

PhD Research Thesis

DEVELOPMENT AND VALIDATION OF
INSTRUCTIONAL MODULES FOR PROSPECTIVE
TEACHERS UTILIZING E-MODULAR APPROACH



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INSTRUCTIONAL MODULES FOR PROSPECTIVE
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175/FSS/PHDEDU/F20**

A thesis submitted in partial fulfillment of the requirement for the degree of
PhD Education

**DEPARTMENT OF TEACHER EDUCATION
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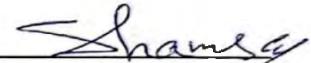
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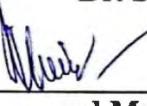
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DEDICATION

With all due respect, I dedicate this effort to my supervisor, my family, my parents and above all Creator of Humanity

ALLAH

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LIST OF ABBREVIATIONS

3PD	Three Phase Production
4CD/ID	Four Component/ Instructional Design
ADDIE	Analyze, Design, Develop, Implement, Evaluate
AI	Artificial Intelligence
APA	American Psychological Association
ASSURE	Analyze, State, Select, Utilize, Require, Evaluate
BSEd	Bachelor of Science Education
CAI	Computer Assisted Instruction
E-MODULE	Electronic Module
FCE	Federal College of Education
HEC	Higher Education Commission
ICT	Information and Communication Technology
ID	Instructional Design
IIUI	International Islamic University Islamabad
ILDF	Integrative Learning Design Framework
IPOs	Input-Process Output Cycle
ISD	Instructional System Design
IT	Information Technology
LMS	Learning Management System
MA	Modular Approach
MBBS	Bachelor of Medicine and Bachelor of Surgery
MDGs	Millennium Development Goals

MI	Modular Instruction
MS OFFICE	Microsoft Office
NCC	National Curriculum Council
PBL	Problem Based Learning
PIE	Plan, Implement, Evaluate
PSF	Pakistan Science Foundation
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
STEM	Science Technology Engineering and Mathematics
TA	Traditional Approach
Ubd	Backward Design/Backward Planning
UK	United Kingdom
UN	United Nations
UNESCO	United Nation Educational Scientific and Cultural Organization

Abstract

Educational technologies are changing with the passage of time, and it is important to update existing educational technologies to improve the achievement of students. One of the latest approaches in teaching and learning is the e-modular approach. The objective of the study was to develop and validate instructional modules for prospective teachers utilizing an e-modular approach in the subject of Educational Leadership and Management. The researcher had developed 12 instructional modules with the help of literature review and the ADDIE instructional design model. The researcher had used a quasi-experimental design for the study. The study was comprised of two phases. The first phase was the development of instructional modules. The second phase was the implementation of these instructional modules. The population of the study was the 358 prospective teachers of BSEd Hons program from Federal College of Education H-9 Islamabad. The students of BSEd. Hons 4th semester were the sample of the study. A pretest was administered to the control group and the experimental group. After this, the control group was taught through the conventional method of teaching, and the experimental group was taught with instructional modules developed in phase 1. Students of the experimental group had access to the instructional modules using Google Classrooms. The duration of the experiment was 12 weeks (three months). At the end of the semester, posttest was administered to both groups. A questionnaire was developed and used to explore students' perceptions about instructional modules. After the collection of data, the next step was data analysis and interpretation of the data. SPSS Version 26 was used for the analysis of the data. Data were analyzed through t-test, mean scores, and percentages. The major findings of the study were 12 developed instructional modules. There was a significant difference in the

achievement of students who were taught using instructional modules and those who were taught using the conventional method. Moreover, there was a difference in the high, average, and low achievers' students who were taught using instructional modules. Their mean score was high as compared to the high, average, and low achiever students in the control group. The analysis of the students' perception questionnaire revealed that students in the experimental group were highly satisfied with the content, delivery, and relevant material of the modules. The teacher's perception questionnaire analysis showed that students took interest in module activities and were motivated. As the developed instructional modules were helpful in increasing academic achievement of students in the study, it was recommended that instructional modules may be developed in other subjects for various levels. It is recommended that HEC may provide training to teachers regarding the development of modules.

Keywords: instructional modules, e-modular, ADDIE, e-modules, instructional technology

CHAPTER 1

INTRODUCTION

Education is the right of every citizen. Each and every citizen in the country is entitled to top-notch education. Education is vital to the growth of a nation. Hawkins (2002) pointed out that education plays an important role in national economic development. He explained the differences between developed and developing countries are the quality of education and the digital divide. It is important to develop lifelong learners and autonomous learners. It is a key fact that high-quality teacher preparation programs can lead to high-quality education.

