzmeaamir.com/vle/index.php." For the student's awareness for this online survey emails were dropped into their in box. 70 email requests were sent but only 41 students responded.

### 4.2.4 Development of Online Questionnaire

For the development of Web based questionnaire php is used as a server side script with the combination of MYSQL as Database Management System.

### 4.2.5 Feedback of the Web Survey

The response was very slow, and the response rate was low as well. Only 41 responses were received from 70. There might be several reasons for this low response like problem of accessibility to internet, slow speed internet connections and understanding for

the meanings and purpose of questions asked. It also showed that at present web based surveys was not very popular tool in Pakistan but in future it will be popular by increasing in awareness.

### 4.3 Measures:

Measures for satisfaction, performance and learning environment were obtained from the self-reported questionnaires. Measurement of variables was done on the five point likert scale where 5 stands for "Strongly Agree", 4 for "Agree", 3 for "Neutral", 2 for "Disagree", and 1 stand for "Strongly Disagree".

Data was collected from IIUI Islamabad, main campuses of AIOU and VU located at Islamabad and Mirpur University of Science & Technology, Azad Jammu Kashmir. The set focused more on learning environment and the students' satisfaction and performance in their studies. Stratified sampling had been applied two data consisting of VLE and TLE were made to delimit the study only two educational institutions running Virtual system and two running traditional systems were selected. A sample of 200 was selected. Analytical tools such as mean, median mode, standard deviation, t-test and chi- square were applied to test the hypotheses using statistical software SPSS version 16.0

# CHAPTER 5

# RESULTS AND ANALYSIS

# 5. RESULTS

## 5.1 DESCRIPTIVE STATISTICS

Table 1.Mean, Median, Mode and Standard Deviation of Virtual Learning Environment

| ITEMS<br>Learning Environment | Mean | Median | Mode | S.D |
|---|---|---|---|---|
| I like the use of technology for online/class learning environment | 3.67 | 4.00 | 4.00 | 1.01 |
| I like online presentation | 4.43 | 5.00 | 5.00 | .76 |
| I am comfortable in asking online /face to face questions | 3.75 | 4.00 | 4.00 | .957 |
| I can well communicate with teacher on web site/in class | 3.67 | 4.00 | 5.00 | 1.11 |
| I am able to perform lab/class work without the help of teacher | 3.26 | 3.00 | 3.00 | .836 |
| I learn more from the web resources/class lectures | 3.54 | 4.00 | 4.00 | .783 |
| Material available on web suggested/provided by teacher has improved my learning | 3.85 | 4.00 | 4.00 | .946 |
| An online/class session is an efficient means of communicating with other students in course | 3.54 | 4.00 | 4.00 | 1.03 |
| An online/class course allows for social interaction. | 3.53 | 4.00 | 4.00 | .881 |
| I want face-to-face interaction with teacher during lecture | 3.22 | 3.00 | 3.00 | .882 |

Table 1 depicts the descriptive analyses of section-1 of questionnaire consisting of responses of students regarding the learning environment in which they were getting education. It is clear from the analysis that in virtual learning system the student strongly like the online presentation (mean 4.43 and median 5). Students like use of technology (mean 3.67 and median 4.00). They also agreed that they could well communicate with teacher (mean 3.67 and median 4.00). Students agreed that they learnt from lectures and also agree that the material provided by teachers improved their learning (mean 3.54 and median 4.00), (mean 3.85 and median 4.00) respectively. Students also agreed with online/class session are an efficient means of communicating with other students and they also allowed social interaction (mean 3.54 and median 4.00), (mean 3.53 and median 4.00) respectively. The least response was noted for statement "I want face to face interaction with teacher during

lecture" as the mean is 3.22 and median 3.00 and the statement" I am able to perform lab/class work without the help of teacher" as the mean is 3.26 and median 3.00 which had trend toward neutral.

**Table 2.** Traditional Learning Environment and its Mean, Median, Mode and Standard Deviation

| ITEMS<br>Learning Environment | Mean | Median | Mode | S.D |
|---|---|---|---|---|
| I like the use of technology for class learning environment | 4.15 | 5.00 | 5.00 | 1.15 |
| I like class presentation | 4.10 | 4.00 | 4.00 | 1.00 |
| I am comfortable in asking online /face to face questions | 3.68 | 4.00 | 4.00 | 1.16 |
| I can well communicate with teacher on web site/in class | 3.68 | 4.00 | 4.00 | 1.06 |
| I am able to perform lab/class work without the help of teacher | 3.94 | 4.00 | 4.00 | 1.12 |
| I learn more from the class lectures | 4.14 | 4.00 | 4.00 | .899 |
| Material available on web suggested/provided by teacher has improved my learning | 3.99 | 4.00 | 5.00 | .999 |
| An online/class session is an efficient means of communicating with other students in course | 3.86 | 4.00 | 4.00 | 1.06 |
| An online/class course allows for social interaction. | 3.88 | 4.00 | 5.00 | 1.15 |
| I want face-to-face interaction with teacher during lecture | 4.15 | 4.00 | 5.00 | 1.05 |

Table 2 presents the descriptive analysis of section-1 of questionnaire consisting of response of students regarding the traditional environment in which they were getting education. It was clear from the analysis that in traditional learning system the student were strongly in favor of face to face interaction with teacher during lecture as mean 4.15 and mode 5.00. Similarly they strongly agree with the statement that "they learn more from the class lectures" as mean 4.14 and median 4.00. They also agreed with the statement that "I like class presentation". It was also worth mentioning that maximum students of traditional learning environment were in favor of use of technology for class learning environment.

**Table 3.** Virtual Satisfaction and its Mean, Median, Mode and Standard deviation

| ITEMS<br><br>Satisfaction | Mean | Median | Mode | S.D |
|---|---|---|---|---|
| I am satisfied with the amount of time required for this course | 4.00 | 4.00 | 4.00 | .858 |
| I am satisfied with the learning that occurred in Course | 3.56 | 4.00 | 4.00 | .879 |
| I am more satisfied with the class discussion | 3.61 | 4.00 | 4.00 | .897 |
| I am satisfied from teaching methods | 3.73 | 4.00 | 5.00 | 1.22 |
| I am satisfied with teacher's evaluation | 3.76 | 4.00 | 4.00 | .877 |

Table 3 illustrated that most of students of virtual learning environment agreed with the statement that they were satisfied with the amount of time required for their respective course (mean 4.00 and median 4.00). Similarly they agree with the teacher evaluation (mean 3.76 and median 4.00). Trend in remaining statements were also toward "agree" side.

**Table 4.** Traditional Satisfaction and its Mean, Median, Mode and Standard Deviation

| ITEMS<br><br>Satisfaction | Mean | Median | Mode | S.D |
|---|---|---|---|---|
| I am satisfied with the amount of time required for this course | 3.35 | 4.00 | 4.00 | 1.19 |
| I am satisfied with the learning that occurred in course | 3.70 | 4.00 | 4.00 | 1.11 |
| I am more satisfied with the class discussion | 3.69 | 4.00 | 4.00 | 1.04 |
| I am satisfied from teaching methods | 3.62 | 4.00 | 4.00 | 1.12 |
| I am satisfied with teacher's evaluation | 3.36 | 3.5 | 4.00 | 1.16 |

Above tables 3 and 4 show the description of Satisfaction which is about learning environments. As there was not any big difference in the satisfaction of both environment except in two questions there was a slight difference "required time for course and I am satisfied with teacher's evaluation" (mean 4.00 and median 4.00), (mean 3.35 and median 4.00) respectively. Trend of remaining statements were toward "agree "side.

