# Experiment on usability of LMS for virtual learning by the students

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Virtual learning has taken over a lot of education systems these days because it is easy to implement a lot of different strategies to make sure students are getting the knowledge as they redeem. These learnings includes usage of different interfaces where the interface is easy to attract with student and teachers and the interface which have similar set of tools that students and teacher will be getting when they are sitting in a class. learning management system came to picture learning management system is an interface or a framework where it will be easy to realize all the real time experiences of class in virtual learning. As institutions and students have shifted to learning through virtual platforms and virtual learning management systems it have been revolutionized the whole infrastructure of Education system of a country or a particular area lot of studies have explored about the different aspects and different influences but they have not been a study which have able us to understand Does these learning management systems are useful in virtual learning platforms for the students. Using a Experiment research methodology, I have done this study where I have created two different groups which are known as experiment group and control group. The sample has been created by the professor and then I have shared an article with the experiment group to have more understanding about the study. The size of the sample is 7 and it has been divided into experiment group and control group with 4, 3 people respectively in each group. I have used the survey tool which is perceived usefulness which have 4 questions and each question has responses which are taken in the form of likert scale and two questions are general questions about the participant. I've shared the survey for both the groups at first and then have shared the survey again for both the groups but I have said an article for the experiment group for the 2nd time and have recorded all the responses in sheets then I have applied descriptive statistical analysis. mean for the posttest has reached to highest value that means the responses that has been filled by the experiment group after sharing the article are similar on these responses does not have deviation as the standard deviation decreases to 0.56 at posttest that means from this we can infer that all the responses sum are near to the mean which is 17. To support this more the standard error for this study has decreased from 1.66 to 0 .28 which means there has not been large error between the values of sums of responses so from all these we can deduce that people are my sample of study feels that learning management system has good usability and usefulness for using in virtual learning environment by the students. In conclusion, students do fill the usage of learning management system is so good for virtual learning is because it has interactive interfaces to interact and raise doubts and submit confines this does follow traditional methodologies of teaching and practicing skills where people can learn and acquire knowledge without having to carry a lot of books or travel far.

Hence from this study I can say that Learning management systems are useful for studying in virtual environments for the students.

**CCS CONCEPTS** • Online platforms

**Additional Keywords and Phrases:** LMS, MooCs

## 1 INTRODUCTION

Virtual learning has taken over a lot of education systems these days because it is easy to implement a lot of different strategies to make sure students are getting the knowledge as they redeem. These learnings includes usage of different

interfaces where the interface is easy to attract with student and teachers and the interface which have similar set of tools that students and teacher will be getting when they are sitting in a class [1] . Effective use of appropriate media to promote interaction between teachers and students as well as among students can have a major impact on achieving the goal of effective outcomes for learning in courses [2]. Support for teaching, learning, and evaluation is the main goal, with an emphasis on coordinating, creating, and enriching these activities. The potential advantages include improved communication, enhanced engagement, and the use of synchronous as well as asynchronous collaborative learning methods. They also encourage the exchange of knowledge across international borders, a common enthusiasm, and the continual improvement of knowledge [3].

In the past, during the pandemic situation of covid 19, most people were used to virtual learning platforms because of the accessibility of online classes, and they gained information though they were in their own places. However, there may be some difficulties due to the internet connectivity issues That's where learning management system came to picture learning management system is an interface or a framework where it will be easy to realize all the real time experiences of class in virtual learning [4]. Acquiring abilities, principles, and attitudes. To increase students' capacity for learning, a range of approaches to instruction have been used to transfer knowledge. Virtual learning is a form of distributed education inside the traditional framework, where both in-person and online learning are integral to the educational process [5].

Students can now receive instruction online in different countries. A swift and dramatic response was necessary to stop the coronavirus from spreading further in the past, and this included assessing the following: instruction, the content of the course, student feelings toward the challenge of the material, opinions of students, and final evaluation [6].

Peer interaction is another area where traditional education and e-learning differ significantly. In conventional education, knowledge can be developed in an interdependent manner where behavior is shaped by the learning sources, learning. On the other hand, with e-learning, these kinds of learning opportunities are limited by the features of platforms like chat rooms and forums [7]. Online courses and programs have given virtual education an innovative aspect and brought up theoretical and practical concerns related to the interaction, and distribution of virtual instruction. The opportunities for online learning are growing because of evolving technologies, which are also affecting traditional approaches [8].

**Previous work**

Researchers have explored studies such as The use of virtual learning and LMS has revolutionized teaching methods in such a way that they have been using artificial intelligence applications in these virtual learning platforms [9]. One of these studies concludes that deficiency of using LMS have been increased and that have made a great impact on student grades. One of the studies concludes that the usage of these LMS and virtual learning services has made great impact and which helps the teachers to reduce their workload and the usage of different interfaces makes the students to allure towards them [10].

As institutions and students have shifted to learning through virtual platforms and virtual learning management systems it have been revolutionized the whole infrastructure of Education system of a country or a particular area lot of studies have explored about the different aspects and different influences but they have not been a study which have able us to understand Does these learning management systems are useful in virtual learning platforms for the students.

