

DEVELOPMENT OF AN E-LEARNING MODULE IN EDUCATIONAL TECHNOLOGY



A

DISSERTATION

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SUPERVISOR’S CERTIFICATE

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“DEVELOPMENT OF AN E-LEARNING MODULE IN EDUCATIONAL TECHNOLOGY”

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TABLE OF CONTENTS

Sr.	Content	Page. No.
1	SUPERVISOR'S CERTIFICATE	ii
2	ACKNOWLEDGEMENT	iii
3	TABLE OF CONTENT	iv
4	LIST OF TABLES	viii
5	LIST OF SCREEN SHOTS	ix
6	LIST OF APPENDICES	x
7	ABBREVIATIONS USED	xi
8	ABSTRACT	xii

CHAPTER-1		
INTRODUCTION		
Sr.	Content	Page No.
1.1	BACKGROUND OF THE STUDY	1
1.2	E-LEARNING	4
1.2.1	E-learning Module	14
1.2.2	Structure of E-learning Module	15
1.2.3	Types of E-learning Module	16
1.3	PLATFORMS FOR MODULE DELIVERY	17
1.4	NEED AND SIGNIFICANCE OF THE STUDY	17
1.5	STATEMENT OF THE STUDY	18
1.6	OPERATIONAL DEFINITIONS OF THE KEY TERMS	18
1.7	OBJECTIVES OF THE STUDY	18
1.8	HYPOTHESES OF THE STUDY	18
1.9	DELIMITATIONS OF THE STUDY	19

CHAPTER-2		
REVIEW OF RELATED LITERATURE		
Sr.	Content	Page No.
2.1	INTRODUCTION	20
2.2	RESEARCH STUDIES ON E-LEARNING	21
2.3	CHAPTER SUMMARY	38

CHAPTER-3		
RESEARCH METHODOLOGY		
Sr.	Content	Page No.
3.1	INTRODUCTION	39
3.2	DESIGN OF THE STUDY	40
3.3	POPULATION	40
3.4	SAMPLE	42
3.5	VARIABLES OF THE STUDY	42
3.5.1	Dependent	42
3.5.2	Independent	42
3.6	TOOLS EMPLOYED AND THEIR DESCRIPTION	42
3.7	PROCEDURE	44
3.8	STATISTICAL TECHNIQUE USED	45

CHAPTER-4		
DEVELOPMENT OF MOOC-AN EXPERIMENT		
Sr.	Content	Page No.
4.1	INTRODUCTION	46
4.2	PLANNING OF THE COURSE	47
4.2.1	Selection of the Topic for the course development	47
4.2.2	Course Content	47
4.2.3	Target Audience for the course	47
4.2.4	Objectives	47
4.2.5	Online Strategies	47
4.2.6	Learning Outcomes	48
4.2.7	Selection of MOOCs Platform	48
4.3	PREPARATION	48
4.3.1	Creating a Website	48
4.3.2	Creating Course	50
4.3.3	Adding Resources	52
4.3.4	Video Production	52
4.3.5	Adding Text	54
4.3.6	Creating Discussion Forum	56
4.3.7	Created a Quiz Activity	58
4.3.7.1	Manage Date and Time	58

4.3.7.2	Manage Grade Settings	59
4.3.7.3	Manage the Quiz Layout	59
4.3.7.4	Question Behaviour	60
4.3.7.5	Appearance Management	60
4.3.7.6	Adding Questions to Quiz	61
4.4	Try out	62
4.4.1	Individual Try out	62
4.4.2	Group Try out	62
4.5	DELIVERY OF THE COURSE	63
4.5.1	Enrolment of Students into Course	63
4.5.2	Sending Mails to Learners	65
4.5.3	Start of the Course	65
4.5.4	Monitoring of the Course	65
4.5.5	Ensuring the Delivery of the Course	66
4.5.6	Completion of the course	66
4.6	EVALUATION	66
4.6.1	Quiz Report of the course	67
4.6.2	Assignment 1	68
4.6.3	Assignment 2	69
4.7	TIME LINE/SCHEDULE	70
4.8	IMPACT OF EXPERIMENT ON AWARENESS	70
4.9	STATISTICAL ANALYSIS AND RESULTS OF DATA COLLECTED	70
4.10	CONCLUSION	71

CHAPTER-5		
FINDINGS, CONCLUSIONS AND DISCUSSION, EDUCATIONAL IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH		
Sr.	Content	Page No.
5.1	INTRODUCTION	72
5.2	RESULTS & FINDINGS OF THE STUDY	72
5.2.1	Research Objective 1	73
5.2.26	Research Objective 2	76
5.3	QUALITATIVE DATA ANALYSIS	76
5.4	CONCLUSIONS AND DISCUSSIONS	80
5.5	EDUCATIONAL IMPLICATIONS OF THE STUDY	81
5.6	SUGGESTIONS FOR FURTHER STUDY	81

Content	Page No.
SUMMARY	83-93
REFERENCES	94-97
APPENDIX	98-102

LIST OF TABLES

TABL E NO.	TITLE	PAGE NO.
4.8	Paired Samples Statistics	67

LIST OF SCREEN SHOTS

ITEM	TITLE	PAGE NO.
Screen shot 1	Showings 'Login Page of Moodle Website'	46
Screen shot 2	Showing 'Site Administration Page'	47
Screen shot 3	Showing 'Course Management Page'	48
Screen shot 4	Showing 'Home Page of Basics of Educational Technology'	49
Screen shot 5	Showing 'Introductory Video'	50
Screen shot 6	Showing 'Video Presentation on Scope of Educational Technology'	51
Screen shot 7	Showing 'Editing of Course Content'	53
Screen shot 8	Showing 'Discussion Forum in course'	54
Screen shot 9	Showing 'Updating Quiz Page'.	55
Screen shot 10	Showing 'Managing Timing and Grade of the quiz'	56
Screen shot 11	Showing 'Managing Layout and Question Behaviour of the Course'	57
Screen shot 12	Showing 'Managing Appearance Option of the Quiz'	58
Screen shot 13	Showing 'View of the Quiz'	59
Screen shot 14	Showing 'Site Administration Page'	60
Screen shot 15	Showing 'Add New User'	61
Screen shot 16	Showing 'Users page'	62
Screen shot 17	Showing 'Log Report Page'	63
Screen shot 18	Showing 'Log Report of Basics of Educational Technology'	64
Screen shot 19	Showing 'Quiz Report of Students'	65
Screen shot 20	Showing 'Forum Page', which shows result of students who submitted their assignment	66
Screen shot 21	Showing 'Assignment View Summary Page'	66

LIST OF APPENDICES

No.	DETAILS
A	Objective Type Test
B	Copy of Tool

ABBREVIATIONS USED

MOOCs	Massive Open Online Courses
Moodle	Modular Object orientated Dynamic learning environment
SWAYAM	Study Webs of Active –Learning for Young Aspiring Minds

ABSTRACT

Technology is available in abundance these days and it has presented educational field with the latest innovative techniques and tools of teaching and learning which can do wonders if utilized appropriately. MOOC is the one of the modern method of learning and getting education which provides free, easily accessible, completely online courses, which offer one the opportunity to study with top universities around the world. The present study is related to development of an e-learning module and the impact of e-learning module in educational technology was also studied during the study. It was mainly focused on the development of one e-learning module for massive open online course by the investigator. Investigator developed an e-learning module on basics of educational technology by using an online Moodle cloud website. She developed video tutorials, quizzes, assignments and discussion forums on the basis of four quadrant approach. After development, it was successfully launched for a limited number of teacher trainees. For the course enrollment and data collection, a sample of 50 teacher trainees from M. Ed. programme was selected for the study. Secondly, 10 teacher trainees were also interviewed for the qualitative validation of the data through interviews. They were enrolled in the course developed for the study and a teacher made test was given before and after the completion of the course. During the present study, investigator developed a small private online course during her study and delivered it online to a small group and for a smaller duration of time as compared to actual MOOCs due to time constraints. 90% of the 50 participants could complete the pre-test so they were allowed to complete the course while 10% participants were dropped out at initial stage of the course. The e-learning module developed in the course was found to be effective on teacher made test. Therefore, the impact of e-learning module on teacher trainees has been found to be positive and during interaction, teacher trainees have agreed that e-learning module are important part of MOOCs and cost effectiveness, job opportunity, knowledge of ICT skills and internet are important factors in MOOCs. The results obtained from the students' interviews were consistent with the results from quantitative analysis.

CHAPTER-I

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Education is vital to the pace of the social, political and economic development of any nation, so vital is the mode through which education is being imparted. Face to face as well as online or distance modes of education are equally contributing towards betterment of our educational growth. Face to face method is well tested and tried method of imparting education for past many centuries and it is still prevailing in whole world. On the other hand, technology is available in abundance these days and it has presented educational field with the latest innovative techniques and tools of teaching and learning which can do wonders if utilized appropriately.

E-learning has been performing a main role in current teaching and learning. Earlier than the broad enhance use of electronic learning, the established chalk and chat technique was use as a main way of teaching, where teachers use a chalk to write on a blackboard and next convey a lecture. Now a days in many universities, all traditional methods are now being replaced by modern techniques like multimedia presentations. Through multimedia presentation it is easy for learners to absorb ideas given in presentation. Teacher can show a number of audio or video information by embed them within a slide. It is a big question mark among teachers that what methods need to be retained or discarded. The online materials make very easy to gather right information. Moreover, it becomes very easy to produce multiple copies of the content for distribution. However, having overloaded and high quality information does not necessarily prove the abilities of a learner or teacher. A teacher must know what information is right and best for students. At the same time, students must know how to learn or catch up with lessons more efficiently. Unfortunately, providing best ideas to learn does not really help students because they fail to provide best process of learning, and students fail to practice real-life situations during learning. For example, in the traditional classrooms, students need to be aware of classroom conditions strictly and need to take notes actively while listening to their teachers. They also learn how to live with fellow classmates, how to talk to teachers in person, and how to

participate in different academic competition and this not only improves them psychologically but also physically (Rai & Chunrao, 2016).

In present century, technological innovations have been influencing heavily on practices of educational. Both Learners and teachers apply these novel and innovative ideas for improving the quality of teaching, learning, disseminating ideas, and knowledge sharing. Though, in the age of technology, it becomes challenging for them to keep some of the time-tested and reliable practices that had been followed for thousands of years. Innovation is always meant as key to the success of any educational organization.2016)

A few years back, both teachers and students was using traditional method of teaching and learning and suffered from the availability of course and learning materials. But today the trend is changed. One of the factors which is responsible for this change is the development of E-learning, which changes the methods of teaching and learning. The development of E-learning make us simple to get huge quantity of utensils during different media such as Internet, television, and stylish mobile phone, etc. (Rai&Chunrao,2016).Educational technology is an inclusive term for both the material tools and the theoretical foundations for supporting learning and teaching. Educational technology is not restricted to high technology but is anything that enhances classroom learning in the utilization of blended, face to face, or online learning. An educational technologist is someone who is trained in the field of educational technology. Educational technologists try to analyze, design, develop, implement, and evaluate process and tools to enhance learning. While the term educational technologist is used primarily in the United States, learning technologist is synonymous and used in the UK and other countries also. Modern electronic educational technology is an important part of society today. Educational technology encompasses e-learning, instructional technology, information and communication technology (ICT) in education, Educational Technology, learning technology, multimedia learning, technology-enhanced learning (TEL), computer-based instruction (CBI), computer managed instruction, computer-based training (CBT), computer-assisted instruction or computer-aided instruction (CAI),internet-based training (IBT), flexible learning, web-based training (WBT), online education, digital

educational collaboration, distributed learning, computer-mediated communication, cyber-learning, and multi-modal instruction, virtual education, personal learning environments, networked learning, virtual learning environments (VLE), m-learning, ubiquitous learning and digital education. The classroom is now changing its look from the traditional one i.e from one way to two way communication. Now teachers as well as students participate in classroom discussion. Now Education is based on child centric education. So the teacher should prepare to cope up with different technology for using them in the classroom for making teaching learning interested. For effective implementation of certain student centric methodologies such as project-based learning which puts the students in the role of active researches and technology becomes the appropriate tool. Educational technology provide better and swifter communication; presentation of ideas is presenting in more effective and relevant way. It is an effective tool for information acquiring-thus students are encouraged to look for information from multiple sources and they are now more informed then before. So in this way educational technology is beneficial for Teacher Education. Based on various changing needs of our society now emphasis is also given to the various educational theory and educational practices. According to these theories and practices changes are also undergo in pre-service teacher education also. It is natural that teacher education, whether it is pre-services or in-services it must include new technology. Teachers should also know the right attitudes and values, besides being proficient in skills related to teaching. As we know the minimum requirement of any training programme is that it should help the trainee to acquire the basic skills and competencies of a good teacher. Now-a-days new trends in Pre -service teacher education are Inter-disciplinary Approach, Correspondence courses, orientation courses etc. Simulated Teaching, Micro Teaching, Programmed Instruction, Team Teaching are also used in Pre-service teacher education. Now-a-day Action Research also implemented in Teacher Education. ICT acts as the gateway to the world of information and helps teachers to be updated. It creates awareness of innovative trends in instructional methodologies, evaluation mechanism etc. for professional development. Now -a-days different strategies of educational technology are also applying in pre -service teacher education curriculum by providing adequate infra-structure and technical

support, by applying ICT in all subjects, by using application software, using multimedia, Internet, e-mail, communities, understanding system software etc. By providing the knowledge of educational technology to teacher trainees, teacher trainees will become effective teachers. Educational technology is one of the major factors for providing the rapid changes in our society. It can change the nature of education and roles of students and teachers in teaching learning process. Now in present situation all education system is based on technology. So the study of educational technology is necessary for teacher trainees in this 21st century as because they create a bright future for students.

1.2 E-LEARNING

E-learning is a new and evolving concept. It is not possible to give it a strict definition. E- learning involves the use of ICTs to enhance the art of teaching, harnessing the potential of digital technology in presenting a concept in various exploring implications, placing the concept in various contexts, creating links with existing knowledge and leading discussions that probe student understanding and allow students to take their learning in personally relevant directions. Like traditional teaching-learning is essentially a group activity where the group is the size of a normal class “presentation devices are key to extending the reach of information from individual to entire groups, large or small.. E-learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents, and PDFs. Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users. There is a plethora of different e-learning systems (otherwise known as Learning Management Systems, or LMSs for short) and methods, which allow for courses to be delivered. With the right tool, various processes can be automated such as a course with set materials and automatically marked tests. E-learning is an affordable (and often free) solution which provides the learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications. Some of the most important developments in education have happened since the launch of the internet. These days’ learners are well versed in the use of smartphones, text messaging and using the internet so participating in and running an online course has become a simple affair. Message boards, social media and various other means of

online communication allow learners to keep in touch and discuss course-related matters, whilst providing for a sense of community. In the fast-paced world of e-learning, the available technologies to make a course new and exciting are always changing, and course content can and should be updated quickly to give students the very latest information

"E-learning is the use of internet and digital technologies to create experiences that educate our fellow human beings." (Horton, 2001)

"E-learning is the continuous assimilation of knowledge and skills by adults stimulated by synchronous and asynchronous learning events and sometimes knowledge Management Outputs -which are authored, delivered, engaged with, supported and administrated using internet technologies." (Don Morrison 2003).

"The delivery of a learning, training or educational Program by electronic means. E-learning involves the use of a computer or electronic device (e. g. a mobile phone) in some way to provide training, educational or learning material." (Derek Stockley 2003).

E-learning is commonly referred to the intentional use of networked information and communications technology in teaching and learning." (Som Naidu 2006).

CHARACTERISTICS OF E- LEARNING

1. E-learning is connected to electronic media.
2. An e-learning course is designed with one or more learning objectives in mind.
3. An e-learning course is created with a particular audience and its needs in mind.
4. The development of e-learning follows a streamlined process.
5. E-learning course is created with the help of subject matter experts.
6. E-learning is self- paced and reaches a wider audience.

TYPES OF E-LEARNING

There are diverse ways of classifying the types of e-learning. According to Algahtani (2011), there have been some classifications based on the extent of their engagement

in education. Some classifications are also based on the timing of interaction. Algahtani (2011) divided e-learning into two basic types, consisting of computer-based and the internet based e-learning.

According to Algahtani (2011), the computer-based learning comprises the use of a full range of hardware and software generally that are available for the use of Information and

Communication Technology and also each component can be used in either of two ways: computer managed instruction and computer-assisted-learning. In computer assisted- learning, to him, computers are used instead of the traditional methods by providing interactive software as a support tool within the class or as a tool for self-learning outside the class. In the computer-managed instruction, however, computers are employed for the purpose of storing and retrieving information to aid in the management of education. The internet-based learning according to Almosa (2001) is a further improvement of the computer-based learning, and it makes the content available on the internet, with the readiness of links to related knowledge sources, for examples e-mail services and references which could be used by learners at any time and place as well as the availability or absence of teachers or instructors (Almosa, 2001). Zeitoun (2008) classified this by the extent of such features use in education mixed or blended more, assistant mode, and completely online mode. The assistant mode supplements the traditional method as needed. Mixed or blended mode offers a short-term degree for a partly traditional method. The completely online mode, which is the most complete improvement, involves the exclusive use of the network for learning (Zeitoun, 2008).

Algahtani (2011) described the completely online mode as “synchronous” or “asynchronous” by the application of applying optional timing of interaction. The synchronous timing comprises alternate on-line access between teachers or instructors and learners, or between learners, and the asynchronous, to him allows all participants to post communications to any other participant over the internet (Algahtani, 2011; Almosa and Almubarak, 2005). The synchronous type allows learners to discuss with the instructors and also among themselves via the internet at the same time with the use of tools such as the videoconference and chat rooms. This type according to

Almosa and Almubarak (2005) offers the advantage of instantaneous feedback. The asynchronous mode also allows learners to discuss with the instructors or teachers as well as among themselves over the internet at different times. It is therefore not interaction at the same moment but later, with the use of tools such as thread discussion and emails (Almosa and Almubarak, 2005; Algahtani, 2011), with an advantage that learners are able to learn at a time that suits them whilst a disadvantage is that the learners will not be able to receive instant feedback from instructors as well as their colleague learners (Almosa and Almubarak, 2005).

MAJOR COMPONENTS OF E-LEARNING

There are five e-Learning Components that are essential for all successful online courses. The diagram below illustrates how these components are connected. Each e-learning component plays an important role in designing an E-learning system.

- AUDIENCE
- CONTENT ENGAGEMENT
- PAGE DESIGN
- USABILITY
- COURSE STRUCTURE

AUDIENCE

From concept to implementation, the student is a critical factor in the process of developing online courses. The whole thing intended and developed should be done with the student in mind. One of the first steps in the system designing is to conduct an student analysis. This analysis will help to find out the basic structure of the other four e -learning components. As we begin to develop an online course we should forever consider the following about our student:

- **Expectations**

- **Learning abilities**
- **Available hardware/software**
- **Learning Environment**
- **Job Responsibility**
- **Preferences**

COURSE STRUCTURE

Course structure refers to how a course is intended for e-learning. The structure of a course plays a critical role in how our student learns the content. How the course should be structured and structured for e- learning. Consider the following items when structuring our course:

- **Group content into logical modules:** Recognize the flow of the course and then find out how to modulate the information.
- **Size of modules:** Most people require to feel like they are accomplishing something and require those mental check points that indicate that they are progressing. Keeping our modules to 8-10 pages will help the student feel a sense of progress. Also, modules that tend to be long cause the student to lose interest and thus, the learning process becomes drudgery.
- **Incorporate interactive concepts:** our course structure should also include interactive concepts strategically placed throughout the course. Too much interactivity can cause the student to either forget why they are completing the course or simply loose interest. A good rule of thumb is to include an exercise or activity every third page with one major activity per module. This will establish a good balance between exchanging information and sustaining the interest of the student.
- **Use pictures/graphics to help explain ideas, concepts, or statements:** It is forever a good practice to include images whenever possible. Each image should have a purpose and should represent the subject presented on the page.

PAGE DESIGN

The page design of an online course is critical to the learning process. How a page is intended can have a huge impact on the learning experience of our student. Consider some of the following tips when formatting our course:

Navigation must be intuitive. Make navigation simple and easy to follow. The easier it is to navigate, the more engaging the course will be for the student.

Appearance must not hinder the learning process. Remember, the purpose of the course is to instruct the student. The layout of the course should not be laborious for the student to understand what he or she must do on the page. If a page is confusing or frustrating for the student, they will lose interest and we will not achieve the learning objectives.

Balance between text and graphics is critical. Avoid over powering the text with graphics or images. Graphics are a powerful resource for instructional designers. Using graphics wisely to stress a concept is a great way to help the student comprehend a complex topic. However, if the graphic becomes too dominate and over shadows the intent of the topic or concept on the page, the student can become distracted and lose interest in the course. Also, too much text with little to no images can also have an affect on student. Similar to images, too much text on a page can appear to laborious for the student and can psychologically impact the student in not reading the information. Thus, balance of images and text must be considered when designing a page.

White space is good. Some people like to use every bit of real estate on a screen. This makes the page look cluttered and unstructured. Having a lot of white space is actually a good practice to incorporate into our training.

Using white space effectively can promote a positive learning environment for the student as he or she will not see the page as labor intensive to complete.

Consistency is golden (includes fonts, layouts, and pop-ups). Being consistent throughout our course will improve the learning experience of our student. Keeping objects and fonts consistent throughout our course helps the student to become less frustrated in navigating through the training.

Ease of scanning information is imperative. Most people like to scan through a page. Making the page user friendly by organizing information using bullets or numbers can greatly improve the learning experience. Organizing concepts and topics using bullets or numbers ensure a greater retention percentage for the student. It also helps the student to quickly find key points or facts to assist in comprehending critical topics.

CONTENT ENGAGEMENT

Content engagement refers to how the student interacts with content of the course. Because studies have shown that the learning experience is greatly enhanced when exercises or activities are incorporated into the learning process, content engagement is critical. Consider the following when attempting to engage the student in an e learning environment.