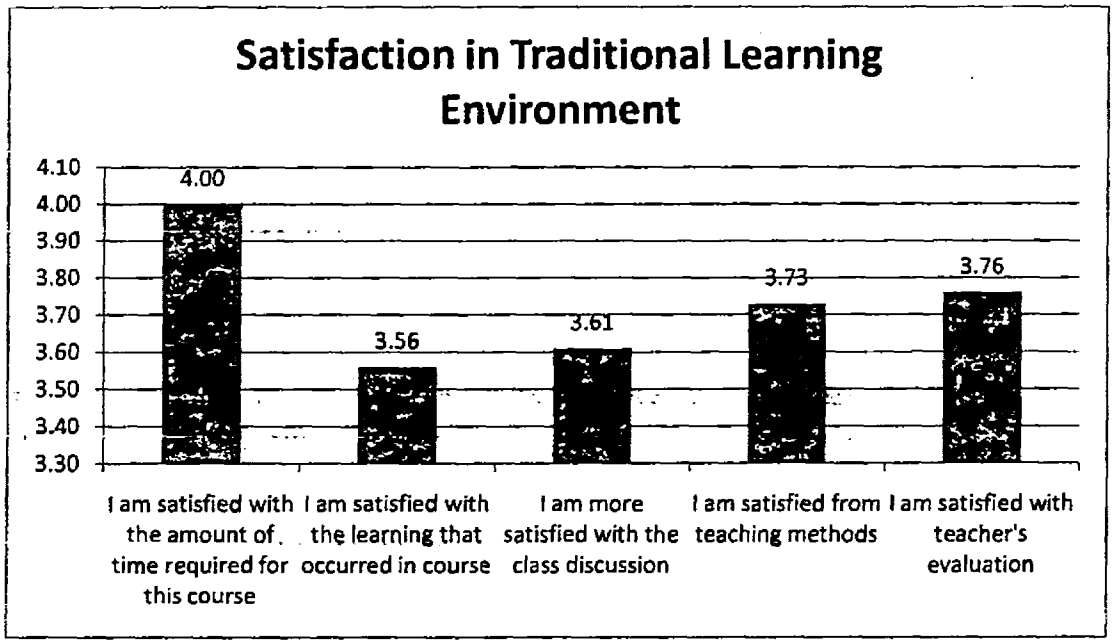



**Figure 2**

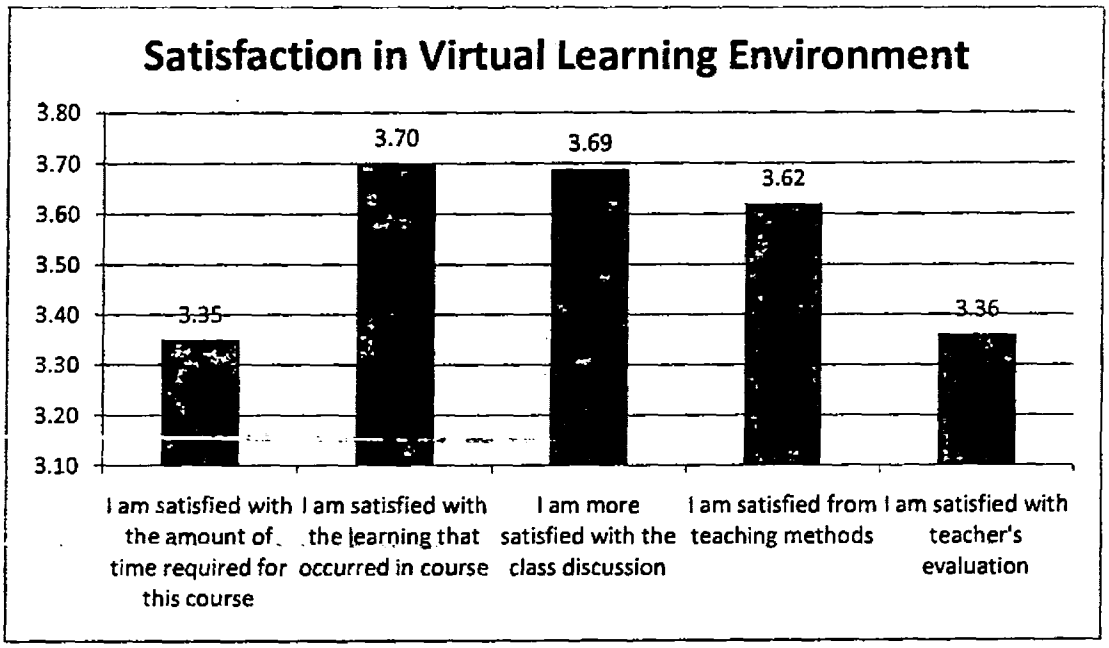



**Figure 3**

Figure 2 and figure 3 show the graphical representations of table 3 and table 4.

**Table 5.** Virtual Performance and its Mean, Median, Mode and Standard Devaition

| ITEMS<br>Performance | Mean | Median | Mode | S.D |
|---|---|---|---|---|
| Course is successfully completed in time | 3.55 | 4.00 | 4.00 | 1.05 |
| I get knowledge from the subject | 3.93 | 4.00 | 4.00 | .807 |
| I obtain expected grades | 3.75 | 4.00 | 4.00 | .936 |
| I have improved my learning skills | 4.24 | 4.00 | 5.00 | .900 |
| I feel difficulties in learning | 3.97 | 4.00 | 5.00 | 1.14 |

Table 5 illustrates the responses of students regarding their performance while studying in the virtual learning environment. Mostly student's response was that they improved their learning skills (mean 4.24 and median 4.00 while mode is 5.00) while the standard deviation was 0.900 which showed the consistency of response. The other major response was for the statement that "I feel difficulties in learning". The mean was 3.97 and median 4.00. The mode was again 5.00 which confirm the strongly agree response. The standard deviation was 1.14, which is not a big value. As S.D was near to 1 at likert scale then it will be small but if it will be 2 or more than 2 then it will be consider a big value. The response for remaining statements mostly falls in the category of "agree".

**Table 6** .Traditional performance and its Mean, Median, Mode and Standard Deviation

| ITEMS<br>Performance | Mean | Median | Mode | S.D |
|---|---|---|---|---|
| Course is successfully completed in time | 3.41 | 4.00 | 4.00 | 1.35 |
| I get knowledge from the subject | 3.87 | 4.00 | 4.00 | .872 |
| I obtain expected grades | 3.65 | 4.00 | 4.00 | 1.07 |
| I have improved my learning skills | 4.00 | 4.00 | 4.00 | .852 |
| I feel difficulties in learning | 3.16 | 3.00 | 4.00 | 1.07 |

Table 6 portrays the responses of students learning in Traditional Environment. The maximum response was about the statement that "I have improved my learning skill". The

mean, median and the mode was same i.e., 4.00 while the standard deviation here was 0.852 which was very low showing the consistency of responses. The remaining responses were in the range of categories 'neutral' and agree. The less response was for the statement that "I feel difficulties in learning". Here mean was 3.16, median 3.00 and mode 4.00 while the standard deviation was also not having big value.

## 5.2 Chi-Square Analysis:

To check the association between two or more attributes, chi-squared test was used and Pearson's chi-square value determined possible acceptance or rejection of hypotheses for existence of any relationship.

**Table 7.** Learning Environment * I like the use of technology for online/class room learning environment

| | | I like the use of technology for online/class room learning environment | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Learning Environment | Virtual Learning Environment | 12 | 31 | 57 |
| | Traditional Learning Environment | 10 | 9 | 81 |

**Table 8.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 28.510 | 4 | .000 |

Table No. 7 depicted that usage of technology depended upon the learning environment as the chi-square value in table 8 was 28.510 and the p-value for this test was 0.000 which was highly significant both at 0.01 and 0.05 level of significance. So it showed

that there was significant difference between the opinions of respondents of both learning environment. From the above table 7 it was clear that the 81 students of TLE were more in favour of "use of technology for their classroom learning" and only 10 students were against. Actually students wanted they should be teach with the use of latest technology like through internet, multimedia etc. Basically students of TLE wanted new innovations in their teaching style. As the VL students were already learning through latest technology so their response was not as much as of TL students.

**Table 9.** Gender of students * I like the use of technology for online/class room learning environment

| | | I like the use of technology for online/class room learning environment | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Gender of students | Male | 7 | 22 | 61 |
| | Female | 15 | 18 | 77 |

**Table 10.** Chi-Square

**Chi-Square Tests**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 12.020 | 4 | .017 |

It was clear from table No. 9 that to determine the relationship between the gender and use of technology the chi-square value in table 10 was 12.00 and the p-value was significant at 0.05 but was non-significant at 0.01 so it can be said that we cannot strongly reject the hypothesis of independence for gender and use of technology.

77 female and 61 male students were in favor of "use of technology for their learning". It also showed that there was not much difference of opinions of both male and

female respondents regarding "the use of technology for online/classroom learning". Both respondents want new innovations for learning.