**1.1Research Question**

Does the Learning Management systems are useful in virtual learning platforms for students?

## 2 METHODOLOGY

Using an Experiment research methodology I have done this study where I have created two different groups which are known as experiment group and control group [18]. The sample has been created by the professor and then I have shared an article with the experiment group to have more understanding about the study.

### 2.1 Sample

The survey questions were chosen as the initial phase in this process. I then carried out the survey among samples. The Fall 2023 semester MSIT students at the University of Cincinnati, were divided up into many groups by our lecturer. There are approximately 140 students in our class. The lecturer used a method known as random sampling to form these groupings. There were 8 samples (N=7) in each group, including me. Thus, 7 out of 100 samples, or 7% of the sample, were chosen to take part in the poll. These samples function as sample frames and provide the data for the survey. For this method I'll be dividing the group into two different parts one is experiment group which consists of four people and control group consist of three people.

### 2.2 Measures

This survey consists of six questions in total the first questions are general questions which are done undoubted by the basis of to understand the persons dynamics and the next four questions are used and designed with perceived usefulness (PU) which it consists of four questions PU1-PU4 all these questions are mentioned in the appendices part of this paper. I'll be sharing an article with these people of experiment group that article also has been mentioned in the references section.

### 2.3 Design

This study is an experiment study so this have two different groups and I'll be including in article shared with the experiment group so they'll be different types of responses collected from each point of time from each group so to explain that from the below figure one first row have R which is indicated as Experiment group and the O,O are pretest and posttest of the study where X means the experiment or the article I'll be sharing with the sample of experiment group [17]. In the next row R is control group where O,O are observation 1 and observation 2 .


Fig 1: experiment design

All of the samples for the survey received the Google Form, which has sophisticated analytics tools. The Likert scale serves as the framework for the survey, and a 5-point rating system is used to get responses from the samples. With five points, strong agreement is the greatest, while strong disagreement is the lowest, with just one point. Following the design of the Google Form, all participants received it via email, and their comments were properly entered into an Excel to get beneficial findings, a quantitative analysis was then carried out.

### 2.4 Procedure

On November 14, 2023, the Google Form was mailed to each of the chosen participants separately for both control and experiment group and I have collected the responses by November 20, 2023 then I shared the same survey again to the same people of both the groups but I have shared an article with that to the experiment group on November 21st ,2023 and I have collected all those reposes by November 25,2023. On November 26, 2023, final calculations and data processing were completed. I have conducted statistical analysis to derive results.

## 3 RESULTS

A thorough review of the Google Form survey replies was done to gather the data that was required. An Excel sheet was used to carefully go through each participant's response. To present their ideas, participants used an evaluation system and a questionnaire that were sent. A quantitative analysis approach was used to assess the assertions made, and each response was carefully recorded in an Excel file.

I love those sample has been responded for the study and to analyze the study the data that I have collected is so tough so I'll be using some of responses of each sample so PU1-PU4 sum of responses are from the range of 4(1*4),20(4*5). In the below table I'll be mentioning the means of both the groups before and after the sharing of the article to the experiment group.

Table 1: Mean table

| | | | |
|---|---|---|---|
| R | O(8) | X | O(17) |
| R | O(12) | | O(12) |

As per the above table there has been increase in the value of the mean from 8 to 17 after sharing of the article and for the control group the mean does not change it stayed with 12. To have more understanding about this I'll be mentioning standard deviation and standard error in table 2 below.

Table 2: statistical measures of all the labels

| | Sum | Mean | Standard deviation | Standard error |
|---|---|---|---|---|
| Pretest | 32 | 8 | 3.23 | 1.61 |
| Posttest | 68 | 17 | 0.56 | 0.28 |
| Observation1 | 36 | 12 | 2.45 | 1.32 |
| Observation 2 | 36 | 12 | 2.45 | 1.32 |

From the above table two the value of mean during the pretest is 8 and the value of me during the post test is 17 which mean there has been increase in me and where 17 is actually a big number related to the upper limit of sum of responses.

And the value of standard deviation is 3.23 for the pretest and it got decreased to 0.56 for the post test below graphs will show more understanding about these values to derive insights.