Use hyperlinks for additional concepts, explanations, or definitions. The advantage of online learning is that it provides the student with additional resources and information with just a click of the mouse. Linking to additional references can greatly improve the learning experience and offer added value to the content of the topic.

Incorporate interactive graphics such as animations or simulations. If pictures are worth a thousand words, then interactive graphics should be worth 2,000 words. Creating interactive images help the student to experience a hands-on learning process that accelerates the learning. For example, information graphics provide a visual comprehension of the concept presented. If the student had to click on portions of the information graphic, the learning experience would be more impact to the student. Simulations and other animations also provide that same objective.

Provide additional options/choices for the student. In today's world, people love the ability to choose various options. This is important when it comes to learning because everyone learns differently, including various learning style preferences. For example, most people learn visually. However, there are some people that learn better

via audio. By incorporating both the visual and the audio aspects into our training, we allow the student to choose an option that best meets his or her learning requires.

Incorporate quizzes, tests, skill assessments. Another way to engage the student is to test them on the things that they learned within the course. This allows both the student to verify that they understood the content while at the same time the instructional designer can verify that the contents achieved the training objectives. This also helps to establish check points for the student to know if they can move on within the course or return to previous topics to review the information again.

Create fun activities such as games or other educational methods of interactive learning. When learning is fun, people can maintain their interest longer in the topic. As we incorporate activities into our training, remember to make it fun. Use games or other methods that help increase the learning experience. However, use caution in creating the games so as not to allow the games to over shadow the intent of the topic. Remember, the intent of these activities is to provide context around the explanation of the topic.

Keep activities focused on the course objective. Forever ensure that no matter what we do to engage the student, the concepts must compliment the training objectives or topics. The temptation for many is to become so engrossed in interactive concepts that the reason for the training is often forgotten.

USABILITY

Many creative ideas are refused because they do not work. Likewise, a well-structured e- learning course can be ill-received if it does not function properly. Usability refers to the testing of e- learning content and applications.

Once we have built our online course, we should forever test it in the same environment that the student will complete the course. Consider the following when we conduct our usability analysis.

- Verify that all links work properly
- Ensure that activities function as intended
- Inspect content to ensure that grammar and spelling are correct

- Ensure that graphics are visible
- Verify that the course works appropriately in all applicable server environments
- Verify that screen resolution works for the intended student
- Verify that course objectives and expectations are met

MODES OF E-LEARNING

The various modes of e-learning are:

WEB-BASED LEARNING

This form of training is accessed via web browsers or through the corporate internet. The best part of this training is that learners can access it at their own pace, within the set time. In addition, they do not need to travel to the training centers to attend the training. The compatibility of web browsers with videos, audios, animations, and other media elements, make it a user- friendly medium to deliver the training. On the flip side, To embrace this learning, the learner needs to meet a certain set of system requirements.

COMPUTER-BASED TRAINING

It is training accessed offline on computers .This type of interactive training worked wonders before the advent of the internet. It allows learners learn as their pace and the training progress is tracked by the computer, hence assigning grades instantly. In addition, instructors can also track the traininress. It uses various multimedia elements to engage the learner.

CD-ROM BASED LEARNING

In this training model the training material was recorded onto compact disks and accessed on the system without internet connection. Today, e-learning has come a long way from CD-ROM to mobile based learning. However, a few organizations are still using this outdated form of learning to distribute training material.

WEBINARS

A webinar is a training or a workshop delivered over the web using videoconferencing software. The best part of this form of training is that, you can host a large group, interact and brainstorm, and share applications and documents with the other participants. In simple terms, it mimics the traditional classroom, where you can interact with the instructor and other learners. You can deliver all kinds of trainings through this form of e-learning. A few of them include product sales training and HR training.

VIRTUAL CLASSROOM

It is an online portal through which learners can attend the training right from the comfort of their own pace. This is similar to a traditional classroom, but the instructor and learners login from different places, virtually. This uses various synchronous technologies such as web conferencing, video conferencing, etc. To enable global learners attend the training, communicate with each other, and view videos at the same time. Learners do not need to travel to attend the session, thus saving their money and time.

MOBILE LEARNING

Mobile learning is the breakthrough in the e-learning world. In this form of learning, the training material is accessed by learners via mobile devices, anywhere anytime with just a few taps. Mobile learning also allows the learners to collaborate, discuss, and learn with their peers.

COLLABORATIVE LEARNING

In this type of learning, both the instructor and learners interact and share knowledge, either online or offline. In simple terms, it is a blend of synchronous and asynchronous learning. Learners can gain knowledge and acquire new skills by interactions and learners who could not make it to the online session can participate in online forums, live chats, Instant messaging, and use message boards.

VIDEO-BASED LEARNING

In this mode, training is imparted to end-users via engaging videos. This is ideal to grab the attention of unmotivated learners. Basically, videos with less content and more images glue the audience to their seats throughout the training. This video-based training material can be accessed round the clock from anywhere, thus allowing learners watch the video as many times as they want and learners at their own pace. A plethora of studies has proven that 80% of people grasp things by seeing them. In fact, it gives a feel of someone guiding the learners. This medium is interactive, engaging and yields positive learning outcomes.

1.2.1 E-LEARNING MODULE

The concept of “module” is strictly linked to the idea of a flexible language curriculum, which should provide all those concerned with education (primarily learners and teachers, but also parents and administrators, as well as society at large) with a framework to establish clear and realistic language learning objectives. Modules are increasingly being used in many countries as a way of organizing a language curriculum. As a consequence, many course books are now structured on the basis of “modules” rather than “units”, and most teachers, when faced with this innovation, wonder whether this is really a new development, opening up new paths for learning and teaching, or whether it might not just be “old wine in new bottles”. Modules are relatively autonomous, because, especially in the early stages of language learning, one cannot give up the ideas of a sequence of learning steps and of a spiral, recursive approach to language. So it is legitimate to talk about the integration of basic, intermediate, and advanced modules. However, the basic idea of modularity is that at all levels there should be the opportunity to choose and combine modules in different ways according to the context of each particular teaching situation. Modules are not limited to the “core” language syllabus. It is possible to envisage and implement, for example, cross-curricular modules (involving several school subjects), project modules (aimed at carrying out a particular project) as well as remedial or development modules. Modules allow instructors to organize content to help control the flow of the course. Modules are used to organize course content by weeks, units, or a different organizational structure. Modules essentially create a one-directional linear flow of what students should do in a course. Each module can contain files, discussions, assignments, quizzes, and other learning materials. Module

items can be added to the course from existing content or new content shells within the modules. Course content can be added to multiple modules or iterated several times throughout an individual module. Modules can be easily organized using the drag and drop feature. Elements within the modules can also be reorganized by dragging and dropping.

1.2.2 STRUCTURE OF E-LEARNING MODULES

1. The title
- 2 .The introduction
3. The overview
4. The instruction to the user
5. The pre-test evaluation and feedback
6. The objectives
7. The learning activities
8. The formative test, evaluation and feedback
9. The summative evaluation and feedback

1.2.3 TYPES OF E-LEARNING MODULES

PDF module

The PDF module allows you to render PDF document. It is rather simple to use as it only requires to import a static file.

E-book module

The digital form of a book is recognisable by the term e-book. Living in the digital era, the term electronic is somewhat thought-provoking. Also, the meanings of the term of e-book are constantly evolving, and it gains new interpretations parallel with the technical enhancement of the digital content. This led us to review extensional definitions of the term e-book.

Audio module

From the audiocassettes of the 1970s to digitally recorded music on an invisible Cloud, audio has come a long way as a teaching and learning aid and is an extremely valuable method for capturing and presenting information. Audio provides a quick,

cost-effective alternative to text for connecting with your students and providing up-to-date content, interviews, discussions or lecture materials. Middleton (2013) highlights that audio has a demonstrated capacity to facilitate authentic engagement, allowing students to connect in various ways to the outside world as both listeners and publishers. Audio can easily be created with many desktop tools and small digital recording devices such as smartphones.

Video module

Video is also a popular tool used to engage learners and enhance a learning experience. Anyone with a digital camera, webcam, tablet or smartphone can now create and edit a movie. YouTube statistics highlight the widespread use of video online, with more than 4 billion hours of video watched each month and 72 hours of video being uploaded every minute (YouTube 2013, statistics). Videos are an excellent way to present and elaborate concepts, demonstrate a procedure or gain an understanding of learning in action. There are many ways to exploit video in order to create motivating, memorable and inclusive learning experiences.

1.3 PLATFORMS FOR MODULE DELIVERY

1. Google Course Builder: This platform contains software and instructions for presenting materials. We can organize the material in lessons, activities and exams. In addition, there are instructions for using other Google products (surprise, surprise) to create a community and evaluate effectiveness.

2. Canvas: Canvas is one of the cloud based learning management system. Many learners are connected it with Online.

3. MOODLE: Moodle is also a cloud based learning management system. It provides an integrated learning system to student's teachers and administrators Through Moodle one can easily integrate and complete their education.

1.4 NEED AND SIGNIFICANCE OF THE STUDY

Students now-a-days feels more comfortable with new technologies, which increase their motivation and, as a result, improve their academic performance .In the last two

decades, the use of e-learning has been increasing in many disciplines in higher education, online learning or educational technology has been used and integrated into the curriculum around the world. Developing an e-learning system has many advantages like, it can reduce the time consuming and money. It may also have benefits on the institution, proponents, user and future researchers. It can help the college of Arts and Sciences to reach their goals by developing an e-learning system. The teacher can inform and update the students in the website about lesson and activity in their subject. It can also enhance the skills and the ability can also access the e-learning website everywhere as long as they have a network. It will less the paper works of the students and teachers of the researchers. This will set as a basis about e-learning for the future researchers. The present study will be one step in this direction as an e-learning module will be a significant contribution in this field.

1.5 STATEMENT OF THE PROBLEM

DEVELOPMENT OF AN E-LEARNING MODULE IN EDUCATIONAL TECHNOLOGY

1.6 OPERATIONAL DEFINITIONS

E-Learning Module

An e- module is a 10-15 minute e-learning content that has no, more than one or two learning concepts and incorporates a blend of teaching and assessment tools that may include video clips, direct instruction, gaming elements and social media. In the present study, it will be a module an educational technology and it will be based on four quadrant approach as given by SWAYAM.

Educational Technology

Educational technology is a course which is being taught at B.Ed. level in the colleges of Education.

Teacher Trainees

Teacher trainees, in the present study, are those students who are pursuing B.Ed. and M.Ed. programmes from colleges of education or university departments.

1.7 OBJECTIVES OF THE STUDY

The following objectives were framed for the present study;

1. To develop an e-learning module in educational technology for teacher trainees.
2. To conduct a survey to know the impact of e-learning module on teacher trainees in terms of knowledge.

1.8 HYPOTHESIS

The following hypothesis was formulated for the present study;

1. e-learning module has a positive impact on teacher trainees in terms of knowledge.

1.9 DELIMITATIONS

Due to time and other constraints, the present study has been confined to

- i. One e-learning platform i.e. Moodle
- ii. Fifty participants.
- iii. One week duration course.
- iv. One teacher made test.
- v.

CHAPTER II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

In this chapter, an attempt has been made to present a brief review of the researches available in the present field of investigation. The review of related studies is an essential part of any investigation. The survey of the related studies is crucial aspect of the planning of the study. According to David (1969), literary if revises to create the content of the past in such a way that the new study is carried out with new subjects and newly obtained data.

The investigation exploits information accumulated within the past as results of constant human effort. It will never be tired isolation from the work that has already been done on issues directly or indirectly associated with a study projected by an investigator. A careful review of analysis journals, books, dissertations, theses and alternative sources of data regarding the matter to investigate is a vital step within the coming up with of any research study. In examining the related literature, the researcher can avoid useless and unsuccessful problem areas and their efforts could significantly increase knowledge. Through the review of related literacy, the researcher can avoid the involuntary duplication of consolidated results. Proposes to the investigator to comprehension of the methodology of investigation that if refers to the form in which the study will be carried out.

John W. Best (1995) pointed out that review of related literature is “The previous analysis transient outline wherever the writing of recognized consultants offers researchers at home with what's antecedently legendary and what's still unknown and untested. Since, effective research must be based on past knowledge this step helps to eliminate the duplication if what has been already provides useful hypothesis and helpful suggestion for significant investigation.

The review of literature in this chapter presents a picture of the research work done on usage of e-learning to improve the process of education in different countries in

general and India in particular. The main aim of this study is to access use of e-learning at B.Ed. level.

2.2 RESEARCH STUDIES ON E-LEARNING

Dhamija (1985) compared the Effectiveness of the Three Approaches of Teaching namely Conventional, Radio-vision and Modular on the Achievement of Students in Social Studies. The mean achievement scores of students in Civics when taught through Modular approach were more than the mean achievement scores of students when taught through Radio-vision as well as Conventional approach. It indicated that Modular approach was more effective in teaching Civics in comparison to Radio-vision and Conventional approach.

Kutty (1991) conducted research on the Effectiveness of Modular Approach in Teacher Education and requisites for implementation. The objective of the study was to test the effectiveness of modular approach in Teacher Education. It was found that the achievement of trainees through modular approach was significantly higher than achievement through existing approaches adopted in teacher education institutions.

Greager and Murray (1991) offered Modules to the teacher. They found that the Modules helped the students to learn as well as provided better chances to the students to interact with the teacher because this self-learning material reduced the routine instruction time.

Dutt (1998) conducted a research to find out the Effect of Self Learning Modules on Achievement of Senior Secondary Students in Relation to their Sex and Place of Residence. It was found that male students got significantly higher mean post achievement test scores than female students through Self-learning Modules. Students belonging to both rural and urban places of residence achieved almost identical mean post achievement scores.

Kumari (1998) carried out a research to see the Effectiveness of Remedial Modules in Language Learning in Minimum Levels of Learning Curriculum. The objectives

were to diagnose specific inadequacies in mastering over different competencies of Minimum Level of Learning in languages as well as to find out the effectiveness of remedial modules with respect to various competencies of mastery over language. Remedial module for class III, IV and V were found effective. These helped the students to attain mastery level in desired skills of language.

Arya (1999) compared the Instructional Strategy with Traditional in terms of selected cognitive variables. The objectives of the study were to develop the instructional strategy and study its effectiveness in terms of students' performance on criterion tests and comprehensive test. The developed Instructional Strategy was found to be effective in terms of achievement of students on criterion test and comprehensive test. The developed Instructional Strategy was found to be 29 significantly superior to traditional method.

Marathe (2000) carried out a research on the Nutrition Communication: Development, Testing and Evaluation of Modules for Community Use. The objectives of the study were to gauge the knowledge, attitude and practices of mothers with respect to protein, energy, malnutrition and vitamin A deficiency and to assess the effectiveness of the nutrition communication modules in the community. It was found that the nutrition communication modules were very effective in raising knowledge, modifying the attitude and adopting health-promoting practice among the community mothers.

Shirle (2001) shared that much of e-learning activity has been upon the development of courses and their resources. Successful e-learning takes place within a complex system involving the student experience of learning, teachers strategies, teachers planning and thinking and the teaching/learning context. Staff development for e-learning focuses around the level of technological delivery strategies when other issues such as the teachers conception of learning has a major influence on the planning of courses, development of teaching strategies and what students learn.

Ahuja (2002) studied the Effect of Self - Learning Modules on Achievement in Environmental Education in relation to Altruism and Emotional Intelligence. It was found that the students taught through Self- learning Modules (SLM) strategy gained

more environmental education concepts than those taught through Conventional Method. Thus SLM strategy proved to be superior to Conventional Method for teaching environmental education concepts. Altruism accounts significantly for differential achievement in environmental education than those with low altruism. Interaction between teaching strategies and varying levels of altruism found to be significant in producing differential achievement scores. Students with high altruism gained more concepts in environmental education than those with low altruism under SLM strategy.

Chopra (2002) developed a Self-Instructional Module to Enhance Communication Skills of College Principals. The objectives of study were to develop a self-instructional module in “communication” for college principals. Self-instructional 30 module in “communication” was administered on the college principals for self-study and to evaluate the usefulness of the module through self-appraisal and feedback by college principals. It was found that the „communication module” has definitely proved useful to college principals to enhance their communication skills and competence to optimally perform at work. The respondents had found the sequencing and flow of the module logical and smooth and could work through the module within the time frame allotted by researcher of eight to ten weeks.

Aggabao (2002) developed Individualized Self Instructional Modules on Selected Topics in Basic Mathematics for Instructional use at the Teachers” College in Isabela State University. After making use of the experimental method, it was concluded that 22 the students as well as teachers have a positive attitude towards the use of self-instructional material as a mode of instruction in Basic Mathematics.

Edward, Austron and Sean (2002) studied that the internet and its applications in education and industry have significantly influenced how we teach and learn. This has all occurred as a consequence of emerging technologies and the demands for online instruction by consumers. In the midst of this environment of rapid growth , a new form of pedagogy has emerged. However ,much of it is not the result of research. This paper addresses the need for a conceptual approach to researching-learning instructional design and the technologies employed as a basis for e-learning.

Lynch and Dembo (2004) investigated the relationship between self – regulation and online learning in a blended learning context. Objective: To review the distance education and self-regulation literatures to identify learner self-regulation 58 skills predictive of academic success in a blended education context. Method: Five self regulatory attributes were judged likely to be predictive of academic performance: intrinsic goal orientation, self-efficacy for learning and performance, time and study environment management, help seeking, and Internet self-efficacy. Verbal ability was used as a control measure. Performance was operationalised as final course grades. Data were collected from 94 students in a blended undergraduate marketing course at a west coast American research university (tier one). Findings: Regression analysis revealed that verbal ability and self-efficacy related significantly to performance, together explaining 12 percent of the variance in course grades. Self-efficacy for learning and performance alone accounted for 7 percent of the variance.

Rhone and Greg (2005) studied the student experience of e- learning in higher education in order to identify areas worthy of future investigation. This study highlight some common themes in the student's e-learning experience and recommends implication for practice arising from these, particularly the emotionality of the student experience and a concern about time and time management. E-learning developments based on changes to traditional pedagogy evoke the most inconsistencies in student perceptions and it is here that individual differences emerge as possible success factors. The review concludes that future research should investigate how students understanding of the teaching and learning process impacts on their study strategies and perceptions of online learning.

James and Karl (2006) studied in search of better, more cost effective ways to deliver instruction and training , universities and corporations have expanded their use of e-learning . Although several studies suggest that online education and blended instruction (a blend of online and traditional approaches) can be as effective as traditional classroom models, few studies have focused on learners satisfaction with online instruction , particularly in the transition to online learning from traditional approaches . This study examines students perceptions of integrating online components in two undergraduate business courses where students completed online

learning modules prior to class discussion .The results indicate that participants in an elective course rated the online module significantly better than those in a required course. Overall, participants in the elective courses rated the online modules marginally positive while those in the required course rated them marginally negative. These outcomes suggest that instructors should be selective in the way they integrate online units into traditional, classroom delivered courses. This integration should be carefully planned based on learner characteristics, course content, and the learning context.

Carmelo, Maria and Costabile (2006) studied recent advances of electronic technologies in e- learning, a consolidated evaluation methodology for e- learning applications is not available. The evaluation of educational software must consider its use ability and more in general its accessibility, as well as its didactic effectiveness. This work is a first step towards the definition of a methodology for evaluating e-learning application. Specific usability attributes capturing the peculiar features of these applications are identified. A preliminary user study involving a group of e – students, observed during their interaction with an e- learning application in a real situation, is reported. Then, the proposal is put forward to adapt to the e-learning domain a methodology for systematic usability evaluation, called SUE. Specifically, evaluation patterns are proposed that are able to drive the evaluators in the analysis of an e- learning application.

Cher and Siew (2006), studied a descriptive account of the development and employment of interactive learning objects to enhance the learning experiences of the students in the course. The experimented learning objects were branded as interactive learning objects to reflect the key pedagogical factors for effective learning object this is interactivity. Moreover, the study suggests the importance of designing online modules according to a blended e-learning plan and that teachers also ensure students are e-learning ready.

Silverstone (2007) verified using 21st century technology in on line business education. Objective: To explore the effects of some new technological options which were recently provided to marketing students in order to make their online learning

experience more exciting and meaningful. Method: National University's online classes are offered on the e-College platform. Students interacted with each other asynchronously through discussion boards and synchronously in weekly chat sessions. Chat sessions had been offered in a text-based format, but the School of Business has invested in iLinc software which provides Voice over Internet Protocol (VoIP) capability. In iLinc, students can see and hear each other as well as the instructor in real time. The system allows application sharing, group web-browsing, the display of PowerPoint® slideshows, voting, and independent group work. Using this technology, the instructor acted as both a discussion moderator and a live lecturer. The traditional text-based chats are no longer used due to the high student acceptance and delight with the iLinc system. Outside of the virtual classroom, the marketing students were tasked to analyze and comment on the content of selected television shows. National University's students are adult learners who grew up passively watching television from an early age. These assignments were designed to get them to think beyond the surface entertainment to the underlying marketing and business messages given in these shows. In both classes the students were told to look at these programs critically and share their comments with the class. The use of these current mass media presentations, (which afforded live action cases that demonstrated the immediate consequences of managerial actions), was shown. Findings: Overall, the students appear to thoroughly enjoy this addition of topical and live learning tools to their online learning experience. While not tested empirically as yet, these new classroom tools seem to increase student comprehension and retention of the course material.

Chen and Looi (2007) incorporated online discussion in face to face class room learning with a new blended learning approach. Objective: To examine the advantage and disadvantage of innovative blended learning strategy. Method: This study includes an innovative blended learning strategy which incorporates online discussion in both in-class face to face, and off-classroom settings. Online discussion in a face to face class is compared with its two counterparts, off-class online discussion as well as in-class, face to face oral discussion, to examine the advantages and disadvantages of the proposed strategy. By integrating online discussion into the flow of the classroom, learners are given dedicated time to foster a habit of critical thinking, reflection and articulating these online, which can subsequently seed further in-class oral

discussions, and off-class online discussions. Findings: It is found that in-class, online discussion can provide a wider spectrum of discussion perspectives, equalise participation in discussion, and promote cognitive thinking skills and in depth information processing. However, the lack of face to face interactions and the need for sufficient time to do online postings pose challenges in implementing online discussion for face to face classroom learning.