**Table 11.** Learning Environment * I want face-to-face interaction with teacher during lecture

| | | I want face-to-face interaction with teacher during lecture | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Learning Environment | Virtual Learning Environment | 19 | 45 | 36 |
| | Traditional Learning Environment | 8 | 10 | 82 |

**Table 12.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 62.810 | 4 | .000 |

Table 11 show the response of students of both virtual and traditional environment when they were asked that whether they want face to face interaction with teacher during lecture. The chi-square value for this analysis was 62.810 and the p-value for this analysis was 0.000 which was highly significant both at 0.05 and 0.01. It shows that 82 students of TLE preferred "face to face interaction with teacher during lecture" while 36 students of VLE in favor of teacher student face to face interaction.

**Table 13.** Gender of students * I want face-to-face interaction with teacher during lecture

| | | I want face-to-face interaction with teacher during lecture | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Gender of students | Male | 13 | 23 | 54 |
| | Female | 14 | 32 | 64 |

**Table 14.** Chi-Square

**Chi-Square Test**

| | Value | Df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 7.844 | 4 | .097 |

Table 13 shows the gender wise response of student toward the question whether they wanted face to face interaction with teacher during lecture or not. In table 14 value of chi-square was 7.844 for this analysis and the p-value was non-significant for both 0.05 and 0.01 level of significance. Here chi-square and p-value both were non significant. It means there was no significant difference of opinions between male and females (54 and 64) regarding the face to face interaction with teacher

**Table 15.**Learning Environment * I am satisfied from teaching methods

| | | I am satisfied from teaching methods | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Learning Environment | Virtual Learning Environment | 19 | 17 | 64 |
| | Traditional Learning Environment | 13 | 29 | 58 |

**Table 16.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 7.760 | 4 | .101 |

In table 15 the data was summarized for the relation between learning environment and response of students for statement that whether they were satisfied with the teaching methods. It was clear from the result that student's satisfaction regarding the teaching methods was not dependent on learning environment as the chi-square value in table 16 was 7.760 and the p-value was 0.101. 64 respondents of VLE were satisfied from their teaching methods while 58 respondents of TLE were satisfied from their teaching methods. So it was clear from these figures that students' satisfaction was not dependent on learning environment.

**Table 17.** Gender of students * I am satisfied from teaching methods

| | | I am satisfied from teaching methods | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Gender of students | Male | 16 | 13 | 61 |
| | Female | 16 | 33 | 61 |

**Table 18.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 7.425 | 4 | .115 |

In table 17 the satisfaction from teaching method was checked on the basis of gender. The results depict that the value of chi-square was 7.425 for this analysis and the p-value was non-significant for both 0.05 and 0.01 level of significance. So it was clear that the

satisfaction from teaching methods was not dependent on gender. This shows that both genders gave equal importance to teaching methods. Both male and female students were equally satisfied from teaching methods.

**Table 19.** Learning Environment * I have improved learning skills

| | | I have improved learning skills | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Learning Environment | Virtual Learning Environment | 4 | 16 | 80 |
| | Traditional Learning Environment | 6 | 15 | 79 |

**Table 20.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 11.138 | 4 | .025 |

Table 19 illustrates the comparison of statement "I have improved learning skills with the learning environments. The chi-square value for this comparison was 11.138 in table 20 while p-value was 0.025 showing the significance of association.

**Table 21.** Gender of students * I have improved learning skills

| | | I have improved learning skills | | |
|---|---|---|---|---|
| | | Against | Neutral | Favour |
| Gender of students | Male | 3 | 12 | 75 |
| | Female | 7 | 19 | 84 |

**Table 22.** Chi-Square Test

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 8.111 | 4 | .088 |

Table 21 represents the association between the genders regarding the statement "I have improved learning skill". It was cleared from the results that the chi-square was 8.111 and the p-value here was 0.088 in table 22 which was non-significant both at 0.01 and 0.05. This result was showing that improvement of learning skill not based on gender. Both male and female students improved their learning skills whether they were in VLE or TLE. It was showing the effectiveness of both teaching methods.

**Table 23.** Learning Environment * I prefer learning environment

| | | I prefer learning environment | |
|---|---|---|---|
| | | VLE | TLE |
| Learning Environment | Virtual Learning Environment | 89 | 11 |
| | Traditional Learning Environment | 42 | 58 |

**Table 24.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 48.877 | 1 | .000 |

Table 23 illustrates the association between the choices of learning environment while studying in a particular learning environment. Here the value of chi-square was 48.877 with p-value 0.000. The value of chi-square was highly significant both at 0.01 and 0. 05 level of significance. This shows that students learning in VLE were highly associated with their learning environment only 11 of them replied they prefer TLE. On the other hand in case of TLE mostly students (58) were in favor of TLE.

**Table 25.** Gender of students * I prefer learning environment

| | | I prefer learning environment | |
|---|---|---|---|
| | | VLE | TLE |
| Gender of students | Male | 68 | 22 |
| | Female | 63 | 47 |

**Table 26.** Chi-Square

**Chi-Square**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 7.322 | 1 | .007 |

Table 25 presented the association between the statements I prefer learning environment with regard to gender. It was clear from the result that the association was significant as chi-square value was 7.322 with p-value 0.007 which was highly significant both at 0.01 and 0 .05 level of significance. Here it was clear from table 16 that there was difference between male and female regarding the choice of learning environment. 57% females and 66% male prefer VLE. The reason might be as males have to support their families so they prefer VLE, as in this system they could continue their studies along with their jobs.

**Table 27.** Learning Environment * I am more satisfied with learning environment

| | | I am more satisfied with learning environment | |
|---|---|---|---|
| | | VLE | TLE |
| Learning Environment | Virtual Learning Environment | 96 | 4 |
| | Traditional Learning Environment | 42 | 58 |

**Table 28.** Chi-Square

**Chi-Square Tests**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 68.163 | 1 | .000 |

Table 27 depicted that student's satisfaction with the learning environments while studying in some specific learning environment. It was clear from the results that the chi-square value was 68.163 and p-value is 0.000. The chi-square was significant both at 0.01 and 0. 05 level of significance. This shows that students of VLE were much more satisfied with their learning environment. 96 students of VLE were satisfied with their learning environment while only 4 replied in favour of TLE. On the other hand in TLE 58 out of 100 respondents showed satisfaction with their learning environment, while large number (42) traditional students said they would be more satisfied in VLE rather than TLE.

**Table 29.** Gender of students * I am more satisfied with learning environment

| | | I am more satisfied with learning environment | |
|---|---|---|---|
| | | VLE | TLE |
| Gender of students | Male | 73 | 17 |
| | Female | 65 | 45 |

**Table 30.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 68.163 | 1 | .000 |

Table 29 depicted the association between the gender and the statement "I am more satisfied with learning environment". The value of chi-square was 68.163 with p-value 0.000. The results were highly significant both at 0.01 and 0. 05 level of significance. Results showing that male students more were satisfied from VLE (73) and only 17 in favor of TLE. On the other hand females were in favor of both environments VLE as well as TLE (65 & 45 respectively). Only 19% male respondents were satisfied with TLE while 41% females showed satisfaction with TLE.

**Table 30.** Learning Environment * I can perform better

| | | I can perform better | |
|---|---|---|---|
| | | VLE | TLE |
| Learning Environment | Virtual Learning Environment | 95 | 5 |
| | Traditional Learning Environment | 41 | 59 |

**Table 31.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 67.004 | 1 | .000 |

Table 30 is showing the association between the response of statement "I can perform better" and the learning environments. The chi-square value was 67.004 and p-value is 0.000. The chi-square value was highly significant both at 0.01 and 0 .05 level of significance showing the strong association between the above mentioned statement and the learning environments. It was clear from results that respondents belonging to VLE, responders were highly in favor they can perform better in their LE. This result also supported the results of table 17. On the other hand the students of TLE had dispersed opinion as 41 out of 100 replied they could perform better in VLE whereas, 59 responded they could perform better in their own (Traditional) learning environment.

**Table 32.** Gender of students * I can perform better

| | | I can perform better | |
|---|---|---|---|
| | | VLE | TLE |
| Gender of students | Male | 74 | 16 |
| | Female | 62 | 48 |

**Table 33.** Chi-Square

**Chi-Square Test**

| | Value | df | Asymp. Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 15.211 | 1 | .000 |

Table 32 illustrates the association between the gender and their response regarding the statement "I can perform better". It was clear from the result that the chi-square value here was 15.211 and the p-value was 0.001 showing the significance of chi-square value. The chi-square value was highly significant on 0.01 and 0.05 level of significance.