Despite the fact that free education is stated in UN Article 26 of the 1948 Universal Declaration of Human Rights, the world is unable to meet this goal, and the Sustainable Development Goals (2015) still include "education for all" as one of their goals. The UN review of the MDGs (2015) acknowledged that the poorest and those disadvantaged due to gender, age, disability, or ethnicity are frequently disregarded in the assessment of progress towards the MDGs.

Since 1950, computer technology has been utilized in the field of education. Computer technology is developing at a rapid pace, which has changed the IT industry. Computers used to be as big as rooms, but these days they are just as small as something you can hold in your hand. These days, computers are an integral aspect of everyone's life. Nowadays, an ordinary person uses a computer for a variety of tasks. The fact that computers are underutilized in most of the world's educational systems is another harsh reality. There are numerous justifications for underusing computers in the field of

education. Developed nations are benefiting from its use in the field of education (UNESCO, 2006).

With the passage of time, new innovations are changing the world and every field of life, including education. The use of computers in education has started from 1950s onward. Firstly, technology was used for scientific and military purposes. Later on, it was used for the development of human beings. Computer has evolved by going through many stages and generations. In the beginning, computers were very large and slow in speed but now they are as small and as fast in speed. Similarly, computer storage has also improved with the passage of time.

Technology is one of the tools to expand the accessibility of educational material and delivery through various distance and remote learning platforms, where other measures are made to reach these impoverished and underprivileged people. Reaching the goals of extensible educational inclusion is better served by the idea of free, flexible, and adaptive learning. In present era, there is hardly any field where technology is not being utilized. It is being used in every field of life including health, education, agriculture, business, research, scientific, banking etc.

Every country is adopting state of the art practices to improve the education system. One of the top trend approach is modular approach (Sejpal, 2013). Modular teaching is being used in almost all the countries in the world. The reason for its excessive use is that it imparts teaching that is according to the needs of the learners and meets the individual differences (Farooq, 2015; Rashid et al., 2020). UNESCO is offering many courses in the form of modules for teachers and students as well. Modular approach is being used in many countries for teaching, in training, course development etc.

Keeping in view the advantages of modules in teaching, Pakistan Science Foundation had started a project for the development of teacher training modules on STEM education in 2022, a project for secondary and higher secondary level. STEM project had started its implementation initially in 58 schools and universities across the country. The modules were utilized for training of the teachers.

Modular approach is being used by different countries in different disciplines of social sciences and science subjects as well (Arosyad, 2022). In Pakistan, this approach is not being widely used. Here, conventional methods are commonly used teaching methods in the classroom. Keeping in view the advantages of modular approach, the aim of the study was to develop instructional modules in the subject of Educational Leadership and Management for prospective teachers of BSEd Hons.

1.1 Background and Context of the Study

Technology is a major aspect of the modern period. The world is changing day by day at supersonic speed. New innovative and learning pedagogies have changed the globe totally (Shaheen & Khatoon, 2017). Furthermore, Covid-19 had altered the educational system of the world around the globe. All the educational institutions had to shift their educational activities online during this pandemic. But the positive thing is that we as a nation had learned many useful and innovative technologies with the passage of time, and this was the need of the time too.

A module is a manageable unit of instruction. It is a self-learning package that is related to the curricula of some particular course. Modular approach creates the characteristics of autonomous learning and self-directed learning among the students (Rashid et al., 2020). E-modules are called digitalized package for learning interactively.

It is also called the media for digital and independent learning. E-modular approach is a modern form of module in 21st century. It consists of text, graphics, pictures, audio, video and interactive material related to particular course. Several research studies have laid stress on the importance of e-modular approach (Nardo, 2017; Saravanakumar, 2020).

Although research studies were available in module development for different subjects, but the modules were developed in different subjects specially science subjects. These subjects included Chemistry, Biology, Physics, English, and Mathematics. There was no study available in e-modular approach in the subject of Educational Leadership and Management. The present study aimed to develop the instructional modules using an e-modular approach for the prospective teachers of BSEd Hons in the subject of Educational Leadership and Management.