David and Maria (2009), studied improvement in technology appear to provide an unprecedented opportunity to improve learning and teaching within the higher education system. At present, however, opinion are divided over the efficacy of such an approach and the extent to which technology should be embraced in teaching. Over a period of two years, we have developed a new blended module where all learning resources are provided online and formal teaching sessions are used to provide the direct learning needed by students. This study explores the effectiveness of using technology to direct learning and identifies generic problems. The ability of students to use technology to repeatedly return to resources was a clear benefit, allowing students to take responsibility for their own study at a pace appropriate for the learner.

Palilonis (2009) studied students' reflections on a multimedia course in visual communication class. Objective: To improve the multimedia course by getting reflections from visual communication students. Method: To add parsimony to these two areas of study, and to assess how a blended model has been introduced in a required, 100-level visual communication course through a longitudinal study that followed 174 students through two versions of the same course. Findings: The results revealed that the blended model was in no way different from the traditional course in 41 terms of engagement and attachment. Journal data revealed students in the blended sections were significantly less negative about the course material, personal achievement, technology, and their emotional reactions than their traditional counterparts. Additionally, statements made by students regarding the issue of fear of the course and problems regarding technology substantially faded over the 15-week semester. The overall findings indicate that students are able to adapt well to the technology and processes that make blended learning different from traditional classroom learning. Implications for pedagogy and future research are discussed.

Akyol and others (2009) explored online blended communities of inquiry. Objective: The goal was to explore the developmental differences of the three presences (social, teaching, and cognitive) in the community of inquiry framework and students' perceptions of a community of inquiry. Method: A graduate course delivered online and in a blended format was the context of the study. Data were gathered from the Community of Inquiry Survey, transcript analysis of online discussions, and interviews with students and the course instructor using multiple qualitative and quantitative data sources. Findings: This paper discusses findings of a mixed method approach to a study of the development of a community of inquiry in an online and a blended learning environment. The results indicated that in both the online and blended course a community of inquiry developed and students could sense each presence. However, the findings revealed developmental differences in social and cognitive presence between the two course formats with higher perceptions in the blended course.

Masrur (2010) investigated the impact of web based resource material on learning outcome in open distance higher education. A sample of 68 students was selected. Thirty-eight students comprised the control group, whereas another group of 30 students was named as experimental group. The study package of control group included self-instruction material comprising of two study guides (six credit hours course), recommended book, four assignments, and assignment submission schedule. Experimental group received the same package plus CD having web based articles related to each unit of study guide, and a list of web sites for further reading. After the submission of assignments a one week workshop on the topic assigned to him/her before the commencement of workshop. The final examination was held at the end of semester. The marks obtained by both groups were compared by t-test. The scores of experimental group were higher on all assessment components. Findings: The study concluded that integration of IT in teaching-learning increased the understanding of subject related knowledge.

Jaiswal (2010) identified m- learning as a new paradigm in education. Objective: To make an emphasis over m- learning as a new paradigm of education. Method: Descriptive study through survey method. Findings: its common use with traditional

education will improve educational quality. The educational process will become more flexible and will fulfill the needs of lifelong learning. M-learning also can assure good educational opportunities for disabled people.

Reinhold and others (2010) investigated web based instruction on substance abuse and drug diversion. Objective: To develop a pilot study to assess the effectiveness of a Web-based educational module on enhancing understanding of substance abuse and drug diversion, and to assess students' abilities and confidence in applying the information. Method: A Web-based instructional module was presented to students enrolled in their second pre-professional year, and students were informed that it was part of a research study. Knowledge was tested using 10 pre- and post-module questions. Students were also presented with 5 survey questions assessing abilities related to the learning objectives. Assessment of the median percentage of correct responses increased from 60% (Inter quartile range [IQR] 20%) for the pre-module questions to 90% (IQR = 10%) for the post-module questions. The median percent gain in knowledge was 20% (IQR = 20%) which was significant ($p < 0.0001$). Findings: Conclusions Web based instruction is an alternative method for engaging students in course content, and found that 59% of the pilot study group worked in a pharmacy. From the success of the pilot study, the module was implemented as an extra credit assignment in a required course to provide a foundation for developing professional skills and responsibility.

A.I and others (2010) made a case study to develop cognitive skills with mobile learning. Objective: To analyze m-Learning resources in four courses to identify how they help develop cognitive skills in students. Methods: Focus group interviews, surveys, document analysis and non-intrusive observation were used. The data was analyzed quantitatively and qualitatively in order to link the results and the theoretical information within the two variables that guided this study: m-Learning and cognitive abilities. Findings: The results show that by using m-Learning resources it changes the learning environment by converting any setting into a collaborative and innovative environment. Results also show that the design of m-Learning resources must be based on educational theories and strategies to be effective, and also the nature of the subject and resource type are related to the developed cognitive abilities. Also it was

found that although students are not aware of it, m-Learning resources and the use of mobile devices assists them in developing strategies that promote cognitive skills such as problem solving, decision making, critical thinking, creative thinking and melioration.

Ali (2010) conducted a study on Effectiveness of Modular Teaching in Biology at Secondary Level. The major purpose of the study was to explore the impact of modular teaching on the achievement of students. The study was of experimental type. Equivalent group study design was used. The collected data of both groups were analyzed and interpreted using mean, standard deviation and t-test and conclusions were drawn. The results of the study were in the favour of modular teaching approach, therefore, it was suggested that this approach should be widely used in conventional classroom at various levels of education.

Khalil, Nelson and Kibble (2010) conducted a study on the use of Self-learning Modules to Facilitate Learning of Basic Science Concepts in an Integrated Medical Curriculum. This study used qualitative and quantitative approaches to evaluate the effectiveness of self-learning modules (SLMs) developed to facilitate and individualise students' learning of basic medical sciences. Twenty physiology and nineteen microanatomy SLMs were designed with interactive images, animations, narrations and self-assessments. Out of 41 medical students, 40 students voluntarily completed a questionnaire with open-ended and closed-ended items to evaluate students' attitudes and perspectives on the learning value of SLMs. Closed-ended items were assessed on a five-point Likert scale (5 = high score) and the data was expressed as mean $\pm$ standard deviation. Open-ended questions further evaluated students' perspectives on the effectiveness of SLMs. Students responses to open- 24 ended questions were analysed to identify shared patterns or themes in their experience using SLMs. The results of the midterm examination were also analysed to compare students performance on items related to SLMs and traditional sessions. Students positively evaluated their experience using the SLMs with an overall mean score of 4.25 (SD $\pm$ 0.84). Most of the students (97%) indicated that the SLMs improved understanding and facilitated learning basic science concepts. SLMs were reported to allow learner control, to help in preparation for subsequent in-class

discussion and to improve understanding and retention. A significant difference in students' performance was observed when comparing SLM-related items with non SLM items in the midterm examination.

Liam and Triona (2010), studied the social changes brought about in no small part by web 2.0 tools, the potential impact of the blog writing phenomenon upon teaching and learning contexts reveals an important area for consideration for all university educators , and in particular for e- learning practioners. Today, web users may access a wide variety of media to express themselves and to communicate with others. These may include conventional blogs websites such as blogger.com or indeed social networking sites such as Myspace, Facebook or Bebo, which continue to integrate blog tools and which also encourage self-expression, on the part of the users. This paper shall detail the pedagogical and support role of the teacher as well as considering the content of learners reflective output throughout the course of the semester.

Aixia and Wang (2011) conducted a study to investigate the critical factors affecting learners 'satisfaction in e-learning environment. The findings presented that the perception of e-learning was positively influenced by its flexibility in knowledge management, time management and widening access to information.

Garillos (2012) conducted a study on Development and Validation of Instructional Module in Biology for Second Year High School Students. It was found that there was a significant increase in the post-test results of the students when the instructional material was introduced in the class.

Natasa, Simon and Bart (2013), studied that an important development in higher education is the increased learning possibilities brought by ICT. Many academics seem reluctant embrace technology. An online teacher training program was followed by 73 academics from nine higher educational institutions. Data were gathered using the technological pedagogical content knowledge (TPACK) model and the teacher beliefs and intention questionnaire using a pre-posttest design. The results amongst 33 participants who completed both pre and posttest indicate that TPACK skills.

Douglass (2014) studied the Influences of Web-based Learning Module on Student Pharmacists' Confidence and Competence in Pain Management. The objectives of the study were to compare the confidence and competence in pain management skills between student pharmacists at the end of their didactic and experimental years and to examine the potential influence of a web-based experimental learning module on students' confidence and competence skills. Two groups of students were surveyed at the end of the third (P3) and fourth (P4) professional years to assess their self-reported confidence and competence on four pain management skills. During the second year of the study, students were asked to complete a web-based learning module aimed at improving competency in pain management. Confidence and competence measures were compared for each group with a Fisher's exact test. Students were more confident than competent on all four pain management skills evaluated and overall competence between both class years was suboptimal. Competence in pain management declined among P4 students who did not complete the learning module.

Guido (2014) conducted a study on Evaluation of a Modular Teaching Approach in Material Science and Engineering. The challenge of this study was to use the modular teaching approach in engineering. A standardized faculty - student instructional module evaluation checklist was used for the assessment of the learning objectives, evaluation of acceptability, effectiveness and the acquired skills in the module. The study showed that the instructional module in material science and engineering were effective for students' knowledge adaptation and showed suitability to the level of the students and acceptability to the faculty evaluators. This revealed that the evaluators trusted that the module was very valuable to the course which made students' learning experience well stimulated.

Gagnon (2015) conducted a study on Adaptation and Evaluation of Online Self-learning Modules to Teach Critical Appraisal and Evidence-Based Practice in Nursing. This study was designed to evaluate online self-learning modules on critical appraisal skills to promote the use of research in clinical practice among nurses from Quebec (Canada) and the Basque Country (Spain). The teaching material was developed in Quebec and adapted to the Basque Country as part of an international

collaboration project. A prospective pre-post study was conducted with 36 nurses from Quebec and 47 from the Basque Country. Assessment comprised the administration of questionnaires before and after the course in order to explore the 26 main intervention outcomes: knowledge acquisition and self-learning readiness. Satisfaction was also measured at the end of the course. Two of the three research hypotheses were confirmed: (1) participants significantly improved their overall knowledge score after the educational intervention and (2) they were, in general, satisfied with the course, giving it a rating of seven out of 10. Participants also reported a greater readiness for self-directed learning after the course, but this result was not significant in Quebec.

Wei Li (2016) conducted a case study “Transforming Conventional Teaching Classroom to Learner - Centered Teaching Classroom Using Multimedia-Mediated Learning Module.” This case study was conducted at INTI International University, Malaysia where it realized the limitations of conventional teaching and had taken initiatives to encourage lecturers to adopt a more learner-centered teaching approach. It was noted that the learner-centered teaching environment successfully helped 27 students to gain better understanding, made the learning process more interesting and engaging as compared to conventional teaching.

Shuryginviktor and Lyubor (2016), studied special requirements to the system of higher education, focused not only on imparting knowledge to students, but also on the formation of the continuous need for independent self – education, self-creative approach to getting knowledge throughout their active life. In this regard, the role of students independent work with its potential to revitalize educational and research activities, to form general and professional competencies, self-education and self-promotion increases significantly. Currently, high-quality educational process is impossible without effective information and communication technologies. Particular importance is attached to the development and use of electronic educational courses which provides that all students of the academic group, without exception, will be involved into the process of learning.

Garridoatel (2016) conducted a survey and aforesaid that the potential of on-line learning offered the hope of providing quality education to anyone, anyplace within the world. The recent development of large and open on-line Courses (MOOC) marked a brand new and exciting progress by providing free tutorial education and development of skilled skills from the most effective universities within the world to anyone with ample resources to access the web. The research worker mentioned that analysis within the MOOCs study for the event initiative was designed to investigate the MOOC landscape in developing countries and to raised perceive the motivations of MOOC users and supply data on the advantages and limitations of MOOCs for developing countries. MOOC. Results of hands development. The key findings of this study challenge common beliefs regarding the utilization of MOOCs in developing countries, questioning the standard characterizations of however individuals in settings with restricted resources use technology for learning and employment. In fact, a number of the results area unit therefore contrary to what was rumored within the U.S. And different developed environments that raise new queries for more investigation.

Kumaran and Robinson (2017) A survey was conducted a study to find out the level of awareness of B.Ed. students towards e-learning. 300 B. Ed students were selected randomly from 6 colleges of Education in Puducherry for the sample for the present study. The questionnaire consisted of 50 test items in the form of multiple choice questions was used by the collection of data. The data collected from the sample was analysed statistically using SPSS ver-22 package. The results revealed that the B. Ed students have low level of awareness towards e-learning. Significant difference excited among the demographic variables used with respect to their knowledge on e-learning.

Wu and Chen (2017) conducted a research that propose a unified model which integrates the model of technological expertise, the model of technological rights, the characteristics of the MOOC and the social motivation to investigate the intention to continue with the use of MOOC. A sample of 252 participants in China that have already used MOOCs took part in this study. Structural equation modelling implemented via partial least squares (PLS) was conducted to test the research

hypotheses. The results showed that research framework for integrating the TAM for the adoption and TTF model for utility provides a more comprehensive understanding of the behaviours related to this context: (1) perceived usefulness and attitude are critical to the continuance intention to use MOOCs; (2) perceived usefulness is a significant mediator of the effects of perceived ease of use, task-technology fit, reputation, social recognition and social influence on continuance intention; (3) perceived ease of use, task-technology fit, reputation, social recognition and social influence are found to play important roles in predicting continuance intention; (4) individual-technology fit, task-technology fit, and openness affect the perceived ease of use; (5) unexpectedly, perceived ease of use and social influence have no significant effect on attitude, and individual-technology and openness do not affect perceived usefulness.

Yamo (2017) conducted a research and has mentioned in a paper that learners intrinsic motivation is a critical factor that directly influences meaningful engagement, facilitates academic achievement, promotes individual learning experience, and decreases dropout rates in both online learning contexts and in various higher education settings. They mentioned that intrinsic motivation is a key psychological aspect that individual learners need to have when participating in online learning activities in order to achieve their learning. Most of the research on massive open online courses (MOOCs) has been largely conducted using developed country MOOCs to examine the experiences of MOOC learners including their motivation to register for MOOCs and to participate in learning activities. However, very little empirical research using developing country MOOCs has been conducted to investigate the same phenomenon. Specifically, qualitative case study research examining learner intrinsic motivation during the MOOC learning activity in the developing country context such as Thailand has been urgently needed. This qualitative case study research was aimed at investigating learner intrinsic motivation in a massive open online course (MOOC) within the context of Thailand as a developing country through the eyes of the learners. Semi-structured interviews were used to collect data and a thematic analysis was used to analyse the data. They found that there were three factors of social conditions, environment conditions, and cultural conditions that influenced a perception of competence and autonomy. Social

conditions include peers, course facilitators, self-motivation, colleagues, and family members. Environmental conditions include accessibility, learning activities and resources, collaboration tools, learning systems, discussion forum, and feedback. Cultural conditions include Thai learners' traits and seniority. The empirical findings of this research would be of potential contributions to theory and practice by informing MOOC stakeholders in the planning, developing and delivering of high quality of MOOC courses. Cognitive evaluation theory as a sub-theory of self-determination theory was used to examine the social, environmental and cultural conditions. These conditions played a significant role in facilitating or diminishing learner intrinsic motivation in this qualitative case study research.

Adebo and Ailobhio (2017) conducted research on the emergence of massive Open Online Courses (MOOCs) as a trend towards e-learning, and his immense inscriptions worldwide inspired this study. This study was conducted to check the participation of e-learning among students of the University of African country, deciding the extent of awareness and therefore the scope of use of large open on-line courses (MOOCS) and different e-learning platforms. The study was conducted at the Federal University of LafiaNasarawa, within the state of African country, with a complete of 126 scraps of respondents all told departments of the University. Descriptive statistics, like counts and percentages of frequency, likewise as inferential statistics, like the Liker scale and therefore the analysis of variance, were accustomed analyze the study. it had been discovered within the study that MOOC participation remains terribly low because of lack of data and inadequate net property infrastructure. Therefore, the study suggested methods to improve the combined and improved learning experience.

Zawaideh (2017)opined that E-learning environments are university's infrastructural features that are increasingly important. With e-learning teachers could impart knowledge in many ways while improving interaction with the students. Also, interaction among students could be improved. This study aimed at identifying factors that can explain the usage of e-learning environments by higher education students. A total of 201questionnaires were answered by 201 students enrolled in Al-Madinah International University in Malaysia. The results point to use behavior of using e-learning as the factor that directly influenced behavioral intention to use the

e-learning the most. This factor also imparted the greatest indirect impact on behavioral intention use E-learning. Simply put, student's usage of e-learning environments is explainable to a great extent via their perceptions of the added value of these environment, which to a high degree is impacted by their belief about web-based activities and computer -assisted learning.

Lusta (2018) conducted a research and has mentioned in a paper that when designing MOOCs, learner motivation cannot be treated as a minor issue but as a major issue to guarantee the success and encouragement for completing these online courses. The researcher has mentioned that the question under study is to explore the motivation of Arabic learners in language online courses in light of the self-determination theory and the research sample consisted of 106 students from different Arabic countries. This study employed the quantitative research approach and administered academic motivation scale (AMS) among MOOC learners to assess their academic motivation. Findings showed that majority of participants were extrinsically motivated while others were intrinsically motivated.

2.3 CHAPTER SUMMARY

In the review of literature in this section it is evident that, most of the studies depict that there are so many studies found on the usage of online courses by different type of users, and the result shows that the online courses are very useful for each and every one in one or another way. It has also been found that it is very useful in every field of life but specially in the field of education, there are many studies on the research scholars, doctors, teachers which clearly show that online courses is the need of hour. However, in most of studies were conducted on about Development of MOOCs courses and Experiment on developing e-learning modules. Impact of e-learning modules and Effectiveness on e-learning modules in these studies has been found that student/teachers have found these e-learning modules very helpful and effective in their respective fields of work. It is also important to note that review of research studies on usage of these e-learning modules shows that learner has found it very useful, beneficial and favorable in their life to access different types of courses of their interest as it is quite available on the different platforms. As far as the present educational system is concerned it is very important for everyone to have knowledge

about these e- learning modules to compete with the world which is an age of technology.

CHAPTER III

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter explains the research methodology used in this study. Research methods play a vital role in a research process. Research is an endless search for knowledge and an endless search for truth. It highlights new knowledge or corrects previous errors and incorrect ideas and announces ads for the corpus of knowledge so far. Knowledge of research is scientific and objective and is a matter of rational understanding, common verification and experience. "Research is considered to be the scientific method of analysis, implies a more systematic investigation structure only usually involves a sort of formal procedure of procedure and report of facts in conclusion".

Research ways area unit of utmost importance during a analysis method. They indicate the varied steps within the arrange of attack to be adopted for resolution an exploration down side. It is, therefore, very important that researchers have a thorough understanding of diverse research methods – their strengths, limitations, applications and appropriateness.

Best (1995) noted that since there are no two exactly equal research companies, it is impossible to establish a rigid formulation of methods or procedures. There is a wide variation in the conditions and circumstances that determine the objective nature of research problems in different fields. The purpose of a study can vary from problems in different fields. The purpose of a study can vary from one researcher to another depending on where it will be conducted and the applications that will be presented to it. Furthermore, the great differences in the skills and characteristics of people doing research are a proven fact. Therefore, all methods challenge representation in terms of formula or standardization.

Mouly (1970) described that there are many ways and means of gathering, analysing and reporting research data. Educators are not in thorough agreement as to the so-called methods of collecting and handling the data. In research literature many

variations of different terms are used to designate shades of meaning. Research workers use terms which suit their own needs and express their own purposes. As an illustration, Mouly (1970) gave an alphabetic list of as many as 131 terms used in literature dealing with educational research to denote the procedure and methods used in studying research problems. This implies that no study can be carried out through the use of only one method.

The decision about the method or methods to be employed always depends upon the nature of the problem selected and the kind of data necessary for its solution. Whatever the method to be employed, it is essential that it should be describable otherwise it will lose its significance and effectiveness. Thus if the research methodology cannot be clearly described, chances are that the results of the study will be too vague and general (Mouly 1970).

Efficient, economical and efficient, flexible is the characteristic of a good design. In general, design, which minimizes bias and maximizes the reliability of data collected and analyzed, is considered a good project. Design, which provides the smallest experimental error, should be the best design in many surveys. Likewise, a design that produces maximum information and offers the opportunity to consider many different aspects of a problem is considered the most appropriate and efficient design compared to many research problems. Therefore, the question of good design is related to the purpose of the research problem and also to the problem. The purposes of a study can vary from researcher to another in terms of where it will be performed and the applications that will be presented to it. Furthermore, the great differences in the skills and characteristics of people doing research are a proven fact. Therefore, all methods question the representation in terms of formulas or standardization.

Taking into account their special benefits and based on the nature of the present study, the mixed method approach was chosen to study the attitude, knowledge and skills of teacher trainees in educational technology.

Firstly, a descriptive survey was used to know the knowledge and attitude with regard to educational technology among teacher trainees. In which a quantitative data was collected through online version of a survey tool.

Secondly, an experimental study was also conducted in which a course on Basics of Education technology was developed and delivered online to a small sample of students. Pre and Post data on knowledge, skills and attitude was also collected from the sample of the students enrolled in the course.

3.2 DESIGN OF THE STUDY

The method one means that a scientific approach towards a selected development. Methodology employed in associate degree investigation determines its destiny. It is the nature of the techniques and procedure adopted which determines the reliability, precession and validity of the data. Therefore, it is essential that in order to investigate the problem in a systematic way, the right methodology should be used.

In view of the objectives of the present study, Experimental method was used to develop an e-learning module. Survey method, a detailed description of the existing phenomenon is collected with the intent of employing data to justify current conditions and practices and to make opined that survey research permits us to collect factual information. Survey method involves the use of variety of questions for collection of data. However, an experiment was also attempted in the present study. In this a one-week course was developed and delivered online for participant and a post data was also collected for their attitude towards educational technology.