**Table 34.** Group Statistics

| | Learning Environment | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Marks percentage in last semester | Virtual Learning Environment | 100 | 66.7329 | 6.75642 | .67564 |
| | Traditional Learning Environment | 100 | 70.2095 | 6.79309 | .67931 |

t = -3.629; p-value=0.000 df: 198

Table 34 illustrates the mean difference comparison of marks difference on the basis of learning environment. The average marks of students studying in VLE are 66.73 and for students studying in TLE were 70.21. The t-statistic value for this analysis was -3.629 with p-value 0.000 (highly significant). The t-statistic value was highly significant on both 0.01 and 0.05 level of significance. Thus, there was significant different among the obtained marks of students among VLE and TLE. These results were showing that students of traditional learning environment got more marks (average marks=70.20) as compare to students of virtual learning environment (average marks=66.73). The reason might be face to face students-teacher interaction.

**Table. 35** Group Statistics

| | Gender of students | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Marks percentage in last semester | Male | 90 | 68.0951 | 7.58807 | .79985 |
| | Female | 110 | 68.7789 | 6.45693 | .61564 |

t = -0.688; p-value=0.492 df: 198

Table 35 presents the comparison of marks on the basis of gender. The t-statistic value here was -0.0688 with p-value 0.492. The t-statistic value was non-significant at both 0.01 and 0.05 level of significance. This showing that there was no significant difference between the marks on the basis of gender. These results show there was no difference in the performance of both male and female. As both gender were obtaining average marks of 68. So we can say, both male and female students were performing equally.

**Table. 36** I prefer learning environment

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | VLE | 131 | 65.5 | 65.5 | 65.5 |
| | TLE | 69 | 34.5 | 34.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

From table 36 it is clear that most students were interested in VLE. 65% of total student reply in favor of virtual learning system and only 34.5% replied for TLE.

**Table: 37** I am more satisfied with learning environment

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | VLE | 138 | 69.0 | 69.0 | 69.0 |
| | TLE | 62 | 31.0 | 31.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

Table 37 illustrates that most of the students were satisfied with VLE (69.0%), while only 31% students were satisfied with TLE. Face to face interaction did not mean that it was TLE but in VLE there was also face to face interaction through video conferencing, online chat (video) etc. So it was not necessary if students want face to face interaction with their teacher they also liked TLE. Due to time and place boundaries students not preferred TLE.

# CHAPTER 6

# DISCUSSION & CONCLUSION

# DISCUSSION

## 6.1. Findings

This study explored the effect of learning environment and satisfaction on the students' performance. Overall, I found good support for the suggested hypotheses.

From table 17 it is clear that there is significant difference between the level of satisfaction for both learning environments' students as p-value for this analysis is 0.000 which is highly significant. So we can reject our null hypothesis and accept the alternative hypothesis that there is significant difference in the level of satisfaction in students of both in traditional and virtual learning environment. As it is shown in table 28 in appendix that 69% students of VLE are satisfied from their environment. On the other hand only 31% students of TLE are satisfied from their learning environment.

Table 16 shows the chi-square value to check interdependency between students' satisfaction in different learning environment with respect to gender. The chi-square value here is 7.322 with p-value 0.007. So we can reject our null hypothesis and can accept the alternative hypothesis that the students' satisfaction in different learning environment is dependent of gender.

The chi-square for this hypothesis as given in table 20 is 15.211 with p-value 0.000. So we reject our null hypothesis that students' performance in both VLE and TLE is independent of gender and can say that students' performance depends on gender.

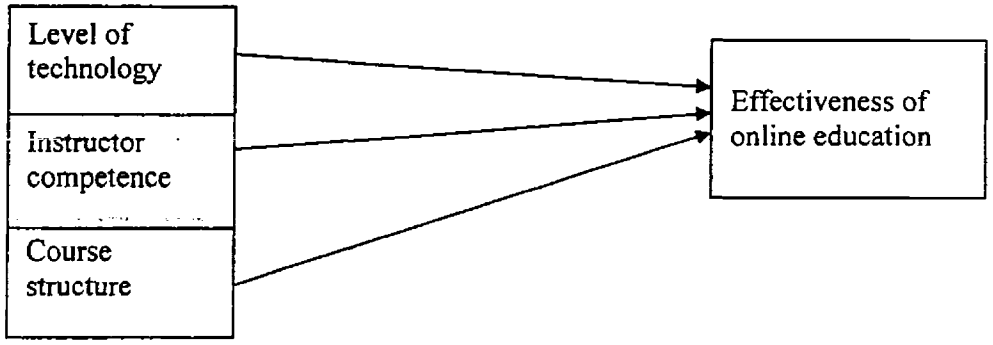
Through table 34 it is clear that the t-value for above hypothesis is -3.629 with p-value 0.000, which is highly significant so there is a significant difference between the obtained marks of students learning in VE and TE.

*From table 22 it is clear that the t-value for above hypothesis is -0.688 with p-value 0.492, which is non-significant at 0. 05 level of significance. So we can say that there is no significant difference between the marks of students and gender.*

- Maximum students of virtual learning environment responded that they like online presentation.
- Similarly the students studying in traditional learning environment preferred class presentation.
- Students of traditional learning environment responded that they learn more from class lectures, the reason may be as in face to face interaction the questioning answering session is always very strong and the teacher spontaneously removes many ambiguities and problems of students. Similarly student can ask things which are not clear in their mind. On the other hand in virtual learning environment web resources are not very strong medium to clear the ambiguities and question which arises in the students mind.
- Students of virtual learning environment were also in favor that they want face to face interaction with teacher during lecture. The reason may be as they selected virtual learning environment as they can't afford regular classes so they will never prefer the compulsion to attend classes on some specific time.
- Similarly the students who are studying in the traditional learning environment preferred that they want face to face interaction with teacher during lecture.
- The students of virtual learning environment were much satisfied with the amount of time that required for their particular course. As the duration of semester is same (6 months) in both learning environment. But results show the student of traditional learning environment were not much satisfied with the time which required for their particular course. The reason may be not completion of course contents by their respective teacher similarly sometimes students not attend classes and they miss their lectures.

- The students of virtual learning environment were more satisfied with their teacher evaluation as the biased is usually not involved in virtual learning environment while the students of traditional learning environment were not much satisfied with the evaluation of their respective teacher which is naturally. As biasness get occur in traditional learning environment due to face to face contact with teacher.
- The virtual learning environments' students' response was that they improved their learning skill very much and this response was stronger than the students of traditional learning environment. The reason may be as in traditional learning environment the student maximum depend upon the teacher, they only read whatever their teachers teach to them while in virtual learning environment the student also get help from other sources like web resources, online study material, CDs etc and by this they improve their learning skill more than the traditional learning environment students.
- From analysis it is also get cleared that the student of VLE feel more difficulties in learning while the percentage is less in TLE students as the VLE student do not have proper guidance in the form of teacher while the TLE students contact immediately to their teachers in case of any problem as they are easily approachable.
- It was found from data analysis that in TLE students were significantly more interested in use of technology during their classroom learning. In VLE the effectiveness of online education depends mostly on level of technology, instructor competency and the courses structure as given below:

**Theoretical frame work for online education**




If there will be any deficiency in these factors it will be difficult to remove it but in TLE these deficiencies can be easily removed due to face to face contact with the teacher.

- There was not much difference in the statements of male and female students regarding the use of technology. Both genders prefer the use of latest technology for their learning.
- Students of TLE were in favor that they want face to face interaction with teacher during lecture. However this difference was not significant in case of gender as in case of both male and female most of students were in favor of face to face interaction with teacher during lecture.
- There was no significant difference in the statement of students learning in both VLE and TLE regarding the satisfaction with teaching methods. As it is clear that these students selected institution of their choice so they were satisfied with the teaching method adopted in that particular learning environment. Similarly there was not much difference in the statement "I am much satisfied from teaching method" with regard to gender.
- The students of VLE improved learning skills more than the TLE students as students of VLE get more chances of learning. They use different sources of information to get knowledge as a result they improve their learning skill more. Whereas in case of TLE

the students totally depend on teachers and they usually not use other sources. So they improve their learning skill but not as much as the students of VLE.