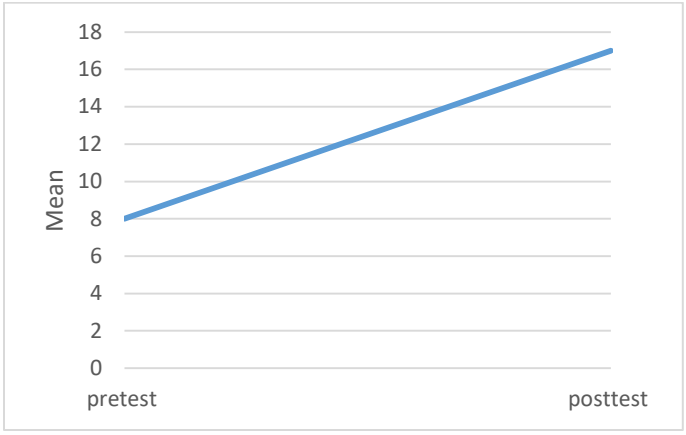


Fig 2: mean values of experiment group

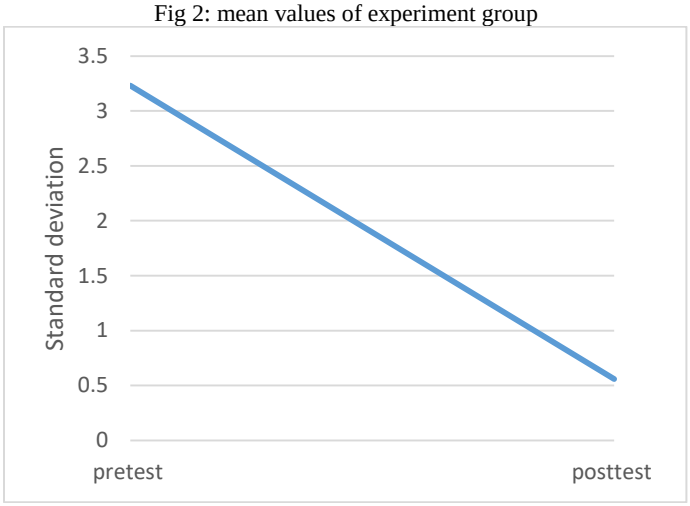


Fig 3: standard deviations

From the above figures the mean for the posttest has reached to highest value that means the responses that has been filled by the experiment group after sharing the article are similar on these responses does not have deviation as the standard deviation decreases to 0.56 at posttest that means from this we can infer that all the responses sum are near to the mean which is 17. To support this more the standard error for this study has decreased from 1.66 to 0 .28 which means there has not been large error between the values of sums of responses so from all these we can deduce that people are my sample of study feels that learning management system has good usability and usefulness for using in virtual learning environment by the students.

Hence from this study I can say that Learning management systems are useful for studying in virtual environments for the students.

## 4 DISSCUSSIONS

After applying the experiment methodology and descriptive statistical analysis the results are turned out to be people feels comfortable using LMS to learn and getting benefited from virtual . Because elements like the caliber of online interactions happened on LMS, the potency of teaching strategies, and the flexibility of the learning environment can all have an impact on how satisfied students are with their virtual learning experiences [11]. Students who suffered from the COVID-19 pandemic mainly benefited because of the virtual learning outcomes through LMS by sharing notes in just one click by raising doubts [12]. Because of this LMS it takes of flexible and reliable to understand and apply different learning models to improve the way of teaching these are the reasons why lot of students opted and shown their comfortable towards using online platforms [13].

Platforms these LMS are so feasible because of the traditional learning methods have been implemented and added to these like Canvas, Moodle [14]. Students tends to understand through practice and listening to the classes on ground so this LMS made the same impact because there is no need of teacher student interaction lively [15].

In conclusion, students do fill the usage of learning management system is so good for virtual learning is because it has interactive interfaces to interact and raise doubts and submit confines this does follow traditional methodologies of teaching and practicing skills where people can learn and acquire knowledge without having to carry a lot of books or travel far.

**Limitations**

The limitations for this study are the I have considered the most case possibility to the population to derive the results well in these results it only says most of the experiment group has inclined to watch the results that have been derived. I have only considered different proportions for this study to do experiment and control group.

**External validity**

The results of the study may differ there is any change in sample and there is any change in experiment and control group with respect to size or the frame of the sample across the world anywhere at any organization.

**Internal validity**

The question is that have been created and used in this study are derived from Survey tool which is known as perceived usefulness and the people that have been a part of this study are the students who have used virtual platforms and also have expertise in virtual platform development so the responses from these students are so valid and the article used for this study is from ACM.

**Reliability**

In this study I have used proper standard methodology such as experiment methodology and for analysis I have used descriptive statistical analysis which is standard methods to do and realize the results. These above mentioned methodologies have been used in lot of acm journals. The question is that have been used are also derived from standard

survey tool and the people that have been shared the questioners have knowledge in virtual platform so by the above information I can say the paper is reliable.

### Ethical challenges

I've followed all the general strength procedures for this study and have not reached any kind of ethical integrity before taking the survey I have taken concern with the sample and make sure that the data is protected and I will be removing the data after 15 days of submission date we will stop I have not faced any kind of ethical challenges while I am doing this

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# A APPENDICES

Below is the interview script for survey.

Hello, I have texted because we are from same group please filling this form

## A.1 Interview Questions

What is your age group?

18-22

22-27

Above 27

What is your gender?

Female

Male

Do not provide.

Table 1: PU questions

| PU | Description |
|---|---|
| PU1 | Using LMS would facilitate easy learning in virtual environments |
| PU2 | Using LMS would provide access to useful study related information |
| PU3 | Using LMS will save students time when they are searching for material or when they are asking questions? |
| PU4 | Using LMS increase productivity of student education by accessing information regarding the subject anywhere anyplace |