3.3 POPULATION

The population of the present study comprised of all teacher trainees at B.Ed. levels in selected Colleges of Education and MIER College of Education (Autonomous). The population being very large in number and vastly scattered, it was very difficult to contact respondent in different Colleges and Departments because of the limited resources. Moreover, it seemed that it would be a wasteful exercise to carry on the study with the whole population, when only a small representative sample could furnish the required information and the expected results.

3.4 SAMPLE

For the purpose of survey, a sample of 50 teacher trainees from M.Ed. programme in MIER College of Education (Autonomous) has been selected for the collection of data.

Secondly, for carrying out an experiment, 45 participants from MIER College of Education were also selected for the enrolment in MOOC developed by the investigator in the present study. They were involved in the Teacher -made test for data collection of the course.

3.5 VARIABLE USED

A research question aims to ask about the relationship between two or more variables. In order to state the expected answer to the research question, a research hypothesis is formulated which determines the expected relationship between the dependent and independent variables. In the present study, there is from dependent variable and one independent variable.

3.5.1 Dependent variable

Variables are those which may vary or change from person to person or situation. In the present study, the dependent variables is impact of E-learning module.

3.5.2 Independent variable

It is the treatment that is supposed to produce an outcome, and on which the dependent variable depends for the outcome i.e. E-Learning module.

3.6 TOOL EMPLOYED

The instrument used for the data collection is known as tool. The selection of the suitable instrument is of vital important for successful research. Tools are suitable for collecting various kind of information for various purposes. No tool was available, in the present study; a self-prepared tool was employed for the collection of the data. A standardized procedure was adopted for the development of the tool. The procedure had six phases which are based on ADDIE Model namely Analysis phase, Design

Phase, Developmental Phase, Implementation Phase, Evaluation Phase and in last phase try out for standardization and preparation of final version respectively.

In this Analysis phase, the investigator was analyzed the phase and clarified the instructional problems and objectives, and identified the learning environment and learner's existing knowledge and skills towards e-learning.

In the Design phase, the investigator was designed the module and deals with learning objectives, assessment instruments, exercises, content, subject matter analysis, and media selection. The investigator was designed this phase in a systematic and specific Way. Systematic means a logical, orderly method that identified, developed, and evaluated a set of planned strategies for attaining project goals. Specific means the team must execute each element of the instructional design plan with attention to detail.

In the Developmental Phase, the investigator was created and assembled the content assets which is described in the design phase. Investigator was created video tutorials, Assignments, content PDF, Discussion Forums and quizzes.

In the Implementation phase, the investigator was developed procedures for teacher trainees. Preparation for learners includes training them on new tools (software or hardware) and student registration, start of course, assume its delivery over internet, engage participants through multimedia contexts and discussion forums etc. Apart from this tasks, quizzes and post survey was also conducted to gather data on their knowledge, skills and attitudes towards e-learning as indicators of impact of e-learning module.

3.7 PROCEDURE

Procedure is an established, official and accepted way of doing or performing something. Present study will be undertaken in five phases.

Phase 1

Review of related literature.

In the first phase, the investigator reviewed the related literature for her study and prepared preliminary drafts of the tools for collection of data for the study. The investigator selected the MIER College of education (Autonomous) where teacher trainees were being trained.

Phase 2

Preparation of tools

This phase was concerned with the drafting, finalization and fine tuning of tool to be utilized for the present study. The self-prepared tool 'E-learning Module in Educational technology' trial on a small sample during this stage. Online versions of tool was prepared.

Phase 3

Selection and finalization of Content for e-learning module.

In this phase, the investigator selected the content for the course and finalized it which includes the meaning of educational technology and its definitions, Scope of educational technology and its component.

Phase 4

Selection of MOOC platform and target audience and for MOOC course.

In this phase, the investigator goes through the different platforms of the out of which three were selected Course Builder by Google, CANVAS and Moodle platforms after going through these Moodle was finalized. Investigator also decided the target audience for doing the course from M.Ed. programmes.

Phase 5

Development and Delivery of MOOC course and Enrolment of students

In this phase, MOOC course was developed and made functional after making a number of trials and modifications for teaching/ learning. This course consists of video lectures, presentation, text, reference material and quiz and discussion forum. After developing course the students were enrolled in the course.

Phase 6

Collection of data

The data collected with the help of online version of tool prepared by the investigator herself. Post data was collected from the student enrolled in the course. In this phase, student completed their course. After they completed their course post data was collected from the student enrolled in the MOOC course.

Phase 7

Data Processing and Data Analysis

In this phase, Data from Google sheet was downloaded in MS Excel and manual scoring and Tabulation of data was done by using MS Excel and data were finalized for analysis.

In this phase, data processing and analysis using frequencies and percentage were carried out for finding the answer for research questions through a software SPSS and writing report and finalizing it for final submission.

Phase 8

Report Writing

In this phase, the researcher started writing the research report. A draft of the research report was first prepared which was then duly edited and finalized for submission.

3.8 STATISTICAL TECHNIQUE USED

Paired sample t-test has been used to know the impact from pre and post test.

CHAPTER IV

DEVELOPMENT OF MOOC - AN EXPERIMENT

4.1 INTRODUCTION

This chapter explains about the development of a MOOC by the investigator. In the present study, investigator also developed one MOOC of one week duration on Moodle (Modular Object orientated Dynamic learning environment) platform. The investigator initially does not have any expertise in developing software, so she used the Moodle Cloud platform for developing an online course. Moodle cloud is a cloud based e-learning platform for creating learning communities around educational subjects and activities. Moodle Cloud is software for "distance learning" or more accurately a "digital learning environment". It allows distributing documents (text, audio, video, etc.) and supporting the interactions between teachers and students, using a variety of communication tools, evaluation and management. Moodle Cloud allows educators to deploy their own server in the cloud. The system is targeted towards small users of Moodle.

The best part of Moodle Cloud is that it's for free because it provides 50 users capacity and 200 megabytes of disk space. In Moodle, we can add text, create forum which allow learner and teachers to post comments in a central place to simulate (and stimulate) discussion, it allow upload video lectures, presentations. One can also create quiz in Moodle cloud. It is perfect for small study groups or for teachers to experiment with the platform.

The investigator followed a ADDIE model for developing the MOOC. She completed her development of course in five phases which are based on ADDIE model i.e. Analysis, Design, Development, Implementation and Evaluation.

4.2 PLANNING OF COURSE

First, investigator went through the literature as presented in Review of literature in chapter II, and decided to plan the course accordingly to steps as given below.

4.2.1 Selection of the Topic for the course development

At the very first step, the investigator decided and finalized the topic for online course “Basics of Educational Technology” and then started collected material related to the topic.

4.2.2 Course Content

After selecting the topic, the investigator selected the content for the course which included the meaning of educational technology and its definitions, scope of educational technology and its component from various books and presentations etc.

4.2.3 Target Audience for the course

Secondly, the investigator decided about targeted audience for whom this course will be meant. She decided that the content is very much suited for the participants who are doing the M.Ed. and B.Ed. programmes.

4.2.4 Objectives

The objectives of course are: -

- i. To enable learner to understand about the basics of educational technology.
- ii. To make learner draw the wide scope of educational technology.
- iii. To make learner to recognize the use of educational technology.

4.2.5 Online Strategies

After completing the course, the investigator planned to use different strategies for teaching the course on ‘Basics of Educational Technology’ i.e. self-directed learning, project learning, discussion and assessment through E –tutorial, E- content, E-assessment and E-forum etc.

4.2.6 Learning Outcomes

The investigator prepared a list of expected outcomes after completion of the course and these are: -

- i. The learner will understand the meaning and definitions of educational technology.
- ii. The learner will be able to define educational technology
- iii. The learner will be able to understand the wide scope of educational technology.
- iv. The learner will be able to use educational technology.

4.2.7 Selection of MOOCs platform

After selecting the topic, the investigator selected a MOOCs platform, where course can be developed and delivered. The investigator went through the details of different platforms, out of which three were selected i.e. Course Builder by Google, CANVAS and Moodle. After going through their features, Moodle was finalized for conducting the experiment. The investigator chose the Moodle Cloud platform for her course because it is free and has maximum 50 user's enrolment facilities and it has 200 megabytes of free disk space and that is considered to be enough for a small course.

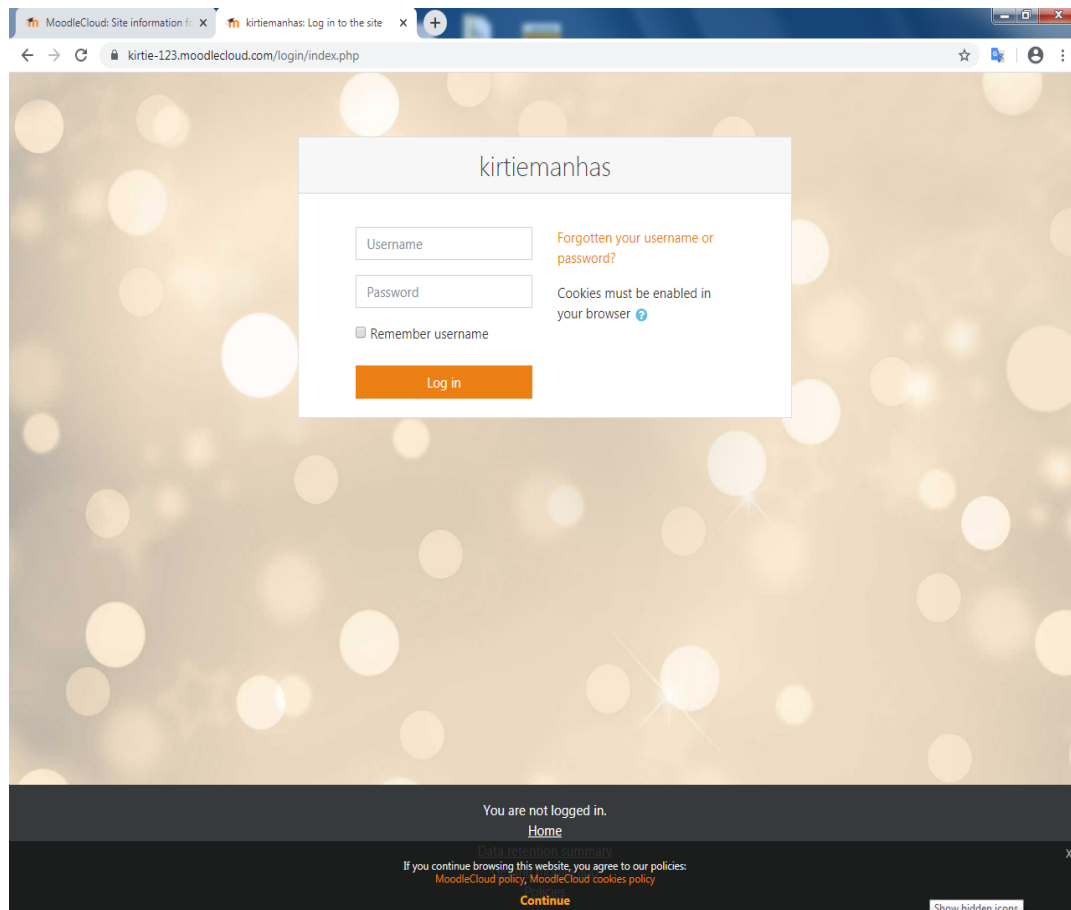
4.3 PREPARATION

Preparation consisted of creating a website, creating course presentations, adding text in the course, creating quiz and try out of the course.

4.3.1 Creating a website

For the purpose of running massive open online courses, the investigator created a log in <https://moodle.com/cloud/free> and started building up the course.

For building up the course, a step by step procedure was adopted as explained in the following screen shots.



Screen shot 1: Showings 'Login Page of Moodle Website'

Investigator created her own Moodle Cloud website having address <https://kirtie-123.moodlecloud.com>

User Name and Password

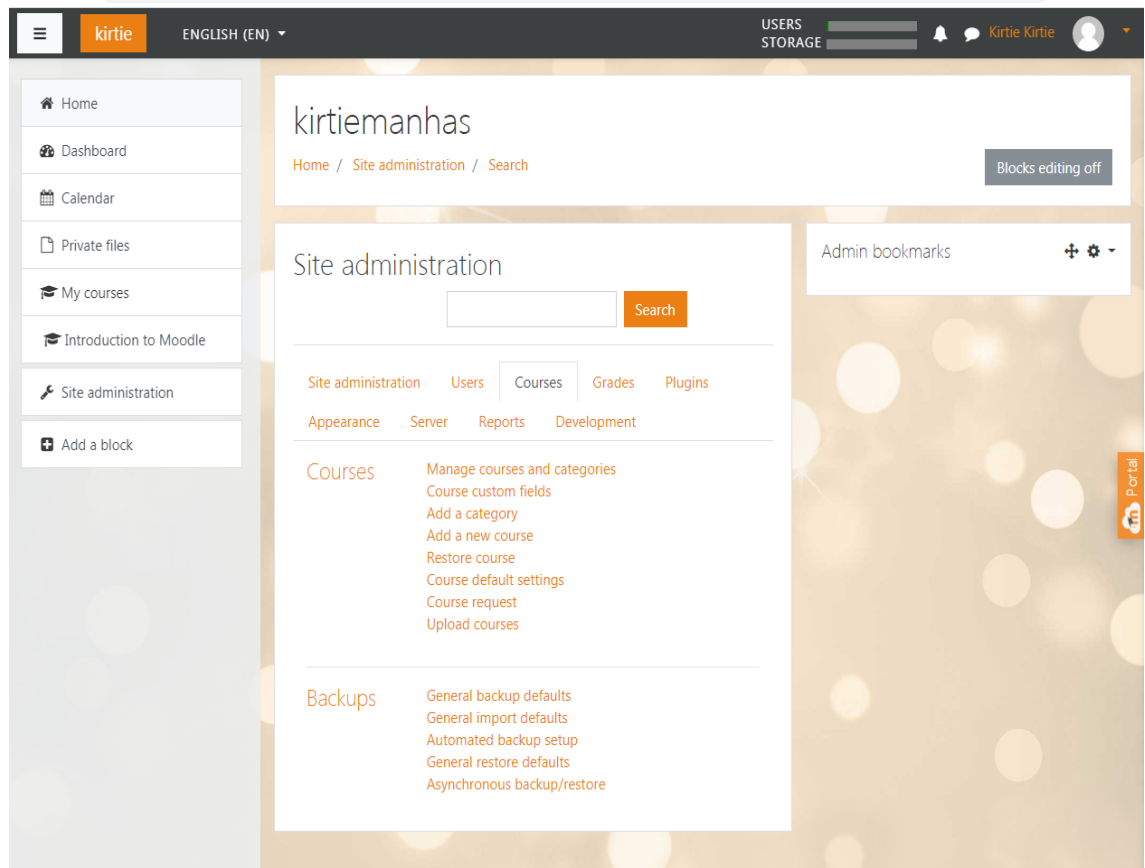
At step one investigator went to my Moodle Cloud by entering her Cloud's address e.g. www.kirtie-123.moodlecloud.com in the login page:

- Type in the username – admin
- Type in your password

4.3.2 Creating Course

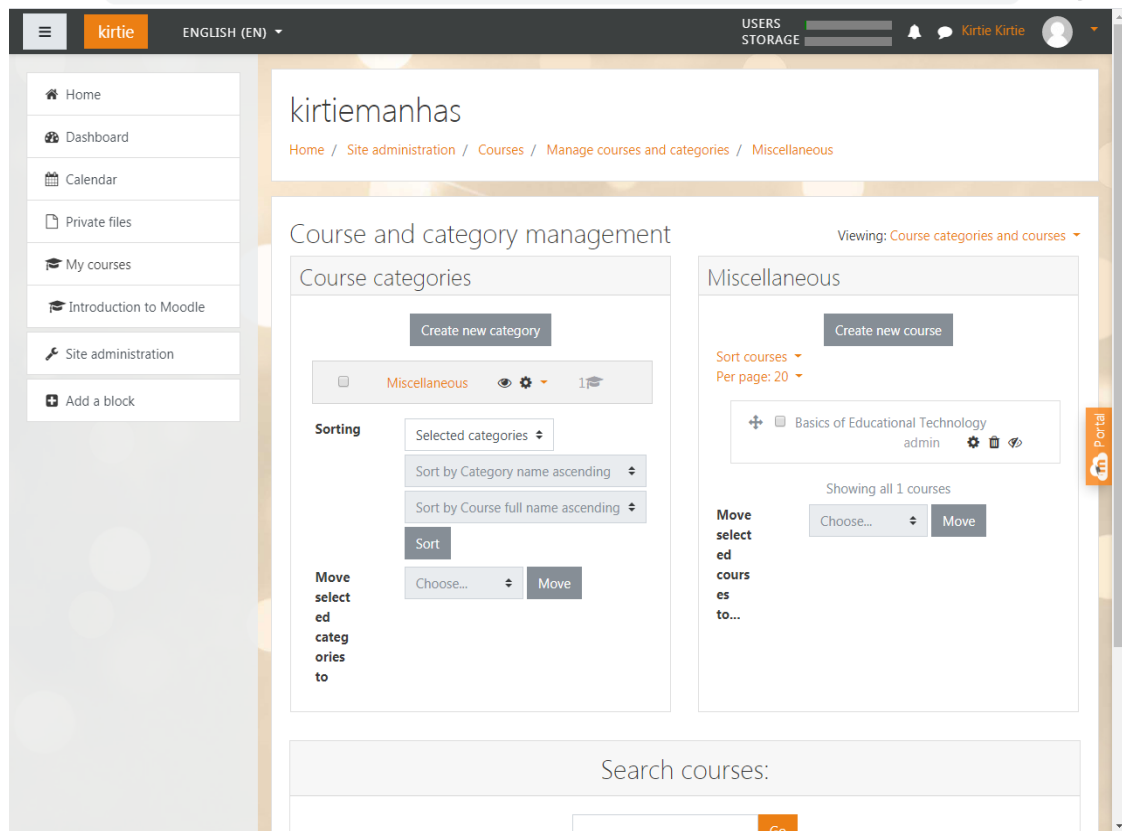
After login to the Moodle cloud, the investigator applied setting to the Moodle course and followed the procedure as given: -

- (i) Log-in to Moodle.
- (ii) Go to Administration>Site administration>Courses>Manage courses and categories



Screen shot 2 Showing 'Site Administration Page'

- iii. Go to the category that the new course will be made available.
- iv. Click on the link that says "New course"



Screen shot 3 Showing 'Course Management Page'.

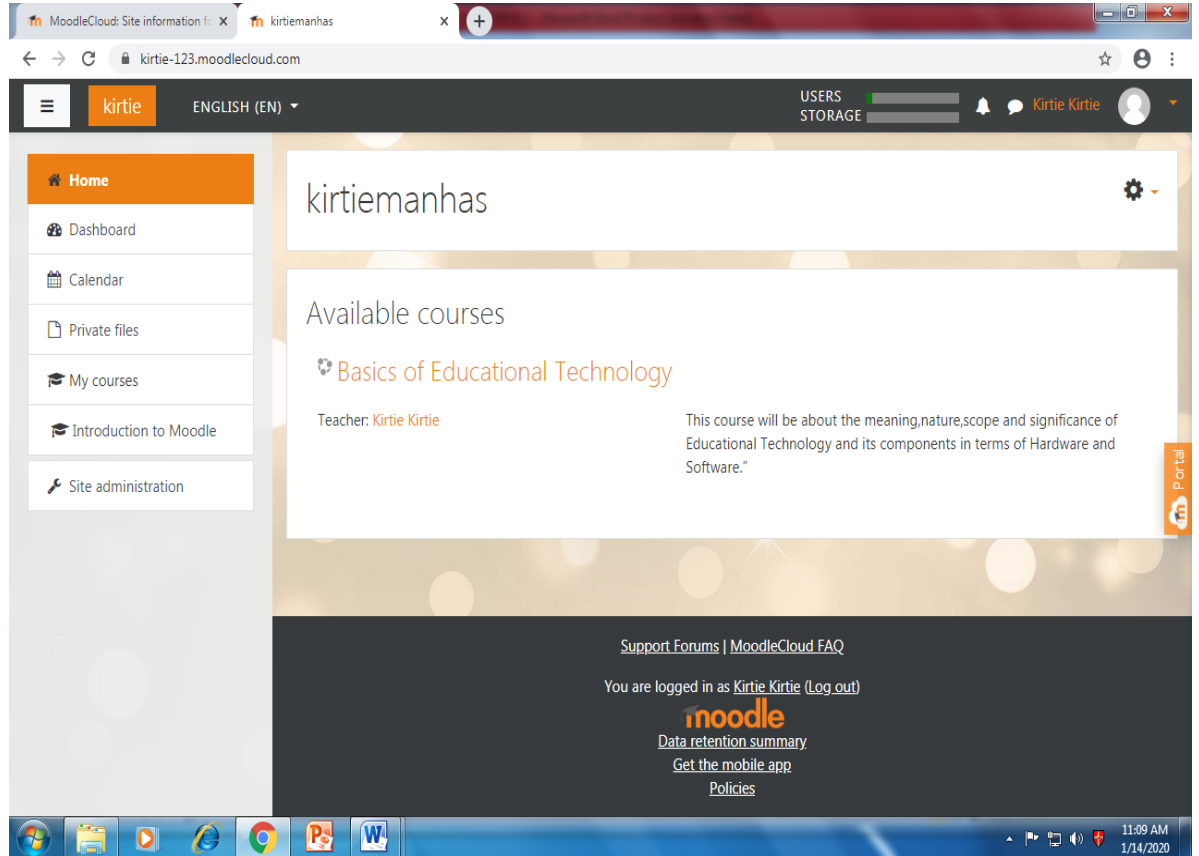
- Course name: The investigator gives the course name "The Basics of Educational Technology".
- Course category: The investigator chose the course category as education.
- Course start date: 11 November 2019 to 14 November 2019
- Course description – The investigator type the course description in about the course and course summary of course was prepared for that.

"To enable the learner to understand about the meaning, nature, scope and significance of Educational Technology and its Components in terms of Hardware and Software."