- There was no significant difference in gender regarding the improvement of learning skill. As usually both male and female get similar chances for learning in their particular learning environment.
- It is very interesting that there was very significant result when student were asked that which learning environment you will prefer. The students of VLE preferred their own learning environment i.e., VLE, but a reasonable number of student those who were studying in TLE also preferred VLE. The reasons will come clearer when it will be analyzed while taking the gender of students into account. It was observed that most male student in TLE preferred VLE. Because the male people in our society have to financially support their family so they will prefer VLE. As there are not any restriction especially in case of attendance is required in VLE.
- It was also observed that there is significant difference in obtained marks scoring in both learning environments. The students of TLE significantly get more marks than the students of VLE. The reason may be the full interaction with the teacher in face to face learning. The teachers personally know the student and also the teachers who teacher also makes the papers of same courses so their students get more marks in their particular subject.
- However, there was no significant difference in the obtained marks of male and female.

## 6.2. Implications

The study is limited to only two universities launching virtual learning system and two those, which running under traditional learning environment. The study can be further extended to more universities. In this study only the campuses located at the Islamabad of virtual university and Allama Iqbal Open University were taken under consideration. However for further study other campuses of this university may be taken for analysis. Similarly open universities of outside Pakistan can also be considered for research

However the results are very important for enhancement of learning environments. Its clear from the results that the virtual learning environment is getting popular day by day as the students learning in TE also prefer it. The Universities and Educational Institution may also should launch the Virtual Education in parallel to Traditional learning so that their student get an option to opt the learning environment in which they want to go. Similarly use of advance technology can improve both TLE and VLE especially e-learning and online classes can improve it better.

## 6.3. CONCLUSION

Usage of Virtual Learning started steadily in Pakistan but an exponential increase was found in recent years. This increase could be due to awareness and availability of ICT at educational institutions. Present research helps management to understand the factors responsible for students' satisfaction and better performance in their learning environment.

Present study compares the results of both Traditional and Virtual learning environment. Students' satisfaction, performance with respect to gender and students' preference towards the selection of learning environment were the major parameters Institutions with virtual learning are considered to be more successful. As students can take classes anytime at anywhere, so students from both environments preferred Virtual Environment.

From analysis it is seen that there is no major difference in the level of satisfaction in students of both TLE and VLE. But it is noted that the male students who studying in the traditional learning environment are willing to study in virtual learning environment. The reason may be the no much compulsion in class attendance and also usually the male have to support their families financially that's why they are preferring virtual learning environment. They are satisfied from their environments and it is also seen that satisfaction is independent to gender i.e. both male and female students are satisfied. Students are performing well in their environments. It is depicted from the study that the now due to increasing use of ICT in educations students of Traditional Environment are also want to switch from Traditional Learning Environment to Virtual Environment. This type of attitude denotes that students of Traditional Learning Environment are willing to leave their existing environment. Universities should emphasize to reduce the dissatisfaction of the students from the

environment; they should collaborate with Virtual Universities. So the students will be satisfied and give better performance.

### 6.4. Limitations of the Study

This study was conducted by using stratified random samples from Islamabad and Mirpur; therefore one cannot properly generalize the results so it could not be used to reflect the population as a whole. The sample size is also limited. One few disciplines were considered. Other limitation of the study was low feedback from online students in filling web-questionnaire.

- In the future research point of view, one can compare the effectiveness of the online education with the effectiveness of face-to-face education. Furthermore, the effectiveness can be measured on the basis of gender.

The sample size and the disciplines of programmes can be increased. Similarly the questionnaire can be make more enhance by keeping in view the requirements of large scale sample size and discipline.

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# APPENDICES

## APPENDIX 1

***INTERNATIONAL ISLAMIC UNIVERSITY***
*Faculty of Management Sciences*
*Islamabad*


Dear Respondent,

I am a research scholar in the field of Technology Management. As the part of my MS studies, I am conducting a research project" A Comparative Analysis of Virtual & Traditional Learning Environment in Pakistan" that investigates the students' satisfaction and performance. My objective is to find out how learning environments impact the satisfaction, and performance of students.

You can help me by filling out the following questionnaire. Please answer ALL questions as honestly and accurately as possible. I am interested in responses that best reflect your experiences in your studies not what should be. I thank you in advance for your time and cooperation.

Yours truly,
Ayesha Mehboob

**Please tick (√) the appropriate checkbox below.**

**Gender:**

☐ Male ☐ Female

**Age:**

☐ 18-22 ☐ 23-27

☐ 28-32 ☐ 32 and Above

| University | Departments | Programs | Semester | Date |
|---|---|---|---|---|
| | | | | |

| Scale | Strongly Disagree 1 | Disagree 2 | Neutral 3 | Agree 4 | Strongly Agree 5 |
|---|---|---|---|---|---|

***Part A: Virtual /Traditional Learning Environment***

| | | | | | |
|---|---|---|---|---|---|
| I like the use of technology for online/class room learning | 1 | 2 | 3 | 4 | 5 |
| I like online/class room presentations | 1 | 2 | 3 | 4 | 5 |
| I am comfortable in asking questions in class/online | 1 | 2 | 3 | 4 | 5 |
| I can well communicate with teacher on website/class room | 1 | 2 | 3 | 4 | 5 |
| I am able to perform lab/class work without the help of teacher | 1 | 2 | 3 | 4 | 5 |
| I am able to learn more from the web resources/class lectures | 1 | 2 | 3 | 4 | 5 |
| Material provided on web/In class room suggested by teacher has improved my learning | 1 | 2 | 3 | 4 | 5 |
| An online/class session is an efficient means of communicating with other students in course | 1 | 2 | 3 | 4 | 5 |
| An online course/class meetings allows for social interaction. | 1 | 2 | 3 | 4 | 5 |
| I want face- to- face interaction with teacher during lecture | 1 | 2 | 3 | 4 | 5 |

***Part B: Students' Satisfaction***

| | | | | | |
|---|---|---|---|---|---|
| I am satisfied with the amount of time required for this course | 1 | 2 | 3 | 4 | 5 |
| I am satisfied with the learning that occurred in course | 1 | 2 | 3 | 4 | 5 |
| I am more satisfied with the class discussions | 1 | 2 | 3 | 4 | 5 |
| I am satisfied from teaching methods | 1 | 2 | 3 | 4 | 5 |
| I am satisfied with teacher's evaluation | 1 | 2 | 3 | 4 | 5 |

***Part C: Students' Performance***

| | | | | | |
|---|---|---|---|---|---|
| Course is successfully completed in time | 1 | 2 | 3 | 4 | 5 |
| I get knowledge from the subject | 1 | 2 | 3 | 4 | 5 |
| I obtain expected grades | 1 | 2 | 3 | 4 | 5 |
| I have improved my learning skills | 1 | 2 | 3 | 4 | 5 |
| I feel difficulties in learning | 1 | 2 | 3 | 4 | 5 |

**I prefer**

☐ Virtual Learning Environment ☐ Traditional Learning Environment

**I am more satisfied with**

☐ Virtual Learning Environment ☐ Traditional Learning Environment

**I can perform better in**

☐ Virtual Learning Environment ☐ Traditional Learning Environment

**Percentage of marks obtained in last semester:** _____

APPENDIX-2

# Frequency Tables

**Table: 1**
**Gender of students**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 90 | 45.0 | 45.0 | 45.0 |
| | Female | 110 | 55.0 | 55.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 2**
**Learning Environment**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Virtual Learning Environment | 100 | 50.0 | 50.0 | 50.0 |
| | Traditional Learning Environment | 100 | 50.0 | 50.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table-3**
**Age of students**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 18-23 | 70 | 35.0 | 35.0 | 35.0 |
| | 24-29 | 96 | 48.0 | 48.0 | 83.0 |
| | 30-35 | 34 | 17.0 | 17.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 4**

**University of students**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | AIOU | 41 | 20.5 | 20.5 | 20.5 |
| | VU | 59 | 29.5 | 29.5 | 50.0 |
| | IIUI | 50 | 25.0 | 25.0 | 75.0 |
| | MUST | 50 | 25.0 | 25.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 5**

**Department of students**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | CS | 93 | 46.5 | 46.5 | 46.5 |
| | Management Science | 107 | 53.5 | 53.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 6**

**Programs of students**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | PGD | 32 | 16.0 | 16.0 | 16.0 |
| | BSCS | 50 | 25.0 | 25.0 | 41.0 |
| | BSIT | 28 | 14.0 | 14.0 | 55.0 |
| | MBA | 58 | 29.0 | 29.0 | 84.0 |
| | BBA | 32 | 16.0 | 16.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 7**