- Course format – At last, investigator choose the course format according to her course.

4.3.3 Adding Resources

After making the course the investigator started adding resources to the course like videos, presentation, text, quizzes and reference material for making the course complete. The investigator click on the course Basics of Educational Technology and

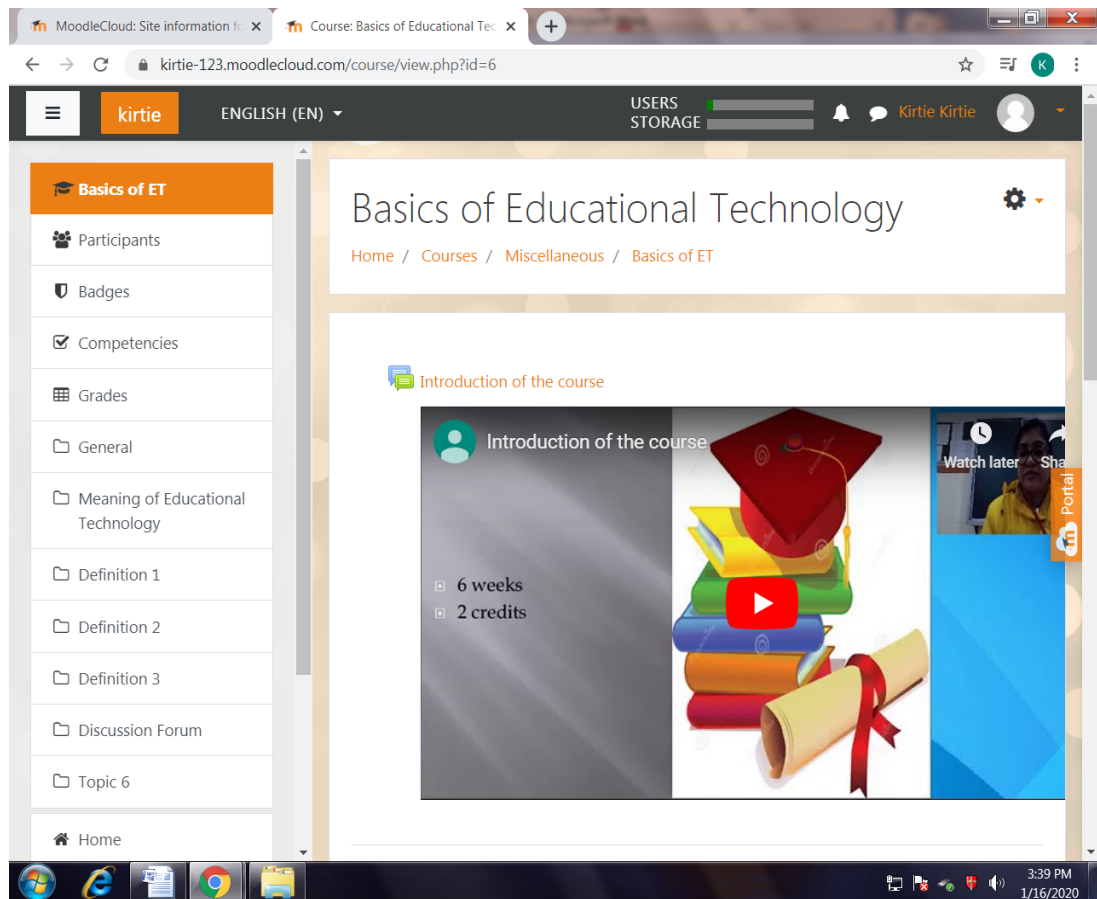


Screen shot 4 Showing 'Home Page of Basics of Educational Technology'

After clicking the page, the investigator selected 'Turn editing on' at the top right of the page and started building the topic related to the course.

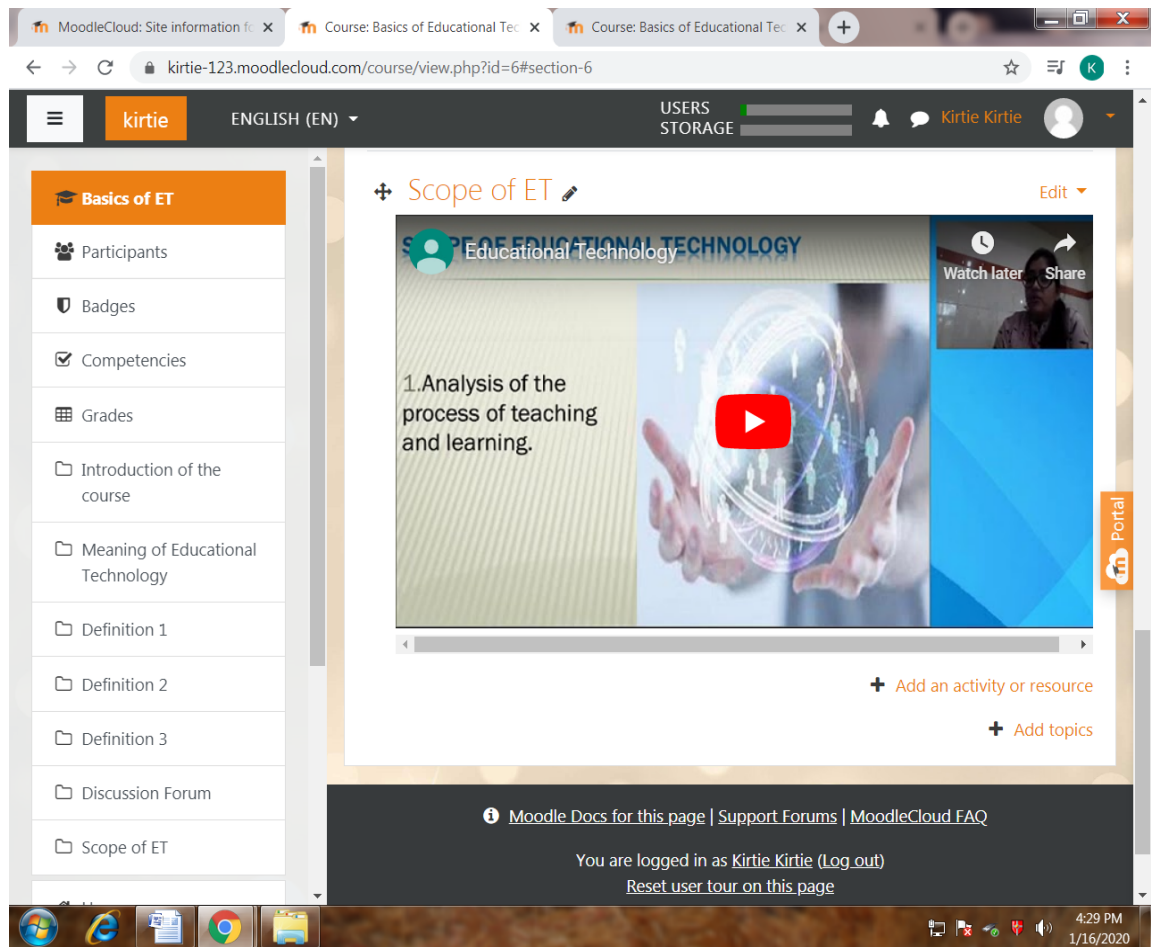
4.3.4 Video Production

For this, investigator recorded five multimedia presentations in the software namely 'Presentation Tube'. This software allows user to use power point presentation with video. First video was named as introductory video and in this description of the course was given. Other videos were related to content. These videos were uploaded to the website and the embedded code was generated and was pasted in the space allocated for videos in Moodle page at address <https://kirtie-123.moodlecloud.com>



Screen shot 5 Shows 'Introductory Video'

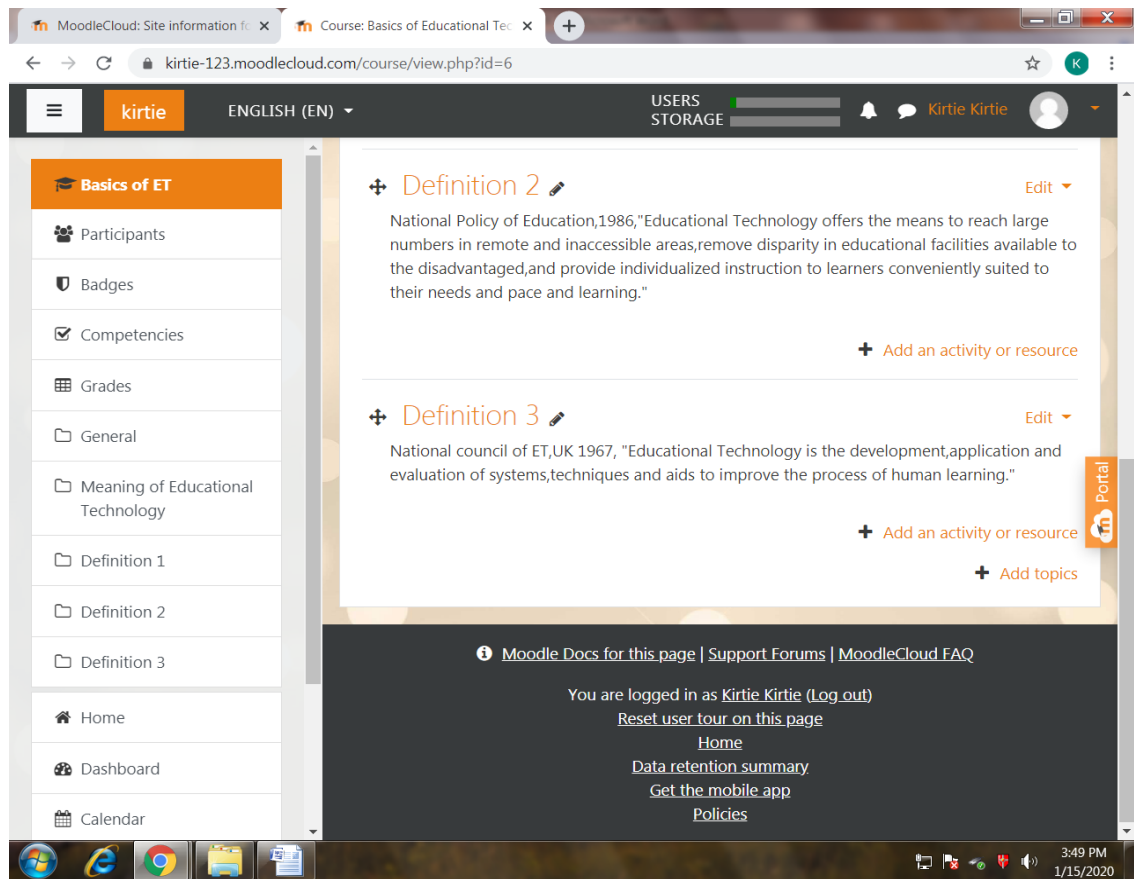
The investigator also made one more video for the purpose of making the learner understand Scope of educational technology to the participant.



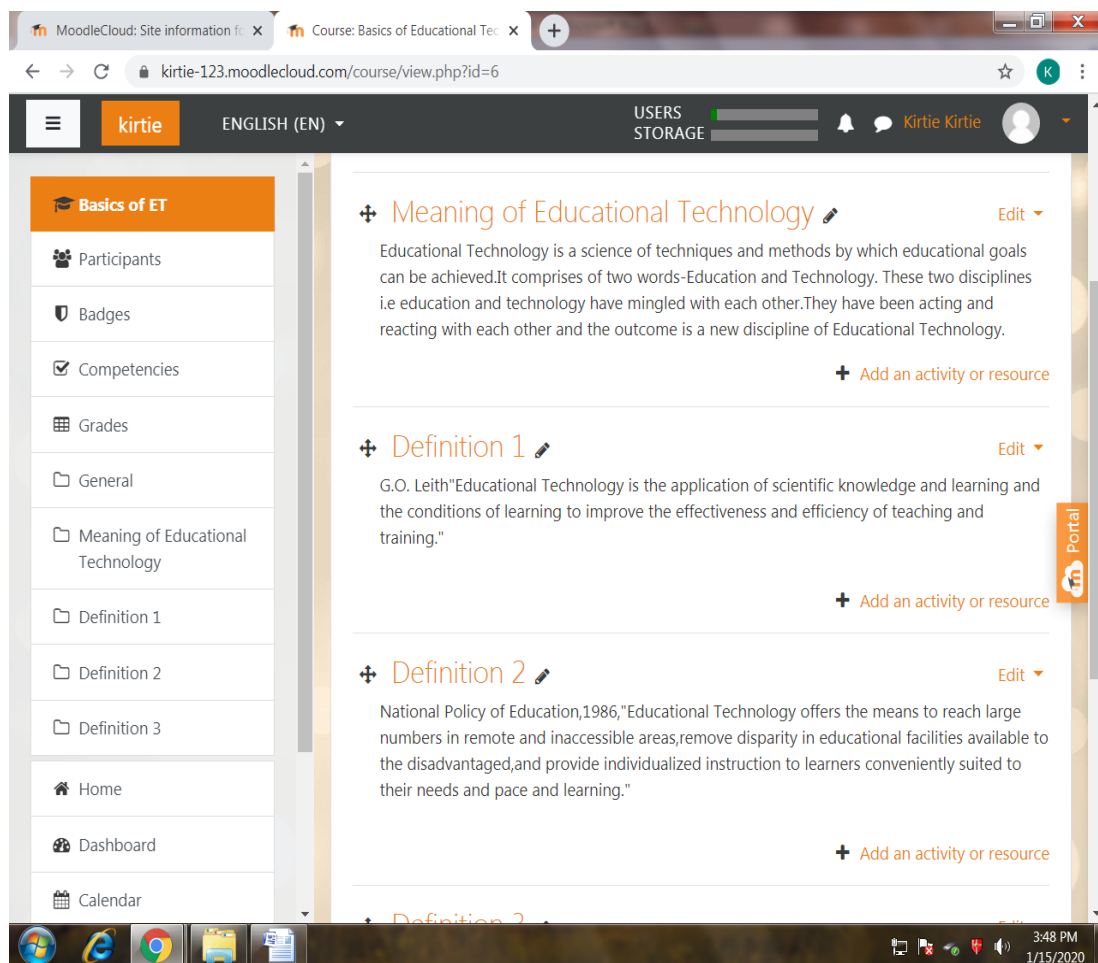
Screen shot 6 Showing ‘Video Presentation on Scope of Educational Technology’

4.3.5 Adding text

After adding an introductory video, the investigator started typing text related to the topic of the course for the students. Investigator added the meaning and definitions of the educational technology for making students understand about the “Basics of Educational Technology”.



Screen shot 7 Showing 'Editing of Course Content'



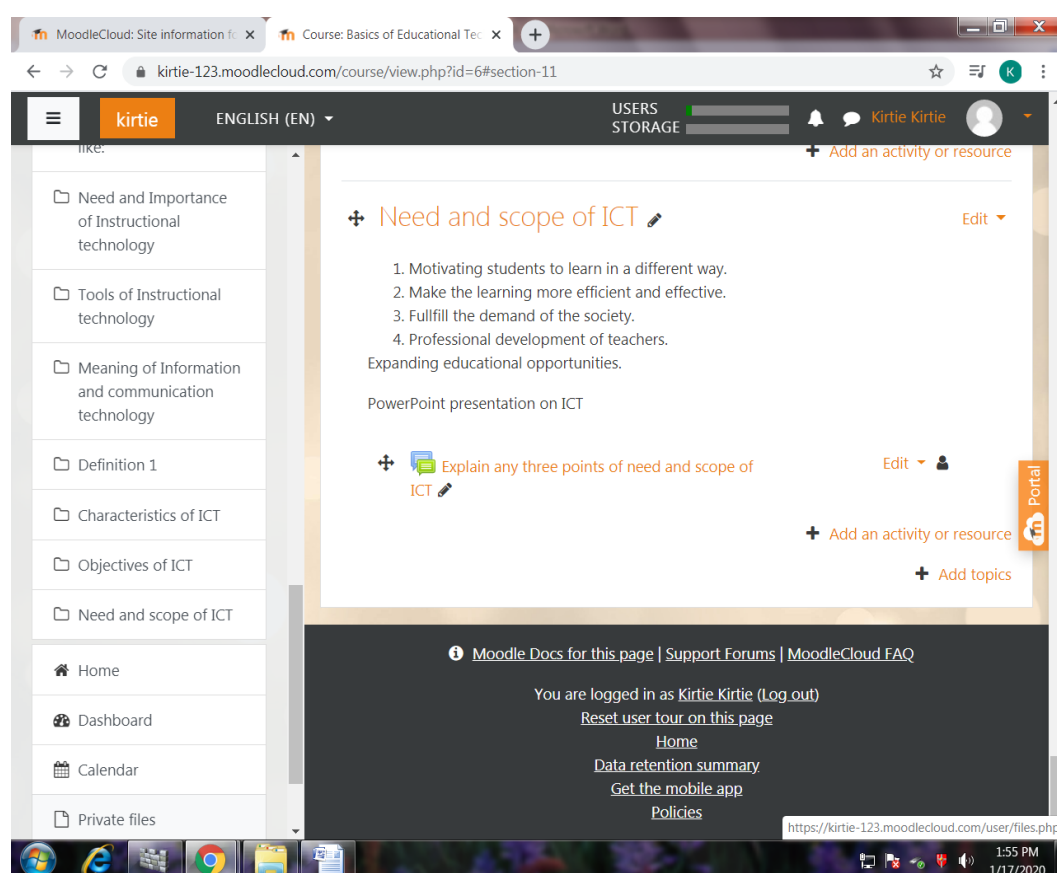
Screen shot 7 Showing 'Editing of Course Content'

4.3.6 Creating Discussion Forum

After adding text, the investigator created the forum module, which allows virtual communication in Moodle between students and teachers. There were five types forum types, each for a different purpose and for a different setting.

- i. **Single simple discussion** – In this format, a single topic discussion is developed on one page. This is useful for short, focussed discussions, as it is only available within one group, not throughout separate groups.
- ii. **Standard forum for general use** – This type of forum is open, so anyone can make posts, or start new topics at any time. For general forums, this is the recommended format.

- iii. **Each person posts one discussion** – This is a useful format if you'd like each student to start a weekly discussion, for example. Even though each student can only post one new discussion topic, everyone can reply to them.
- iv. **Question and Answer forum** – Instead of an open discussion, here participants post questions as the initial discussion starter. Students can post their answers, and they will not be able to see other responses until they have done so.
- v. **Standard forum** – Posts in this type of forum are displayed in a blog-like format

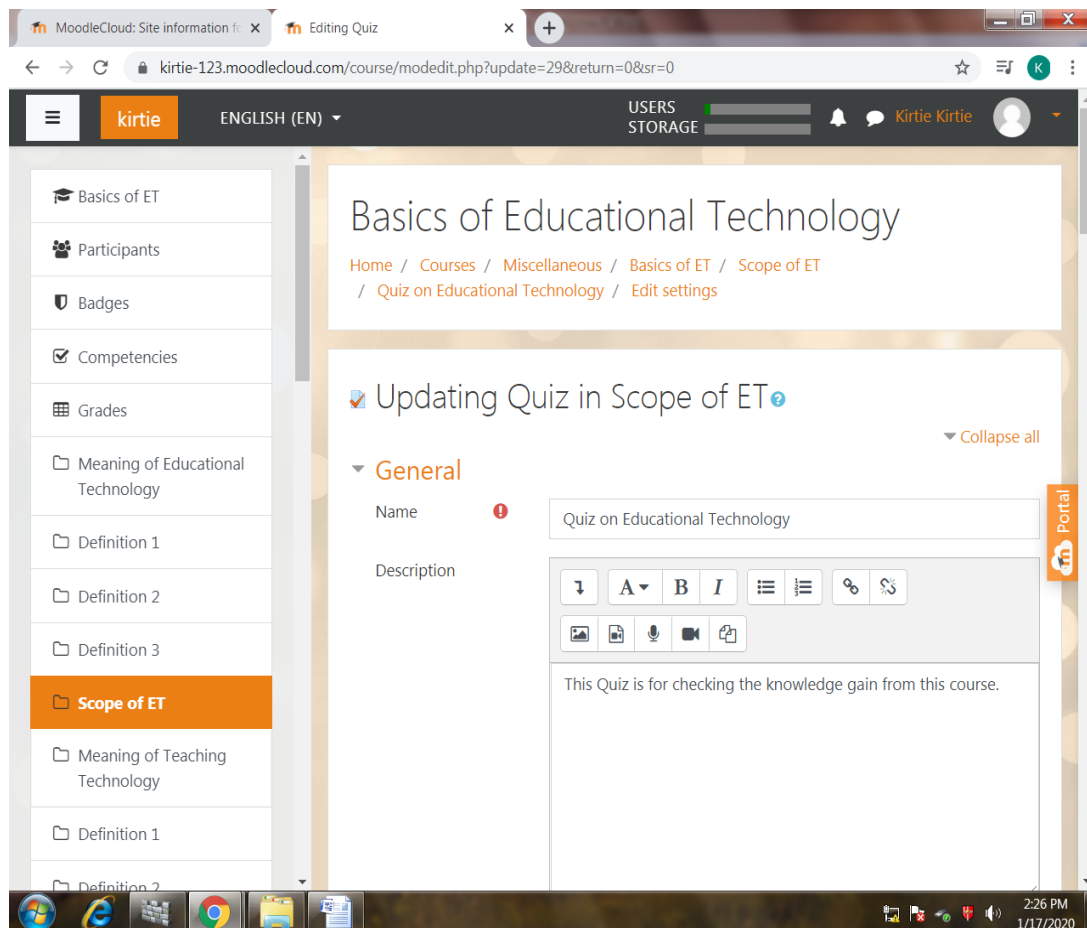


Screen shot 8 Showing 'Discussion Forum in course'

Out of these the investigator, selected 'Each person post one discussion' forum for the purpose of discussion in the present study

4.3.7 Created a Quiz Activity

After making the discussion forum, the investigator made a quiz activity for learner for the purpose of evaluation. At very first step investigator go to Add an activity or resource>Quiz. Then investigator gave the quiz a name “The quiz on educational technology”, and gives description about quiz.