**I like the use of technology for online learning environment**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 9 | 4.5 | 4.5 | 4.5 |
| | Disagree | 13 | 6.5 | 6.5 | 11.0 |
| | Neutral | 40 | 20.0 | 20.0 | 31.0 |
| | Agree | 63 | 31.5 | 31.5 | 62.5 |
| | Strongly Agree | 75 | 37.5 | 37.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 8**

**I like online presentation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 2.0 | 2.0 | 2.0 |
| | Disagree | 6 | 3.0 | 3.0 | 5.0 |
| | Neutral | 20 | 10.0 | 10.0 | 15.0 |
| | Agree | 73 | 36.5 | 36.5 | 51.5 |
| | Strongly Agree | 97 | 48.5 | 48.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 9**

**I am comfortable in asking online questions**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 9 | 4.5 | 4.5 | 4.5 |
| | Disagree | 18 | 9.0 | 9.0 | 13.5 |
| | Neutral | 41 | 20.5 | 20.5 | 34.0 |
| | Agree | 85 | 42.5 | 42.5 | 76.5 |
| | Strongly Agree | 47 | 23.5 | 23.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 10**

**I can well communicate with teacher on web site**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 6 | 3.0 | 3.0 | 3.0 |
| | Disagree | 20 | 10.0 | 10.0 | 13.0 |
| | Neutral | 53 | 26.5 | 26.5 | 39.5 |
| | Agree | 60 | 30.0 | 30.0 | 69.5 |
| | Strongly Agree | 61 | 30.5 | 30.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 11**

**I am able to perform lab work without the help of teacher**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 10 | 5.0 | 5.0 | 5.0 |
| | Disagree | 14 | 7.0 | 7.0 | 12.0 |
| | Neutral | 63 | 31.5 | 31.5 | 43.5 |
| | Agree | 72 | 36.0 | 36.0 | 79.5 |
| | Strongly Agree | 41 | 20.5 | 20.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 12**

**I learn more from the web resources**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 5 | 2.5 | 2.5 | 2.5 |
| | Disagree | 7 | 3.5 | 3.5 | 6.0 |
| | Neutral | 47 | 23.5 | 23.5 | 29.5 |
| | Agree | 97 | 48.5 | 48.5 | 78.0 |
| | Strongly Agree | 44 | 22.0 | 22.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 13**

**Material available on web suggested by teacher has improved my learning**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 2.0 | 2.0 | 2.0 |
| | Disagree | 9 | 4.5 | 4.5 | 6.5 |
| | Neutral | 52 | 26.0 | 26.0 | 32.5 |
| | Agree | 69 | 34.5 | 34.5 | 67.0 |
| | Strongly Agree | 66 | 33.0 | 33.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 14**

**An online session is an efficient means of communicating with other students in course**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 5 | 2.5 | 2.5 | 2.5 |
| | Disagree | 24 | 12.0 | 12.0 | 14.5 |
| | Neutral | 49 | 24.5 | 24.5 | 39.0 |
| | Agree | 70 | 35.0 | 35.0 | 74.0 |
| | Strongly Agree | 52 | 26.0 | 26.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 15**

**An online course allows for social interaction.**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 8 | 4.0 | 4.0 | 4.0 |
| | Disagree | 16 | 8.0 | 8.0 | 12.0 |
| | Neutral | 50 | 25.0 | 25.0 | 37.0 |
| | Agree | 79 | 39.5 | 39.5 | 76.5 |
| | Strongly Agree | 47 | 23.5 | 23.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 16**

**I want face-to-face interaction with teacher during lecture**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 7 | 3.5 | 3.5 | 3.5 |
| | Disagree | 20 | 10.0 | 10.0 | 13.5 |
| | Neutral | 55 | 27.5 | 27.5 | 41.0 |
| | Agree | 65 | 32.5 | 32.5 | 73.5 |
| | Strongly Agree | 53 | 26.5 | 26.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 17**

**I am satisfied with the amount of time required for this course**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 16 | 8.0 | 8.0 | 8.0 |
| | Disagree | 7 | 3.5 | 3.5 | 11.5 |
| | Neutral | 43 | 21.5 | 21.5 | 33.0 |
| | Agree | 93 | 46.5 | 46.5 | 79.5 |
| | Strongly Agree | 41 | 20.5 | 20.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 18**

**I am satisfied with the learning that occurred in course**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 11 | 5.5 | 5.5 | 5.5 |
| | Disagree | 15 | 7.5 | 7.5 | 13.0 |
| | Neutral | 40 | 20.0 | 20.0 | 33.0 |
| | Agree | 105 | 52.5 | 52.5 | 85.5 |
| | Strongly Agree | 29 | 14.5 | 14.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 19**

**I am more satisfied with the class discussion**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 8 | 4.0 | 4.0 | 4.0 |
| | Disagree | 13 | 6.5 | 6.5 | 10.5 |
| | Neutral | 54 | 27.0 | 27.0 | 37.5 |
| | Agree | 91 | 45.5 | 45.5 | 83.0 |
| | Strongly Agree | 34 | 17.0 | 17.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 20**

**I am satisfied from teaching methods**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 13 | 6.5 | 6.5 | 6.5 |
| | Disagree | 19 | 9.5 | 9.5 | 16.0 |
| | Neutral | 46 | 23.0 | 23.0 | 39.0 |
| | Agree | 64 | 32.0 | 32.0 | 71.0 |
| | Strongly Agree | 58 | 29.0 | 29.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 21**

**I am satisfied with teacher's evaluation**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 11 | 5.5 | 5.5 | 5.5 |
| | Disagree | 17 | 8.5 | 8.5 | 14.0 |
| | Neutral | 56 | 28.0 | 28.0 | 42.0 |
| | Agree | 81 | 40.5 | 40.5 | 82.5 |
| | Strongly Agree | 35 | 17.5 | 17.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 22**

**Course is successfully completed in time**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 16 | 8.0 | 8.0 | 8.0 |
| | Disagree | 26 | 13.0 | 13.0 | 21.0 |
| | Neutral | 52 | 26.0 | 26.0 | 47.0 |
| | Agree | 58 | 29.0 | 29.0 | 76.0 |
| | Strongly Agree | 48 | 24.0 | 24.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 23**

**I get knowledge from the subject**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 4 | 2.0 | 2.0 | 2.0 |
| | Disagree | 7 | 3.5 | 3.5 | 5.5 |
| | Neutral | 36 | 18.0 | 18.0 | 23.5 |
| | Agree | 111 | 55.5 | 55.5 | 79.0 |
| | Strongly Agree | 42 | 21.0 | 21.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 24**

**I always obtain expected grades**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 7 | 3.5 | 3.5 | 3.5 |
| | Disagree | 14 | 7.0 | 7.0 | 10.5 |
| | Neutral | 56 | 28.0 | 28.0 | 38.5 |
| | Agree | 78 | 39.0 | 39.0 | 77.5 |
| | Strongly Agree | 45 | 22.5 | 22.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 25**

**I have improved learning skills**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 2 | 1.0 | 1.0 | 1.0 |
| | Disagree | 8 | 4.0 | 4.0 | 5.0 |
| | Neutral | 31 | 15.5 | 15.5 | 20.5 |
| | Agree | 82 | 41.0 | 41.0 | 61.5 |
| | Strongly Agree | 77 | 38.5 | 38.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 26**

**I feel difficulties in learning**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Strongly Disagree | 10 | 5.0 | 5.0 | 5.0 |
| | Disagree | 31 | 15.5 | 15.5 | 20.5 |
| | Neutral | 49 | 24.5 | 24.5 | 45.0 |
| | Agree | 56 | 28.0 | 28.0 | 73.0 |
| | Strongly Agree | 54 | 27.0 | 27.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 27**

**I prefer learning environment**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | VLE | 131 | 65.5 | 65.5 | 65.5 |
| | TLE | 69 | 34.5 | 34.5 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 28**

**I am more satisfied with learning environment**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | VLE | 138 | 69.0 | 69.0 | 69.0 |
| | TLE | 62 | 31.0 | 31.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

**Table: 29**

**I can perform better**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | VLE | 136 | 68.0 | 68.0 | 68.0 |
| | TLE | 64 | 32.0 | 32.0 | 100.0 |
| | Total | 200 | 100.0 | 100.0 | |