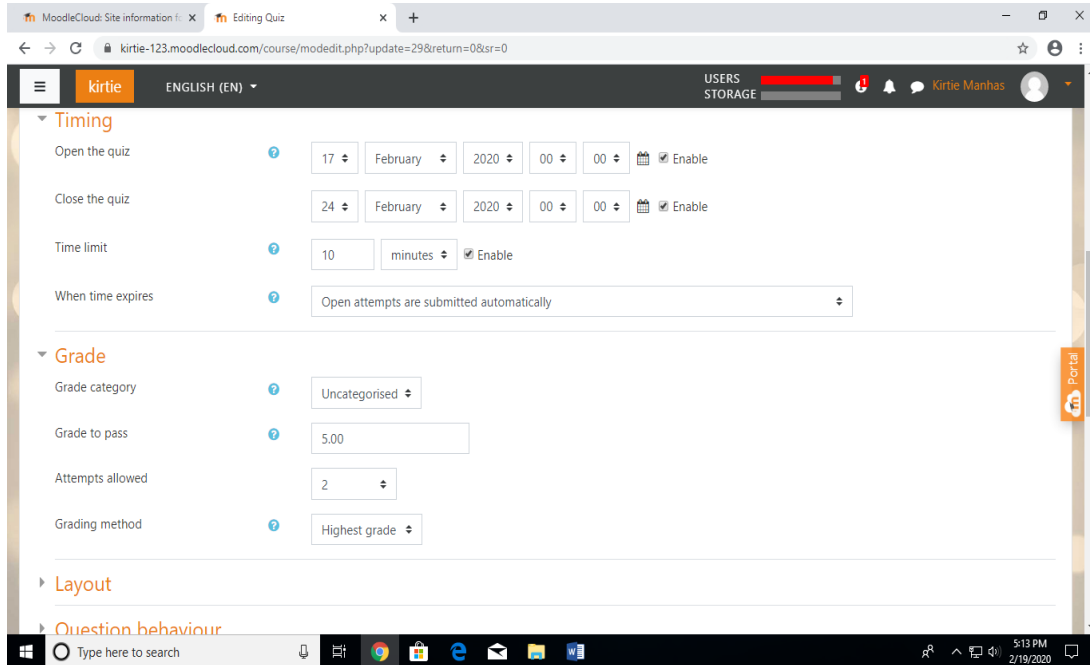
Screen shot 9 showing 'Updating Quiz Page'.

4.3.7.1 Manage Date and Time

After giving the name to quiz and adding description of the quiz the investigator manage the option of date and time which show the time limit to students when to take the quiz. The investigator gives the time of opening the 17 February to 24 February. Initially, this setting will be turned off by default, so it must be enabled if you wish to have this option

4.3.7.2 Manage Grade settings

After manage date and time the investigator manages the grade setting. The investigator set the minimum grade students need to obtain in order to pass.



Screen Shot 10 Showing ‘Managing Timing and Grade of the quiz’

4.3.7.3 Manage the Quiz Layout

The investigator managed the quiz layout option of displaying the quiz over many pages.

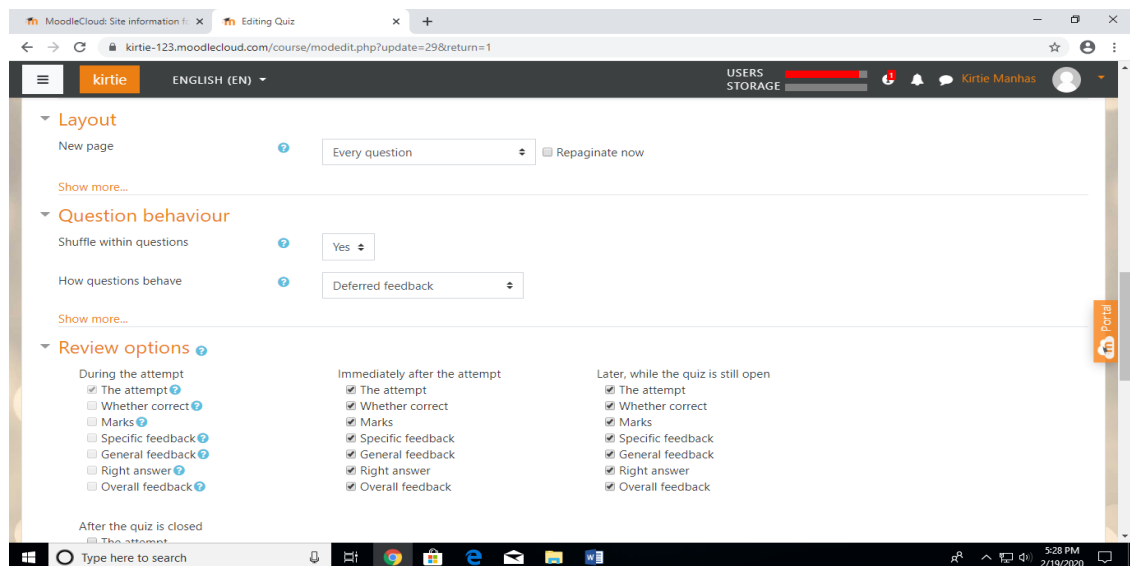
There are two options for changing managing quiz layout i.e.

- i. Sequential: students are forced to go through questions in the set order, without the ability to go back to older questions, or forward to later ones.
- ii. Free: students can go back to older questions, or move forward to see later ones.

The investigator selected the sequential option for better grading of the learner.

4.3.7.4 Question Behaviour

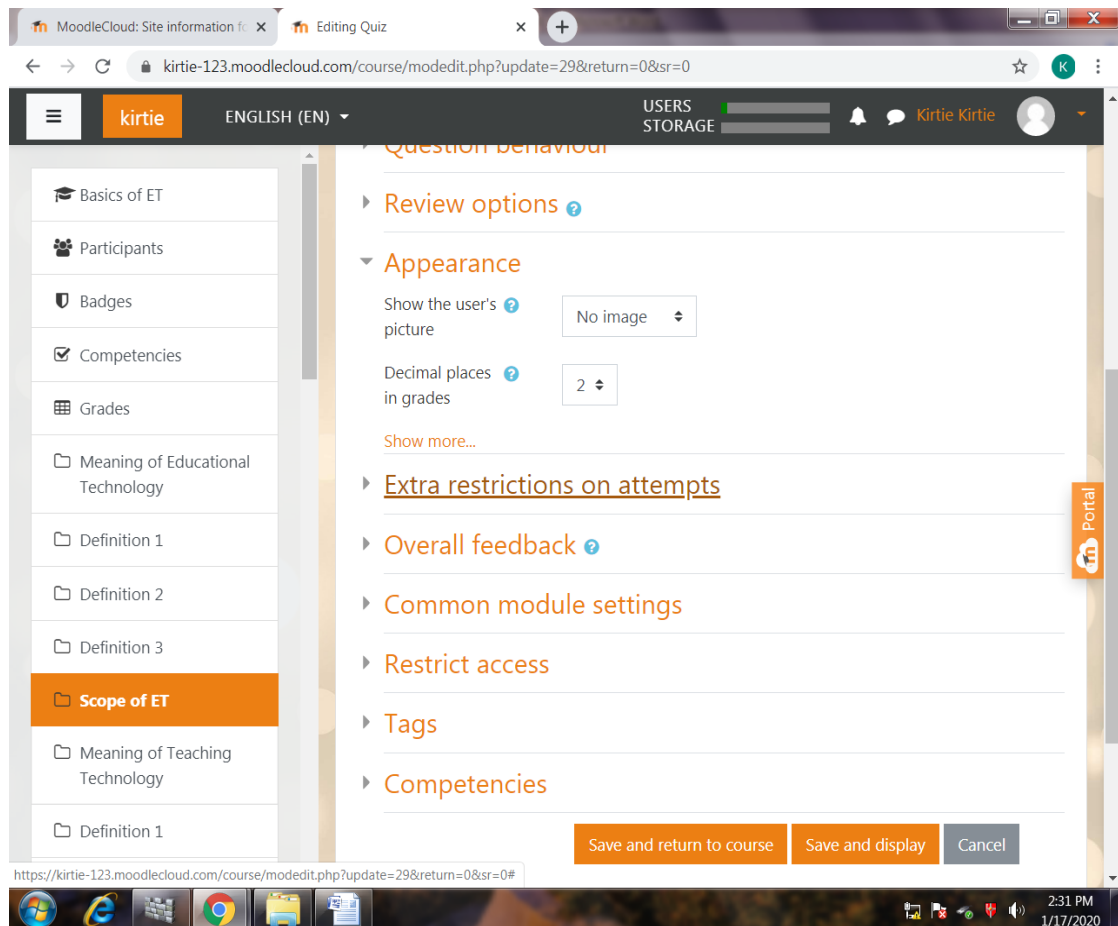
After managing quiz layout, investigator defined the question behaviour. The investigator set questions to shuffle and manage how questions behave. E.g. ‘Deferred Feedback’, ‘Immediate Feedback’, ‘Interactive Mode’, ‘Conditional Questions’. The investigator selected the ‘Deferred Feedback’ question behaviour for the quiz.



Screen Shot 11 Showing ‘Managing Layout and Question Behaviour of the Course’

4.3.7.5 Appearance Management

At last, investigator edited the appearance, which can enable student’s pictures to be displayed and manage how grades displayed.



Screen Shot 12 Showing 'Managing Appearance Option of the Quiz'

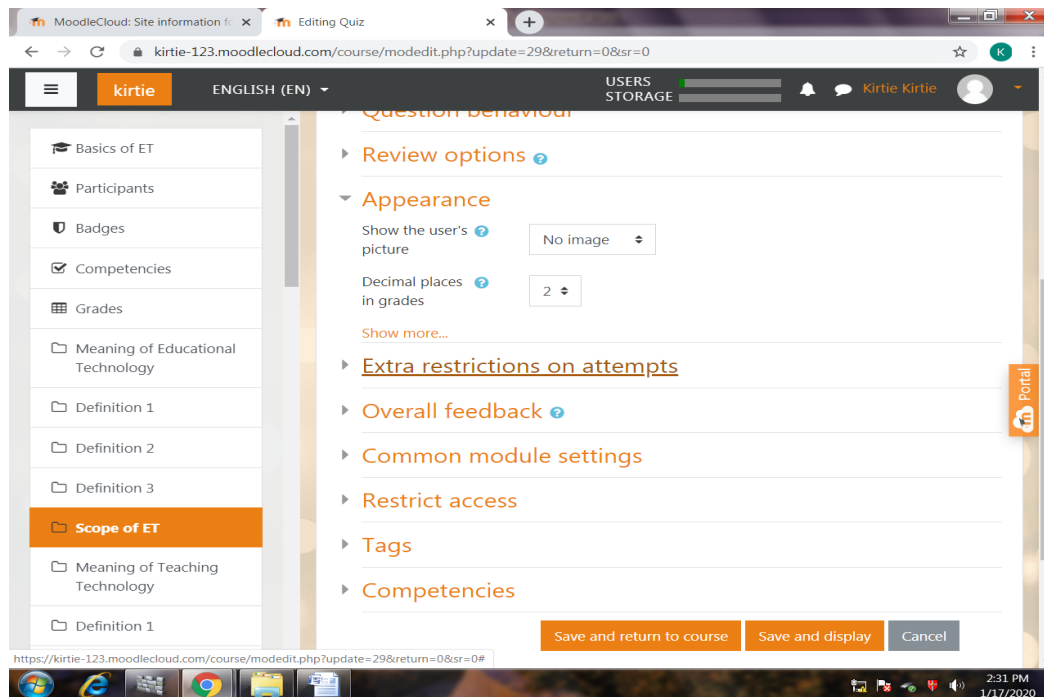
After doing all the setting of quiz, investigator saved the changes.

4.3.7.6 Adding Questions to Quiz

After making quiz investigator started adding questions in the quiz and followed the following steps:-

1. Go to Administration>Quiz Administration>Edit quiz
2. Click "Add", and select the option to add a new question

By adding questions investigator completed the quiz and created the quiz questions of Multiple Choice.



Screen Shot 13 Showing 'View of the Quiz'

4.4 TRY OUT

After making the course, it was found necessary to try out the course for its delivery so course delivery was tested individually and by a group.

4.4.1 Individual Try out

In individual try out the investigator made a dummy enrolment as a student to check how it does work and also note down the problems which need immediate rectification. The investigator also noted time taken to complete the quiz. After doing such activities the investigator made the required changes and checked the course for a group.

4.4.2 Group Tryout

In group tryout, the investigator enrolled five participants in the course. All participant attempts the course. Participants share their experiences regarding the course, which helps the investigator to know the difficulty face by them. After knowing the problems, the investigator made the required changes in the course.

4.5 DELIVERY OF THE COURSE

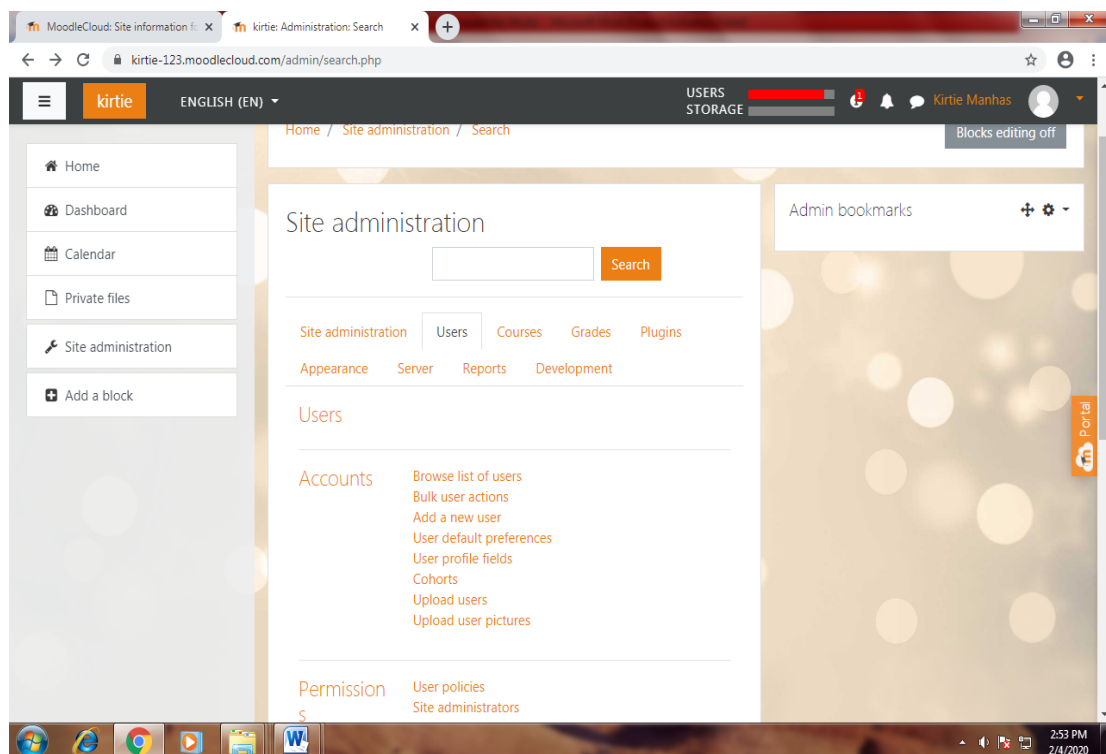
4.5.1 Enrolment of Students into a Moodle Course

After creating Moodle course, the next step which investigator followed was enrolment of learners into the course. There were two ways of enrolling students into course.

- i. Manual
- ii. Email

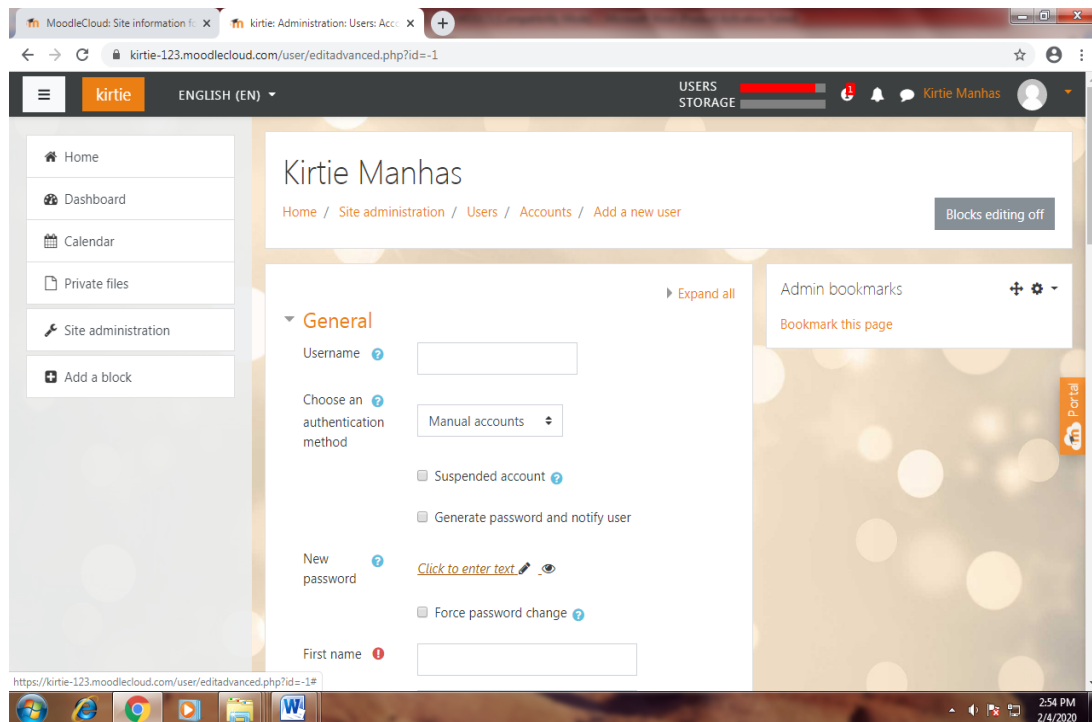
The investigator used the manual enrolments of the learners by using following flow.

The investigator navigates to Administration → Course Administration → Users → Enrolment methods, and make sure that ‘Manual Enrolments’ was enabled.



Screen Shot 14 Showing ‘Site Administration Page’

The investigator type user name, generate password and gave all the required information and at last click the create user.

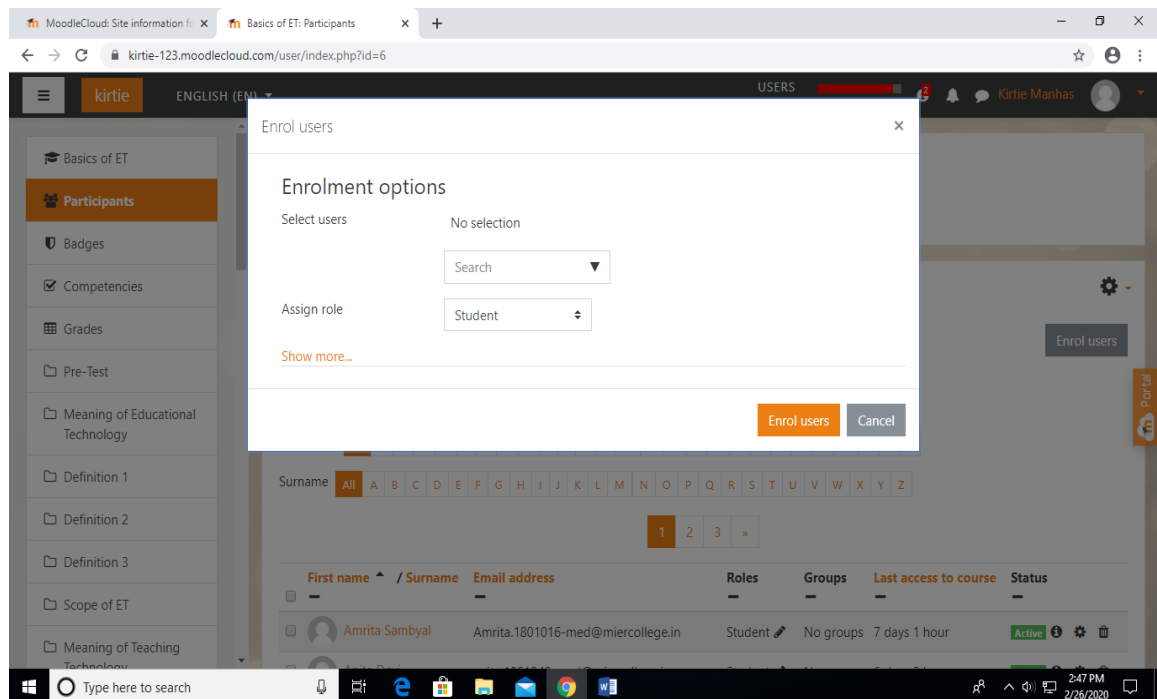


Screen Shot 15 Showing 'Add New User'

Steps Followed for Enrolling Student into the course

The investigator followed the following steps to enrol student to course: -

- i. Go to Administration → Course Administration → Users → Enrolled users, and clicked the button that says “Enroll users use the “Assign roles” dropdown to select a different one
- ii. Select desired enrollment options
- iii. Search for the user, and clicked the “Enroll” button opposite their name. The user’s name in the list indent.
- iv. Finally, the investigator clicked the button that says “Finish enrolling users”, The users now appear in the list of enrolled users.



Screen Shot 16 Showing 'Users page'

4.5.2 Sending Mails to Learners

After enrolling students to course the investigator, sent mails to student to make them inform regarding the username and password.

4.5.3 Start of the Course

After sending mails and password to the students, the investigator started the course to ensure their login and functioning of the course. After ensuring their login the participants of the course started doing course.

4.5.4 Monitoring of the Course

As the course started the investigator, start monitoring the course to check the login of the participants to the course. The investigator visit to the 'Log Report Page' to check when the participants went to the course.

4.5.5 Ensuring the Delivery of the Course

The investigator ensures the delivery of the course to the participant by checking the added text, videos, multimedia presentations, quizzes etc.