## APPENDIX 3

**Figure No. 1**

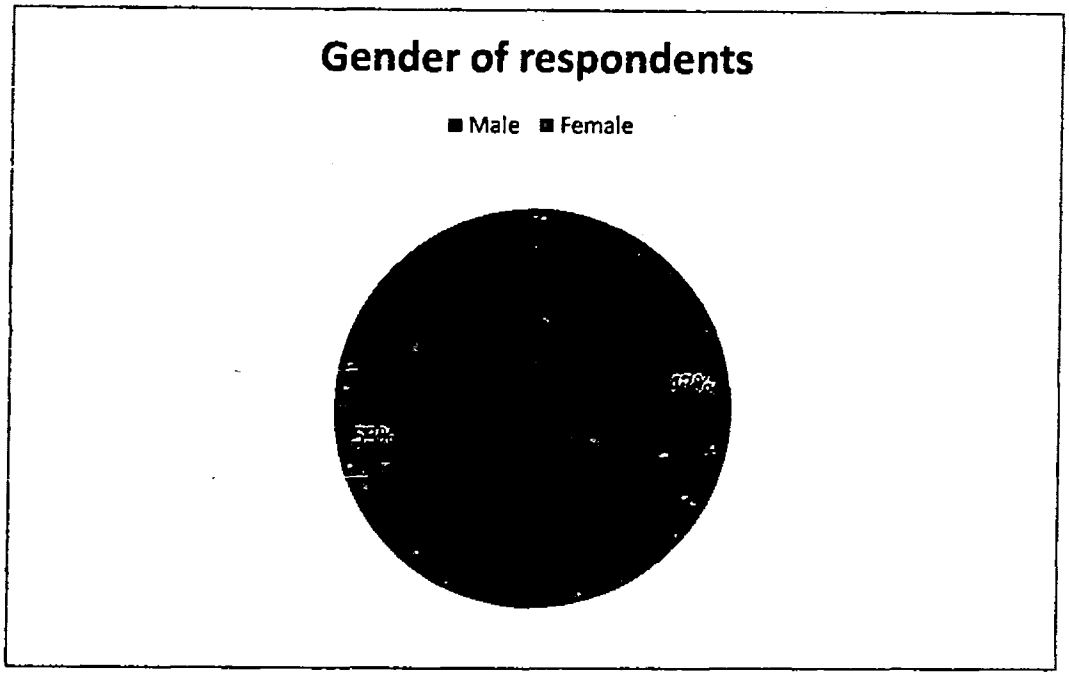


**Figure No. 2**

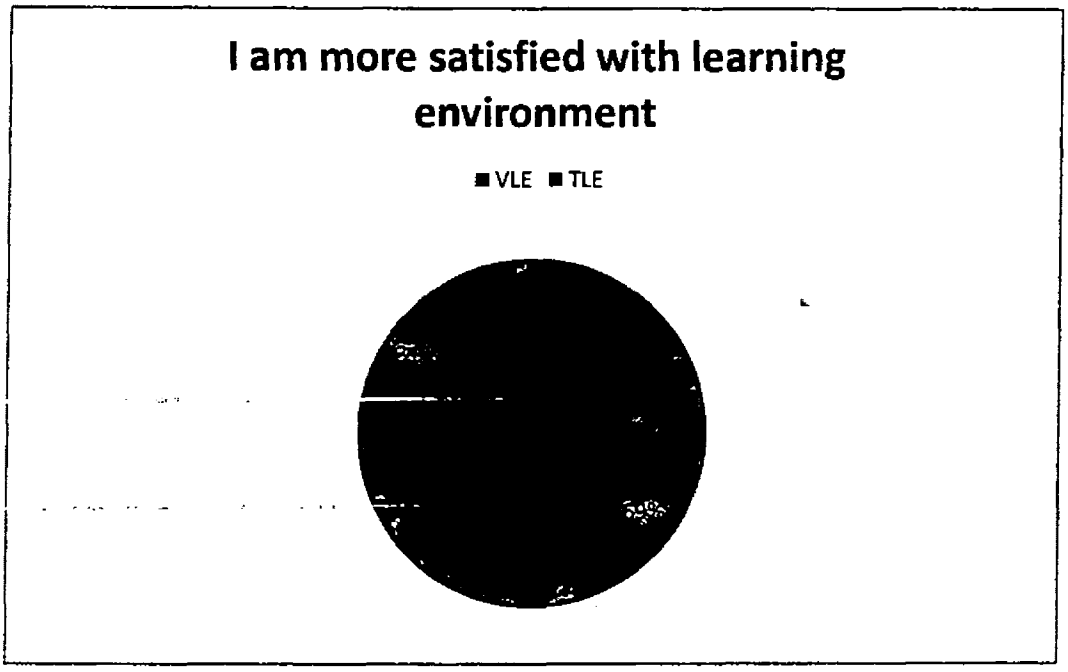

Figure No. 3

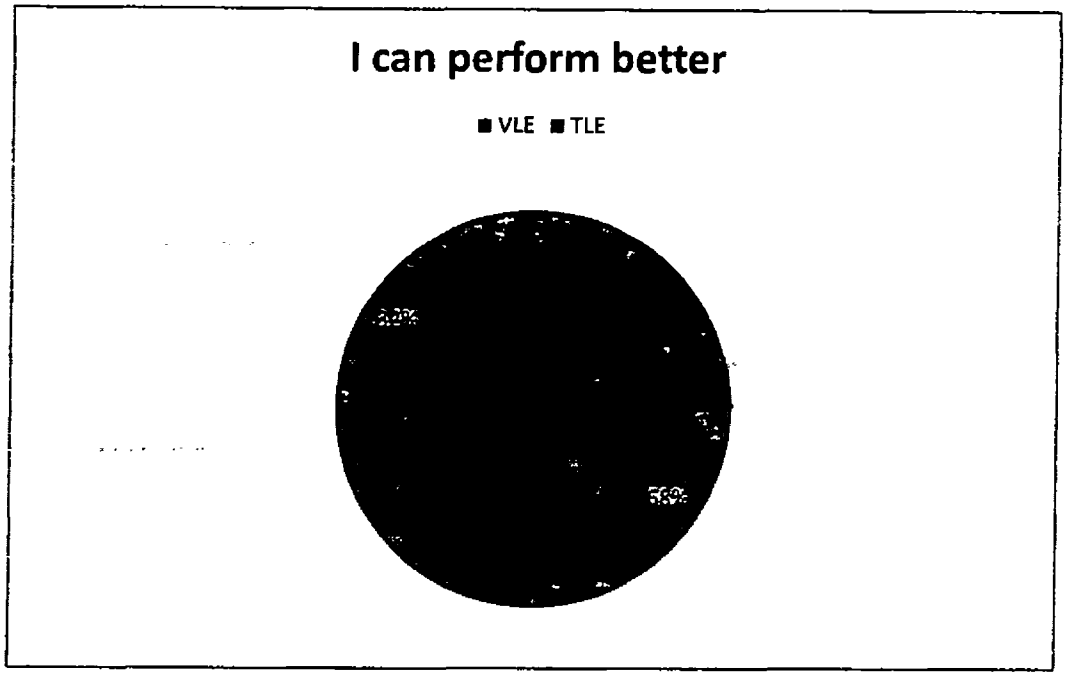


Figure No. 4

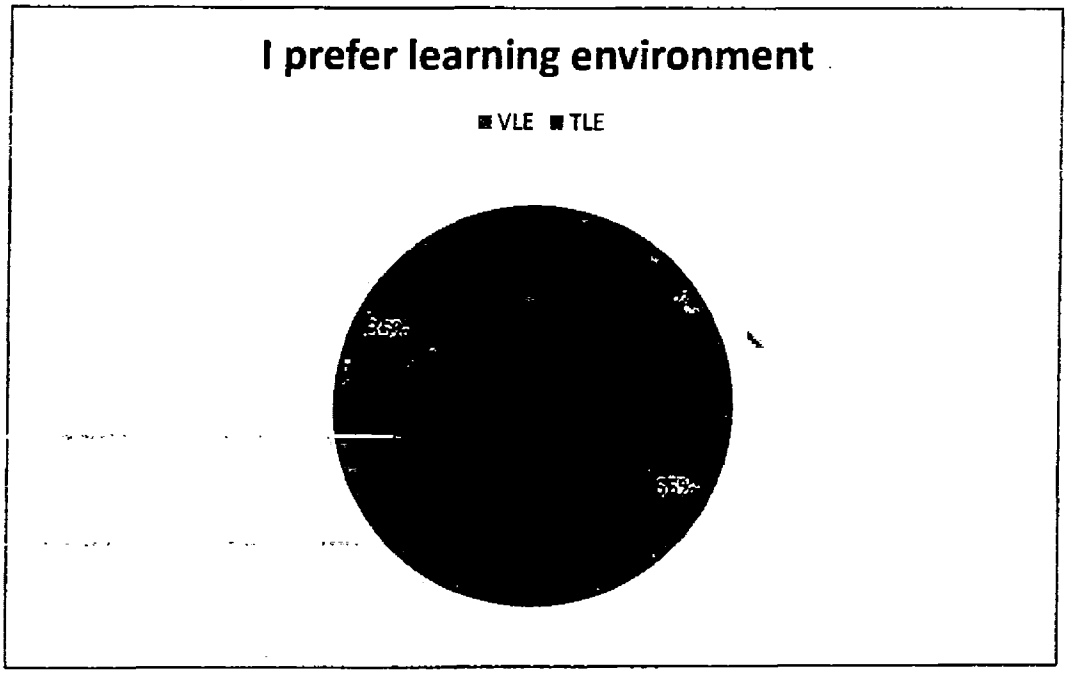

Figure No. 5

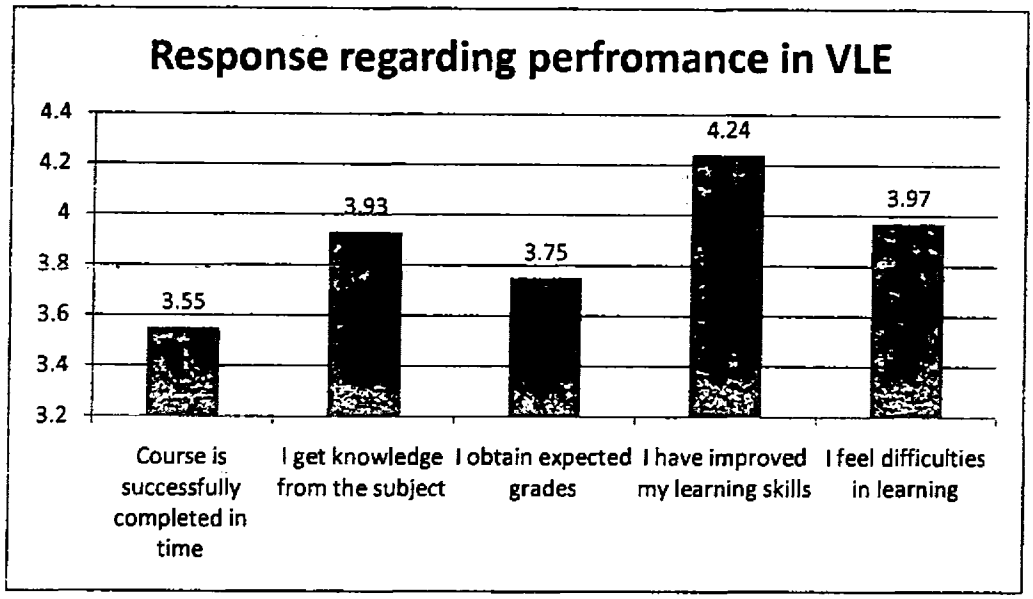


Figure No. 6

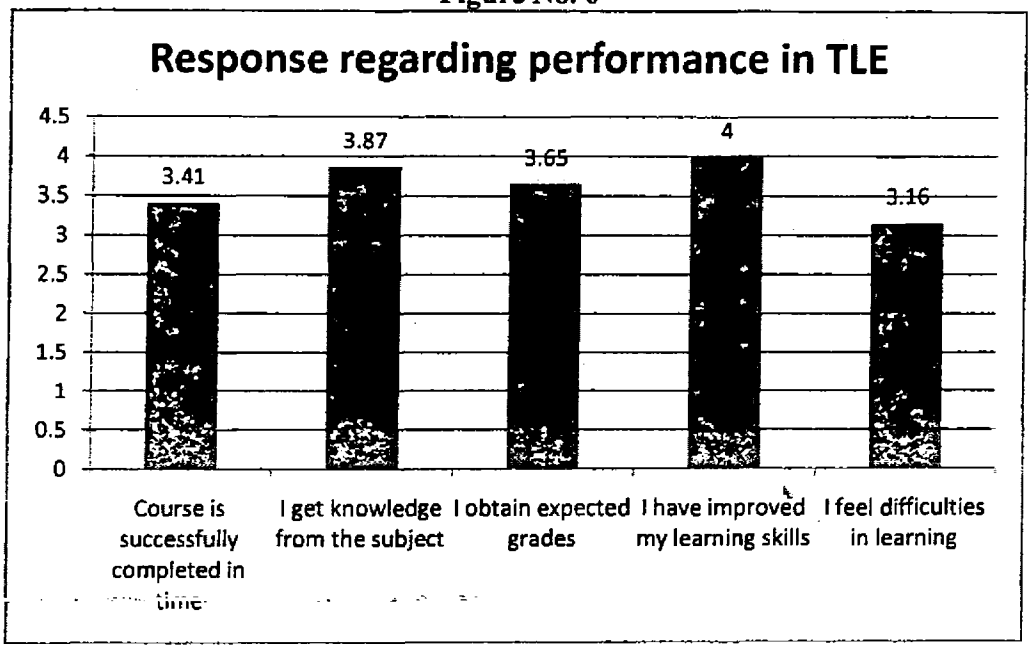

Figure No. 7

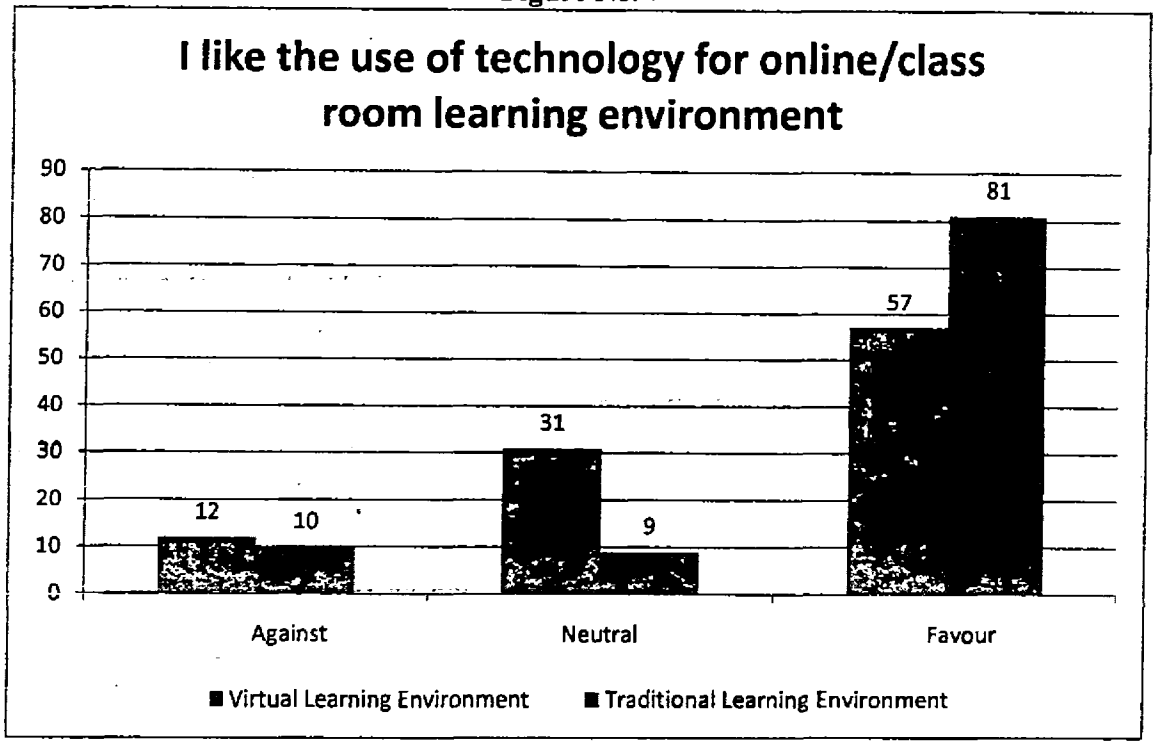


Figure No. 8