4.5.6 Completion of the course

The investigator made the participant to complete their course on time. Investigator time to time informs the entire participant online (by sending mails) about the completion of the course on time.

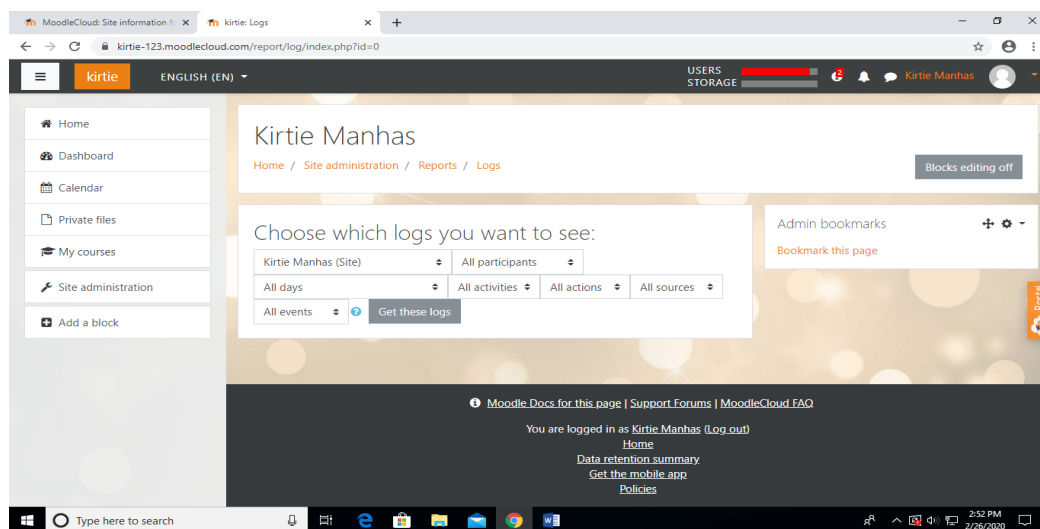
4.6 EVALUATION

Evaluation is an important part of the course as through evaluation, the investigator is able to know about the progress of the students. The investigator has been used three methods of evaluation i.e. Quiz, Assignment 1 given in discussion forum, Assignment 2.

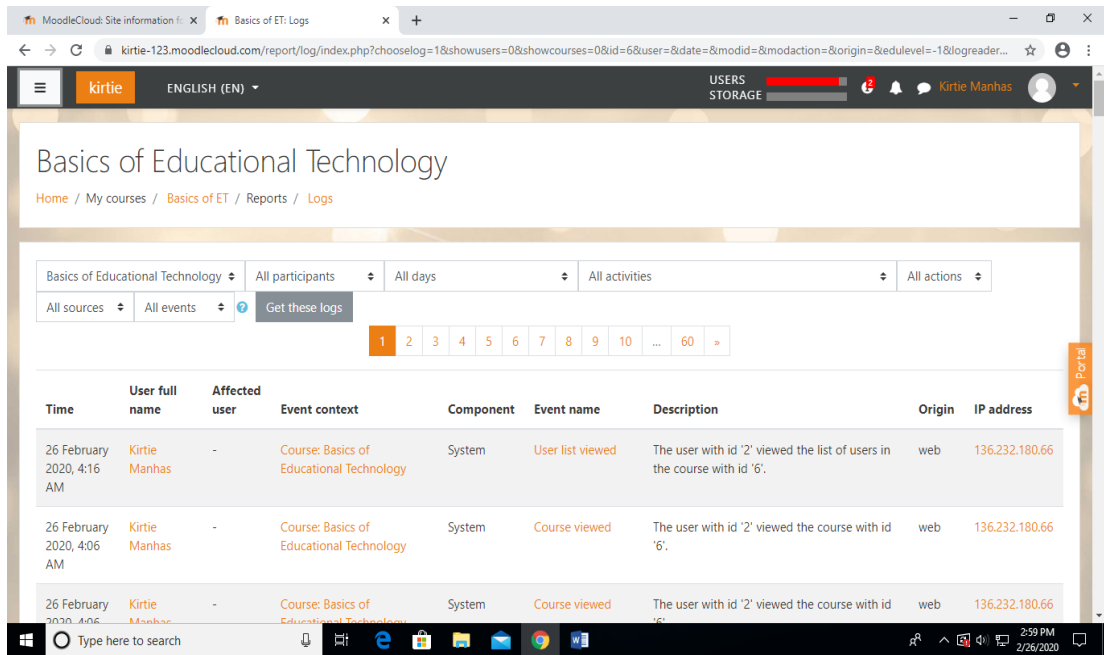
To check the evaluation of the students, the investigator follows the following steps.

Site Administration>Reports> logs

The investigator checked the log for the course ‘Basics of Educational technology’. Through this, investigator saw the reports of students when they viewed the content, how many times they went through the course etc.



Screen Shot 17 Showing ‘Log Report Page’



Screen Shot 18 Showing 'Log Report of Basics of Educational Technology'

From the site administration, one can view the reports selected to the course out of these reports quiz report shows the performance of the students.

4.6.1 Quiz Report of the course

To evaluate the progress of the student the investigator checked the quiz report of the students and plotted as shown in figure.4.1 the graph shows the grades of students who attempt the quiz.

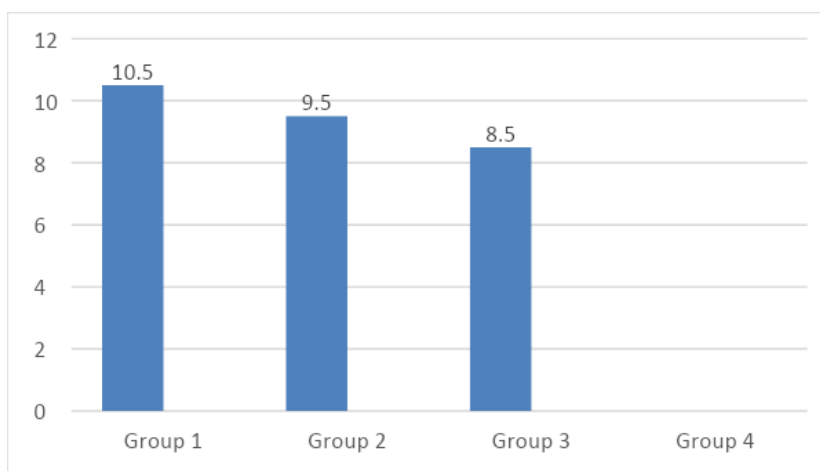
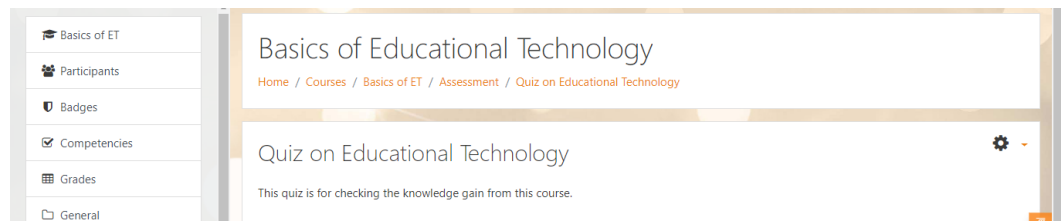


Figure 4.1 Graphical representation of quiz report
[66]

Figure 4.1 shows that six learners obtained grade between 9.50 to 10.00, five learners obtained grade between 9 to 9.50, two learner obtained grade between 8 to 8.50 and one learner obtained zero grades, as they were unable to attempt the quiz on allocated time.



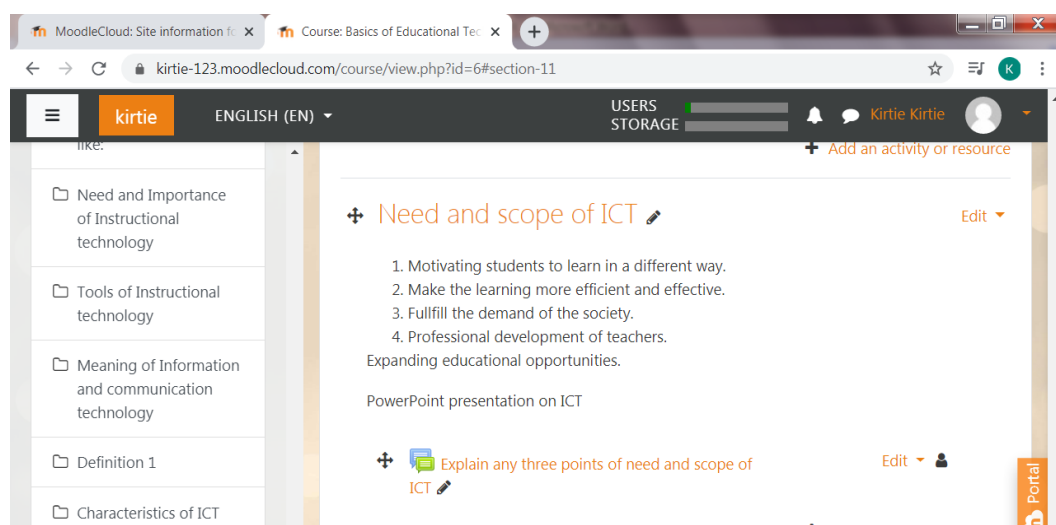
Screen shot 19 Showing 'Quiz Report of Students'.

4.6.2 Assignment 1: Give one definition of educational technology

Second evaluation method used was assignment participant were also assigned with one activity.

To evaluate the progress of students, the investigator also gave an assignment i.e. To give one definition of educational technology. The investigator monitored the progress of the participant and course for the assignment given.

Out of 13 participants 9 submitted their assignment rest of 4 has not submitted on the given time.

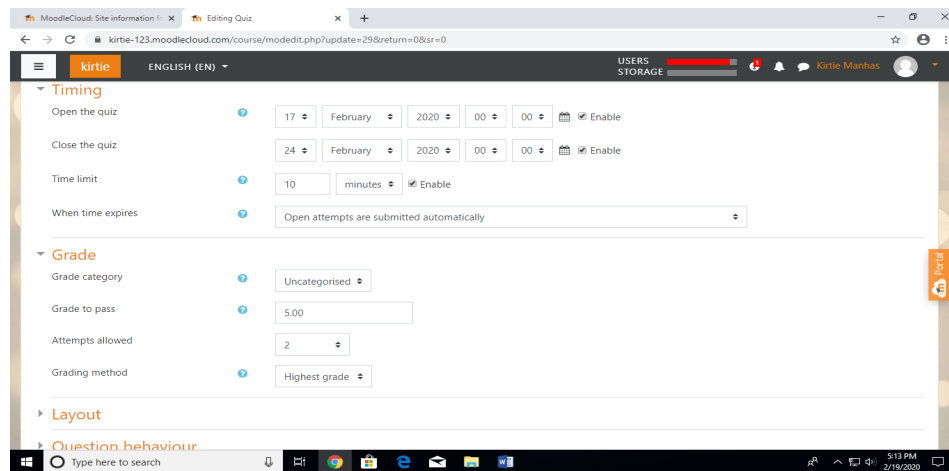


Screen shot 20 Showing 'Forum Page', which shows result of students who submitted their assignment

4.6.3 Assignment 2

Give any two points which explains the scope of Educational technology

The investigator evaluated the progress of students by assigning them another assignment to the students there were 13 participants out of which seven could submit their assignment.



Screen shot 21 Showing 'Assignment View Summary Page'

4.7 Time Line/Schedule:

Three month schedule was planned for the development of the course which included the time of August, September and October. Complete three months was taken to develop the MOOC course. After completing the course the course was started on 17 feb by the investigator herself.

4.8 Impact of E-learning module on teacher trainees.

In this experiment the impact of e-learning module on teacher trainees before enrolling in MOOC and after completing MOOC, the following data was collected from 45 students of M.Ed. programme. Since 5 students could not complete the tool, so they were excluded from the computations.

No. of participants enrolled: 45

No. of participants incomplete the course: 05

Drop out rate:

No. of participants could not complete*100/ Total No. of participants

= $05 \times 100 / 45 = 11.11\%$

All participants who completed the course were found qualified as they passed all the quizzes & Assignments.

4.9. Statistical analysis and results of data collected

Following the steps in SPSS 14.0 the following output was generated:

Paired Samples Statistics

Test	Mean	N	Std. Deviation	Std. Error Mean	r	t value	Sig.
Pre-Test	14.18	44	5.34	0.81	0.94	8.24	0.01
Post Test	16.61	44	5.84	0.88			

Conclusion:

This output shows that there is evidence to suggest that participants showed statistically significantly greater impact ($p=0.01$) when exposed to MOOC (mean=16.61, SD=5.84) than to before enrolment in MOOC (mean=14.18, SD=5.34). That means if we were to do this experiment 100 times, 99 times the true value for the difference would lie in the 99% confidence interval. In our case, the 99% confidence interval for the difference is 2.43. This confirms that Effect Size = Mean difference between the pre-test and post-test scores divided by SD of the pre-test scores = $2.43 / 5.341 = 0.46$

The means pretest score is 14.18, while the mean post test score is 16.61. These data were subjected to the t-test for paired samples, with the results showing a statistically significant gain ($t=8.24; n=44; p=.01$). The effect size is 0.46, which means that the post test scores are slightly more than a standard deviation better than the pretest scores. This is considered a medium effect size. Therefore, hypothesis stating that 'e-learning module has a positive impact on teacher trainees in terms of knowledge'

stands accepted. So e-learning module developed for the purpose has a positive impact on teacher trainees' knowledge.

CHAPTER-V

ANALYSIS AND INTERPRETATION OF DATA

5.1 INTRODUCTION

Data analysis refers to the process of generating value from the raw data (Johnson & Christensen 2004). The purpose of the data analysis phase is to transform the data collected into credible evidence about the development of the intervention and its performance. In this regard, Burns & Grove (1998) mentioned that data analysis is a mechanism for reducing and organizing data to produce findings that require interpretation by the researcher.

According to the DeRos (1998), data analysis entails that the analyst breaks down data into constituent parts to obtain answers to research questions and to research hypothesis. Statistical analysis is the mathematical process of gathering, organizing, analyzing and interpreting numerical data and is one of the basic phases of the research process.

According to Mouly (1978), research data become meaning ful in the process of being analyzed and interpreted. The purpose of analysis is to build up a sort of intellectual model where the relationships involved are carefully broughtout so that meaningful inferences can be drawn. It is used to describe group behavior or group characteristics abstracted from a number of individual observations that are combined to make generalization possible.

The aim of this chapter is to analyze the collected data and interpret the findings of the study. Data analysis and interpretation is the process of assigning meaning to the collected information and determining the conclusions, significance and implications of the findings. It involves breaking down existing complex factors into simple parts and putting the parts to get her in new arrangements for the purpose of interpretation.

5.2 RESULTS AND FINDINGS

The mean pretest score is 14.18, while the mean posttest score is 16.61. These data were subjected to the t-test for paired samples, with the results showing a statistically significant gain ($t=8.24; n=44; p=.01$). The effect size is 0.46, which means that the

posttest scores are slightly more than a standard deviation better than the pretest scores. This is considered a medium effect size.

5.2.1 Objective 1

To develop an e-learning module in Educational Technology for Teacher trainees.

For developing the e-learning module, investigator followed a ADDIE model for developing the MOOC course for the teacher trainees. She completed her development of course in five phases which are based on ADDIE Model i.e. Analysis, Design, Development, Implementation and Evaluation.

Firstly, the investigator went through the literature as presented in Review of literature in Chapter-II, and decided to plan the course accordingly to steps as given below which are explained in Chapter-IV.

5.2.2 Selection of the Topic for the course development

5.2.3 Course Content selection which included the meaning of Educational technology and its definitions, scope and its components.

5.2.4 Target Audience for the course whom this course was to be meant.

5.2.5 Online different Strategies used for teaching the course on 'Basics of Educational Technology'.

5.2.6 Selection of the MOOC Platform for the delivery of the course.

5.2.7 PREPARATION

Preparation consisted of creating a website, creating course presentations, adding text in the course, creating quiz and try out of the course.

5.2.8 Creating a website: the investigator created a login <https://moodle.com/cloud/free> User Name and Password

At step one investigator went to my Moodle Cloud by entering her Cloud's address e.g. www.kirtie-123.moodlecloud.com in the login page:

·Type in the user name-admin

·Type in your password

5.2.9 Creating Course

After log into the Moodlecloud, the investigator applied setting to the Moodle course and followed the procedure as given:-

Log-into Moodle.

Go to Administration>Site administration>Courses>Manage courses and categories

Course name: Basics of Educational Technology

Course category: Education

Course start date: 17 feb to 24 feb

Course description: “To enable the learner to understand about the meaning, nature, scope and significance of Educational Technology and its Components in terms of Hardware and Software.”

Course format: According to the investigator course.

5.2.10 Adding Resources

like videos, presentation, text, quizzes and reference material for making the

5.2.11 Adding text

like investigator typed text related to the topic of the course for the students.

5.2.12 Creating Discussion Forum

Which allows virtual communication in Moodle between students and teachers.

5.2.13 Created a Quiz for Activity learner for the purpose of evaluation.

5.2.14 Manage Date and Time which show the time limit to students when to take the quiz.

5.2.15 Manage Grade settings which the students need to obtain in order to pass.

5.2.16 Manage the Quiz Layout option of displaying the quiz over many pages.

5.2.17 TRY OUT the course for its delivery so course delivery was tested individually and by a group.

5.2.18 Individual Try out

In individual try out the investigator or made a dummy enrolment as a student to check how it does work and also note down the problems which need immediate rectification. The investigator also noted time taken to complete the quiz. After doing such activities the investigator or made the required changes and checked the course for a group.

5.2.19 DELIVERY OF THE COURSE

5.2.20 Enrolment of Students into a Moodle Course either by manually or by sending emails.

5.2.21 Start of the Course to ensure their login and functioning of the course. After ensuring their log in the participants of the course started doing course.

5.2.22 Monitoring of the Course to check the login of the participants to the course.

5.2.23 Ensuring the Delivery of the course to the participant by checking the added text, videos, multimedia presentations, quizzes etc.

5.2.24 Completion of the course like made the participant to complete their course on time. Investigator time to time informs the entire participant online (by sending mails) about the completion of the course on time.

5.2.25 EVALUATION

Evaluation is an important part of the course as through evaluation, the investigator is able to know about the progress of the students.

5.2.26 Time Line / Schedule for the completion and delivery of the course.

5.2.26 Objective 2

To evaluate the impact of e-learning module on Teacher trainees through Teacher made test.

In this experiment the impact of e-learning module on teacher trainees before enrolling in MOOC and after completing MOOC, the following data was collected from 45 students of M.Ed. programme. Since 5 students could not complete the tool, so they were excluded from the computations.

No. of participants enrolled: 45, No. of participants in completed the course: 05

Dropout rate: No. of participants could not complete *100 / Total No. of participants = $05 \times 100 / 45 = 11.11\%$

All participants who completed the course were found qualified as they passed all the quizzes. Assignments.

5.3 QUALITATIVE DATA ANALYSIS

Early research efforts through out the world have often used qualitative methods to evaluate and describe the use of Massive Open Online Courses. On the other hand, experimental researchers have often used qualitative methods to collect data to yield possible interpretation of data collected. These data are typically collected using interviews. It is usual for an experimental researcher to supplement the results from the study further by conducting observations and interviews of the subjects. Among qualitative methods, surveys, interviews, observations, are commonly used in mixed method studies.

In the present research study, it was also decided to conduct interviews of the students to qualitatively assess the use of MOOCs by teacher trainees and teacher educators as they were major contributors in the quantitative assessment of their awareness and usage.

The qualitative analysis was carried out in a most common form of interviews and responses to open ended questions from the questionnaire

Questions asked from the students were;

Q.1 What is MOOCs?

Q.2 What is SWAYAM?

Q.3 What type of courses can be done online?

Q.4 MOOC is going to improve teaching learning, what is your opinion?

Q.5 It's challenging to get enrolled and complete MOOCs, Why?

Some teacher trainees' views are presented here in form of comments;

Teacher Trainee 1: MOOCs stands for massive open online courses. They are available for anyone with internet connections. SWAYAM is a programme initiated by Government of India. There are many courses done online like administration, education, marketing etc. I believe that MOOCs will definitely improve the teaching and learning. It is challenging to get enrolled and complete MOOCs because it is online.

Teacher Trainee 2: I had never heard about MOOCs but I guess it stands for online courses. SWAYAM is an online platform developed by Ministry of Human Resource Development (MHRD). All the courses which can be done academically can be done online. I think MOOCs can improve our teaching and learning. It is challenging to get enrolled and complete MOOCs as it needs computer literacy.

Teacher Trainee 3: MOOCs means massive open online course. SWAYAM is an Indian online course platform. I have no guess about what type of course can be done online. MOOCs can improve our teaching and learning. It is challenging to get enrolled and complete MOOCs as it is an online course.

Teacher Trainee 4: I have no idea about what is MOOCs. I have heard about the SWAYAM, but I had no idea about it. All courses like technology, education, administration, computers etc. can be done online. Definitely if we will do any course it will improve our teaching and learning. It is challenging to get enrolled and complete MOOCs because people are unaware about online courses.

Teacher Trainee 5: MOOCs stands for massive open online courses. SWAYAM is also an Indian MOOCs platform. I hope all the academic courses can be done online. Yes, MOOC can improve our teaching and learning.

Teacher Trainee 6: MOOCs are open online courses. SWAYAM is an MOOC platform. I have no idea about what courses done online. Yes MOOCs can improve our teaching and learning. I have no idea that why it is challenging to get enrolled and complete MOOCs.

Teacher Trainee 7: I heard MOOCs first time from you. Really I have no Idea about SWAYAM. I have no guess about what type of courses can be done online.

Teacher Trainee 8: MOOCs means massive open online courses. SWAYAM is an Indian MOOC platform. I guess maximum all the courses can be done online. Surely MOOC will improve our teaching and learning. It is challenging to get enrolled and complete MOOCs as it is an online course.

Teacher Trainee 9: MOOCs means open online courses which can done through the internet. SWAYAM is also a MOOC platform. Courses like academic, administration, architecture, Sports etc can be done online. MOOCs will improve our teaching and learning. I don't think it is challenging to get enrolled and complete MOOCs.

Teacher Trainee 10: MOOCs means massive open online course. SWAYAM is an Indian online course platform. I have no guess about what type of course can be done online. MOOCs can improve teaching learning performance and teaching effectiveness. It is challenging to get enrolled and complete MOOCs as awareness of MOOCs are less.

Teacher Trainee 11: MOOC is massive open online course. SWAYAM is the one of the MOOC platform. I have no idea about what type of course can be done online. In my opinion MOOCs can improve teaching and learning because like other courses it will also make us learn new things. It is challenging to get enrolled and complete MOOCs because of less knowledge about MOOC.

Teacher Trainee 12: MOOC mean massive open online course. SWAYAM is a website where online courses are done. All the courses can be done online as we know now a day's everything are done online. In my opinion MOOC will definitely improves teaching and learning. It is challenging to get enrolled and complete MOOC as we don't know its proper procedure how to enroll and complete the course.

Teacher Trainee 13: Really I have no idea about MOOCS. SWAYAM is a website. I think every type of courses can be done online. I have no idea. It is challenging to get enroll and complete the course because we are not familiar with the online courses and don't know how to access them.

Teacher Trainee 14: I don't know the exact meaning of MOOCs but I know that it is linked with online course. SWAYAM is an Indian platform where online courses are done. Maximum all type of academic courses are done online. In my opinion MOOC will improve teaching and learning. It is challenging enroll and complete MOOC because it is online rather than offline.

Teacher Trainee 15: MOOCs mean Massive open online course. SWAYAM is website where online course are done. I found that maximum all type of courses can be done on MOOCs. In my opinion MOOC can improve teaching and learning. It is challenging to complete because there role of teacher is very less as compare to traditional teacher.

The comments given by the students show their knowledge towards MOOCs. On the basis of overall analysis of data gathered through interviews, it was found that some teacher trainees have gain knowledge about MOOCs courses and some are not aware toward the usage of MOOCs. They felt that the MOOCs will help to improve their teaching and learning. Maximum teacher trainees know about the SWAYAM is a MOOCs platform for online courses but some teacher trainees was not aware about the MOOCs and its usage.

The results obtained from the students' interviews are almost consistent with the quantitative data results in the study. Therefore, the comments also provide evidence about the construct validity of the results from the experimental study. The qualitative

analysis also highlights the knowledge and the usage of MOOCs by positive and favorable answers to the direct questions posed.

5.4 DISCUSSION AND CONCLUSION

To conclude, it can be humbly claimed that the present study has yielded valuable information regarding the use of massive open online courses at B.Ed. and M.Ed. levels. All the research questions have been satisfactorily answered through the findings of the study. Thus, this can be concluded that MOOCs has been used widely by every one in every field of life it is the case with the teacher trainees. Teacher trainees are found aware about the use of MOOCs. They have also knowledge that how to used the MOOC platforms. There were also founded some teacher trainees were enrolled in MOOC courses. And some teacher trainees were aspiring to enroll in MOOCs in future. The results show that teacher trainees want to develop their own MOOCs. There were also some factors which affect the uses of MOOCs like job opportunities, ICT skills, Values, Cost effectiveness. The attitudes of teacher trainees were found positive towards uses of MOOCs.

It is hoped that the future year shall witness a significant increase in the number of researches based uses of MOOCs. So, that teaching and learning process can be made more effective both for teachers and students in the time to come.

5.5 EDUCATIONAL IMPLICATIONS OF THE STUDY

Education is important for the social and economic development of the country. This is the age of Information dominated by the digital technology. Massive open online courses play an important role in today world of technology. The result of present study has revealed many important implications for use of MOOCs by teacher trainees in the B.Ed. and M.Ed. levels.

- i. The results of the present study show that few students have knowledge about the MOOCs and its uses. So, MOOC awareness program can be run by the universities, colleges and schools also.
- ii. The results of present study also show that students are aspiring to enroll in MOOCs. So, proper opportunities can be provided to the students to enroll in MOOCs courses.

- iii. MOOC may be helpful in learning at individual level as a learner can go to the E-Content any number of times.
- iv. MOOCs may be helpful in online learning as digital content can be accessed through internet.
- v. MOOCs are beneficial for distant learners those who are unable to go to college can do courses through the MOOCs.
- vi. MOOCs may be helpful for all kinds of learners. These include the disabled, linguistically weak, vulnerable groups of students.

5.6 SUGGESTION FOR FUTURE RESEARCH

After conducting the study, the investigator is in a position to put forth a few suggestions for further studies in related areas.

- i. A sample of 50 Teacher trainees of MIER COLLEGE OF EDUCATION from Jammu was taken in the present study. Similar study can be conducted on a larger sample to study the use of massive open online courses at B.Ed. and M.Ed. level.
- ii. The present study cannot be called final and comprehensive; more work can be done on different samples of different age groups.
- iii. Similar study can be conducted on students studying at college and school level.
- iv. A similar study may be undertaken in other districts of Jammu and Kashmir.
- v. Further study may also be conducted on students belonging to different areas.
- vi. Similar study can be conducted on people in different age levels and economic background.

SUMMARY

Topic: DEVELOPMENT OF AN E-LEARNING MODULE IN EDUCATIONAL TECHNOLOGY

SUPERVISOR

Dr. Mool Raj

Associate Professor

IV

INVESTIGATOR

Kirtie Manhas

Roll No. 1801012,M.Ed. Sem.

Introduction

Earlier than the broad enhance use of electronic learning, the established chalk and chat technique was use as a main way of teaching, where teachers use a chalk to write on a blackboard and next convey a lecture. Now a days in many universities, all traditional methods are now being replaced by modern techniques like multimedia presentations. Through multimedia presentation it is easy for learners to absorb ideas given in presentation. Teacher can show a number of audio or video information by embed them within a slide. It is a big question mark among teachers that what methods need to be retained or discarded. The online materials make very easy to gather right information. Moreover, it becomes very easy to produce multiple copies of the content for distribution. However, having overloaded and high quality information does not necessarily prove the abilities of a learner or teacher. A teacher must know what information is right and best for students. At the same time, students must know how to learn or catch up with lessons more efficiently. Unfortunately, providing best ideas to learn does not really help students because they fail to provide best process of learning, and students fail to practice real-life situations during learning. For example, in the traditional classrooms, students need to be aware of classroom conditions strictly and need to take notes actively while listening to their teachers. They also learn how to live with fellow classmates, how to talk to teachers in person, and how to participate in different academic competition and this not only improves them psychologically but also physically. (Rai & Chunrao,2016)

In present century, technological innovations have been influencing heavily on practices of educational. Both Learners and teachers apply these novel and innovative

ideas for improving the quality of teaching, learning, disseminating ideas, and knowledge sharing. Though, in the age of technology, it becomes challenging for them to keep some of the time-tested and reliable practices that had been followed for thousands of years. Innovation is always meant as key to the success of any educational organization.2016)

E-learning is a new and evolving concept. It is not possible to give it a strict definition. E- learning involves the use of ICTs to enhance the art of teaching, harnessing the potential of digital technology in presenting a concept in various exploring implications, placing the concept in various contexts, creating links with existing knowledge and leading discussions that probe student understanding and allow students to take their learning in personally relevant directions. Like traditional teaching, e-learning is essentially a group activity where the group is the size of a normal class “presentation devices are key to extending the reach of information from individual to entire groups, large or small.. E-learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents, and PDFs. Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users. There is a plethora of different e-learning systems (otherwise known as Learning Management Systems, or LMSs for short) and methods, which allow for courses to be delivered. With the right tool, various processes can be automated such as a course with set materials and automatically marked tests. E-learning is an affordable (and often free) solution which provides the learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications. Some of the most important developments in education have happened since the launch of the internet. These days learners are well versed in the use of smartphones, text messaging and using the internet so participating in and running an online course has become a simple affair. Message boards, social media and various other means of online communication allow learners to keep in touch and discuss course-related matters, whilst providing for a sense of community. In the fast-paced world of e-learning, the available technologies to make a course new and exciting are always

changing, and course content can and should be updated quickly to give students the very latest information

"E-learning is the use of internet and digital technologies to create experiences that educate our fellow human beings."(Horton,2001)

"E-learning is the continuous assimilation of knowledge and skills by adults stimulated by synchronous and asynchronous learning events and sometimes knowledge Management Outputs -which are authored, delivered, engaged with, supported and administrated using internet technologies."(Don Morrison 2003).

"The delivery of a learning, training or educational Program by electronic means. E-learning involves the use of a computer or electronic device (e. g. a mobile phone) in some way to provide training, educational or learning material."(Derek Stockley 2003).

E-learning is commonly referred to the intentional use of networked information and communications technology in teaching and learning."(Som Naidu2006).

NEED AND SIGNIFICANCE OF THE STUDY

Students now-a-days feels more comfortable with new technologies, which increase their motivation and, as a result,improve their academic performance .In the last two decades, the use of e-learning has been increasing in many disciplines in higher education, online learning or educational technology has been used and integrated into the curriculum around the world. Developing an e-learning system has many advantages like ,it can reduce the time consuming and money. It may also have benefits on the institution, proponents, user and future researchers. It can help the college of Arts and Sciences to reach their goals by developing an e-learning system. The teacher can inform and update the students in the website about lesson and activity in their subject. It can also enhance the skills and the ability can also access the e-learning website everywhere as long as they have a network. It will less the paper works of the students and teachers of the researchers. This will set as a basis about e-learning for the future researchers. The present study will be one step in this direction as an e-learning module will be a significant contribution in this field.

STATEMENT OF THE PROBLEM

DEVELOPMENT OF AN E-LEARNING MODULE IN EDUCATIONAL TECHNOLOGY.

OPERATIONAL DEFINITION

E-LEARNING MODULE

An e- module is a 10-15 minute e-learning content that has no ,more than one or two learning concepts and incorporates a blend of teaching and assessment tools that may include video clips, direct instruction, gaming elements and social media. In the present study, it will be a module an educational technology and it will be based on four quadrant approach as given by SWAYAM.

EDUCATIONAL TECHONOLGY

Educational technology is a course which is being taught at B.ED level in the colleges of Education.

Teacher Trainees

Teacher trainees, in the present study, are those students who are pursuing B.Ed. and M.Ed. programmes from colleges of education or university departments.

OBJECTIVES OF THE STUDY

1. To develop an e learning module in educational technology for teacher trainees.
2. To conduct a best survey to know the impact of e-learning module on teacher trainees in terms of knowledge, skills and attitudes.

HYPOTHESIS

The following hypothesis was formulated for the present study;

1. e-learning module has a positive impact on teacher trainees in terms of knowledge.

DELIMITATIONS

Due to time and other constraints, the present study has been confined to

- i. One e-learning platform i.e. Moodle
- ii. Fifty participants.
- iii. One week duration course.
- iv. One teacher made test.

METHODOLOGY

A mixed method approach will be adopted for the present study, experiment has been conducted and survey.

Tool

Self-prepared tool will be used to gather data on knowledge, skills and attitudes of teacher trainees towards e-learning.

SAMPLING

A sample of 50 teacher trainees will be selected for the present study.

Findings of the study

Major findings of the present study are reported in the following subsections.

Objective 1: To develop an e-learning module in Educational Technology for Teacher trainees.

For developing the e-learning module, investigator followed a ADDIE model for developing the MOOC course for the teacher trainees. She completed her development of course in five phases which are based on ADDIE Model i.e. Analysis, Design, Development, Implementation and Evaluation.

Firstly, the investigator went through the literature as presented in Review of literature in Chapter-II, and decided to plan the course accordingly to steps as given below which are explained in Chapter-IV.

5.2.2 Selection of the Topic for the course development

5.2.3 Course Content selection which included the meaning of Educational technology and its definitions, scope and its components.

5.2.4 Target Audience for the course whom this course was to be meant.

5.2.5 Online different Strategies used for teaching the course on 'Badics of Educational Technology'.

5.2.6 Selection of the MOOC Platform for the delivery of the course.

5.2.7 PREPARATION

Preparation consisted of creating a website, creating course presentations, adding text in the course, creating quiz and try out of the course.

5.2.8 Creating a website: the investigator created a login <https://moodle.com/cloud/free>
User Name and Password

At step one investigator went to my Moodle Cloud by entering her Cloud's address e.g. www.kirtie-123.moodlecloud.com in the login page:

- Type in the user name-admin

- Type in your password

5.2.9 Creating Course

After log into the Moodlecloud, the investigator applied setting to the Moodle course and followed the procedure as given:-

Log-into Moodle.

Go to Administration>Site administration>Courses>Manage courses and categories

Course name: Basics of Educational Technology

Course category: Education

Course start date: 17 feb to 24 feb

Course description: "To enable the learner to understand about the meaning, nature, scope and significance of Educational Technology and its Components in terms of Hardware and Software."

Course format: According to the investigator course.

5.2.10 Adding Resources

like videos, presentation, text, quizzes and reference material for making the

5.2.11 Adding text

like investigator typed text related to the topic of the course for the students.

5.2.12 Creating Discussion Forum

Which allows virtual communication in Moodle between students and teachers.

5.2.13 Created a Quiz for Activity learner for the purpose of evaluation.

5.2.14 Manage Date and Time which show the time limit to students when to take the quiz.

5.2.15 Manage Grade settings which the students need to obtain in order to pass.

5.2.16 Manage the Quiz Layout option of displaying the quiz over many pages.

5.2.17 TRY OUT the course for its delivery so course delivery was tested individually and by a group.

5.2.18 Individual Try out

In individual try out the investigator made a dummy enrolment as a student to check how it does work and also note down the problems which need immediate rectification. The investigator also noted time taken to complete the quiz. After doing such activities the investigator made the required changes and checked the course for a group.

5.2.19 DELIVERY OF THE COURSE

5.2.20 Enrolment of Students into a Moodle Course either by manually or by sending emails.

5.2.21 Start of the Course to ensure their login and functioning of the course. After ensuring their log in the participants of the course started doing course.

5.2.22 Monitoring of the Course to check the login of the participants to the course.

5.2.23 Ensuring the Delivery of the course to the participant by checking the added text, videos, multimedia presentations, quizzes etc.

5.2.24 Completion of the course like made the participant to complete their course on time. Investigator time to time informs the entire participant online (by sending mails) about the completion of the course on time.

5.2.25 EVALUATION

Evaluation is an important part of the course as through evaluation, the investigator is able to know about the progress of the students.

5.2.26 Time Line / Schedule for the completion and delivery of the course.

Objective 2

To evaluate the impact of e-learning module on Teacher trainees through Teacher made test.

In this experiment the impact of e-learning module on teacher trainees before enrolling in MOOC and after completing MOOC, the following data was collected from 45 students of M.Ed. programme. Since 5 students could not complete the tool, so they were excluded from the computations.

No. of participants enrolled: 45, No. of participants in completed the course: 05

Dropout rate: $\text{No. of participants could not complete} \times 100 / \text{Total No. of participants} = 05 \times 100 / 45 = 11.11\%$

All participants who completed the course were found qualified as they passed all the quizzes. Assignments.

DISCUSSION AND CONCLUSION

To conclude, it can be humbly claimed that the present study has yielded valuable information regarding the use of massive open online courses at B.Ed. and M.Ed. levels. All the research questions have been satisfactorily answered through the findings of the study. Thus, this can be concluded that MOOCs has been used widely by every one in every field of life it is the case with the teacher trainees. Teacher trainees are found aware about the use of MOOCs. They have also knowledge that how to used the MOOC platforms. There were also founded some teacher trainees were enrolled in MOOC courses. And some teacher trainees were aspiring to enroll in MOOCs in future. The results show that teacher trainees want to develop their own MOOCs. There were also some factors which affect the uses of MOOCs like job opportunities, ICT skills, Values, Cost effectiveness. The attitudes of teacher trainees were found positive towards uses of MOOCs.

It is hoped that the future year shall witness a significant increase in the number of researches based uses of MOOCs. So, that teaching and learning process can be made more effective both for teachers and students in the time to come.

EDUCATIONAL IMPLICATIONS OF THE STUDY

Education is important for the social and economic development of the country. This is the age of Information dominated by the digital technology. Massive open online courses play an important role in today world of technology. The result of present study has revealed many important implications for use of MOOCs by teacher trainees in the B.Ed and M.Ed levels.

- i. The results of the present study show that few students have knowledge about the MOOCs and its uses. So, MOOC awareness program can be run by the universities, colleges and schools also.
- ii. The results of present study also show that students are aspiring to enroll in MOOCs. So, proper opportunities can be provided to the students to enroll in MOOCs courses.

- iii. MOOC may be helpful in learning at individual level as a learner can go to the E-Content any number of times.
- iv. MOOCs may be helpful in online learning as digital content can be accessed through internet.
- v. MOOCs are beneficial for distant learners those who are unable to go to college can do courses through the MOOCs.
- vi. 6.MOOCs may be helpful for all kinds of learners. These include the disabled, linguistically weak, vulnerable groups of students.

SUGGESTION FOR FUTURE RESEARCH

After conducting the study, the investigator is in a position to put forth a few suggestions for further studies in related areas.

- i. A sample of 50 Teacher trainees of MIER COLLEGE OF EDUCATION from Jammu was taken in the present study. Similar, study can be conducted on a larger sample to study the use of massive open online courses at B.Ed. and M.Ed. level.
- ii. The present study cannot be called final and comprehensive; more work can be done on different samples of different age groups.
- iii. Similar study can be conducted on students studying at college and school level.
- iv. A similar study may be undertaken in other districts of Jammu and Kashmir.
- v. Further study may also be conducted on students belonging to different areas.
- vi. Similar study can be conducted on people in different age levels and economic background.

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APPENDIX A

MIER COLLEGE OF EDUCATION(AUTONOMOUS)

College with Potential for Excellence Status by the UGC

Recognized by the Govt. of Jammu and Kashmir, Permanently Affiliated to the
University of Jammu.

Accredited by NAAC with 'A+' Grade

Teacher Made Test

Investigator
Kirtie Manhas

Supervisor
Dr. Mool Raj

This test has been prepared by the investigator as a part of her dissertation in M.Ed.
programme.

Name _____ Roll no. _____

Date _____

**General Direction: This is a 40-item test, read each direction written in every
section of test and answer accordingly.**

SECTION A

MULTIPLE CHOICE QUESTIONS

Directions: chose the correct answer and put a tick (✓) mark

1. Who among the following has not given a definition of educational technology?

- a. E.E. Hadden.
- b. G.O.M. Leith
- c. S. S. Kulkarni.
- d. C. R. Darwin

2. According to one definition, _____ can be conceived as a science of
techniques and methods by which educational goals could be realized.

- a. Teaching Technology.
- b. Instructional Technology

C. Educational Technology. d. Task-analysis

3.It is not an example of Instructional technologies.

a. Computer based instructions. b. Learner controlled Instructions

c. Programmed Instructions. d. Rote Learning

4.According to _____ Theory of Instructional designs, the learner is in control of his/her own learning.

a. Cognitivist. b. Constructivist

c. Behaviourist. d. Socialist

5.Which approach provides opportunity for integrating theory with practice?

a. Multimedia approach. b. Teacher-centerd approach

c. Banking approach. d. Learner -centered approach

6.who suggested the term Teaching Technology?

a. Clarke (1970) b. B.k.passi

c. E. G. Vedanayagam(1988) d. Brown (1975)

7.Scientific method used to store information and arrange it for communication is called?

a. Telecommunication. b. Information Technology

c. Codes. d. Information

8.scientific methods and means to store, process and transmit vast amounts of information in seconds with the help of electronic equipments is called _____

a. Information technology. b. Mass technology

c. Biotechnology. d. Information and communication technology

9.Which of the following purposes are fulfilled with the use of Educational technology?

a Teacher training. b. To achieve educational objectives

c. Provide feedback and evaluation. d. All of the above

10.The main form of Educational technology is

- a. Instructional technology.
- b. Teaching Technology
- c. Training Technology.
- d. All of the above

11. what are the components of Information system?

- a. Software.
- b. Communication
- c. Hardware.
- d. All of the above

12. Which type of communication media does not have any direct face to be communication?

- a. Multimedia.
- b. Mass media
- C. Audio-visual media.
- d. None of these

13. Which of the following needs and purposes are not served by 'Educational technology'?

- a Development of suitable curriculum.
- b. Selection of a proper philosophy of education.
- c. Identification of needs and character of the pupil.
- d. Helps in identify the available teaching learning material and resources.

14. Which one is the characteristic of communication?

- a. Improvement in curriculum
- b. Interactive process
- c. Provides learning experience
- d. Appropriate selection of media.

SECTION B

FILL IN THE BLANKS

Directions : Fill each blanks with the suitable words from the given box.

MULTIFACETED, MEDIAS, ICT, EDUCATIONAL TECHNOLOGY
, AUDIO-VISUAL , LATEST, B.F. Skinner

15.The major contribution of educational technology in education is the use of various _____.

16.Information technology is useful for researches for getting_____ information.

.

17.The earliest concept of Educational technology was linked with the use of _____ aids.

18.Educational technology carries a wide meaning and _____ concepts.

19.An application of _____ in our country in the field of education is known as Distance Education.

20. _____ has become an integral part of today's teaching learning process.

21. _____ has referred the term behavioral technology in his book "Technology and Teaching ".

SECTION C

True /False

Directions : Put tick mark on the right answer

22.The use of Educational technology in the field of distance education is for In service Teacher education. (True/False)

23.Educational technology in education makes teaching learning process efficient and objective centered. (True /False)

24.The use of old methods in teaching learning process is known as Educational technology. (True/False)

25.Instructional technology aims to promote the application of practical procedure in the design and delivery of instruction.(True/ False)

26.Cognitive ,Affective and Psychomotor domain can be achieved by using teaching technology.(True /False)

27.Multimedia is not an important innovation in the field of educational technology .(True/False)

28. Educational technology covers a wider field subsumes instructional technology. Thus, instructional technology is just a subset of educational technology. (True /False)