1.2 Problem Statement

Education has changed a lot with the passage of time. The same is true for pedagogical approaches. Instruction that is tailored to the needs and requirements of the learners can have fruitful results. Due to manifold advantages of instructional modules, several studies (Nardo, 2017; Shaheen & Khatoon, 2017; Istuningsih et al., 2018; Aksoy, 2019; Djafar et al., 2019; Sanjaya & Djamas, 2019; Arosyad, 2022; Njoku et al., 2021; Prabakaran & Saravanakumar, 2021; Sunarno & Supriyanto, 2021) confirmed the effectiveness of modules and e-modules in teaching and on students' academic achievement. The researches above have mentioned the effectiveness of modules in different subjects and in developing autonomous learning, critical thinking, and self-directed learning. Modules have been successfully utilized in different areas of teaching and learning. But there was no study available on the subject of Educational Leadership

and Management for prospective teachers. Modules have a significant effect on students' learning and helps in students' achievement. It promotes self-directed learning. Due to unavailability of modules in educational leadership and management, the researcher intended to develop modules utilizing e-modular approach in the subject of Educational Leadership and Management for prospective teachers. The developed modules were also checked whether these modules were able to increase students' academic achievement or not. The developed modules were tried out and improved in the light of feedback and students' perceptions.

1.3 Significance of the Study

It is very important in the learning process to acknowledge the unique talent of each child as well as the individual differences, needs, space, and learning style of the students. Present study was an endeavor to develop instructional modules using e-modular approach. E-modules were developed with the help of the ADDIE instructional design model.

The study is significant in the respect that it has a positive effect on students' achievement. Students' achievements increased as a result of using modules. The modules are helpful for high, average and low achiever students as their academic achievement increased. The modules created through this approach are also useful for instructional technicians and practitioners, enabling them to develop content for various courses and levels. The study provides significant value to students by accelerating their learning pace, making it a highly effective educational tool. One of the key benefits is the elimination of barriers associated with guilt and public speaking anxiety, creating a more comfortable, and inclusive learning environment. Moreover, the cost-effectiveness of this method is evident, as neither learners nor students need to travel to a specific location or building to

access the material.

The study also addresses individual learning disparities. Some students prefer to focus on particular sections of the material, while others choose to explore the entire text, as noted by Zeitoun (2008). In addition, learners' activities are examined and adjusted based on their personal choices, as highlighted by Martin et al. (2020). Students are the primary beneficiaries of this approach, as they have the opportunity to improve their academic achievement and engage with content both inside and outside the classroom. Importantly, the modules are equally beneficial for both low and high achievers, as they offer the flexibility for students to repeat the material as many times as needed, allowing them to learn at their own pace. This product is a valuable contribution to the existing body of literature on e-module development, offering new insights and approaches to modern education.

1.4 Objectives of the Study

1. To develop self-contained learning material for prospective teachers in the subject of educational leadership and management.
2. To ascertain the effect of e-modules on high, average, and low achievers.
3. To assess the effect of teaching with self-contained learning material and conventional method on the academic achievement of prospective teachers.
4. To explore the perception of prospective teachers the about e-modules.

1.5 Research Hypotheses

Research hypotheses of the study were:

H₀₁ There is no significant difference in the mean pretest scores of the students of experimental group and the students of control group.

H₀₂ There is no significant difference in the mean posttest scores of the students of experimental group and the students of control group.

H₀₃ There is no significant difference in the mean posttest scores of high achievers of experimental group and high achievers of control group.

H₀₄ There is no significant difference in the mean posttest scores of average achievers of experimental group and average achievers of control group

H₀₅ There is no significant difference in the mean posttest scores of low achievers of experimental group and low achievers of control group

1.6 Research Question

RQ.1 What are the perceptions of prospective teachers about instructional e- modules?

1.7 Methodology of the Study

The aim of the study was to develop instructional modules utilizing an E-modular approach and to assess the effect of instructional modules on the achievement of prospective teachers of BSEd Hons in the subject of Educational Leadership and Management.

The study was research and development by purpose and quasi-experimental by design. The study was comprised of two phases.

Phase 1

Phase I was the development of instructional modules using e-modular approach.

The researcher had developed modules in the light of literature review and with the help of an instructional design model. ADDIE model was utilized in the development of instructional modules.

ADDIE model has five steps: Analyze, Design, Develop, Implement and Evaluate. E-modules were developed according to the course outline of educational leadership and management provided by the University of the Punjab. Twelve e-modules were developed according to the outline of the subject.

There were five stages in the development of e-modules. The first stage regarding module development was the analysis of the learner and learning environment. It was very important to know the learner in learning environment. A need analysis questionnaire was used for this to know about the learners. The second stage was the design phase. According to the objectives of the course, the main selection regarding teaching methods, strategies were done in this stage of module development. The third stage was the development of modules in the feedback of first two stages. The fourth stage was the implementation stage, and the last one was the evaluation of e-modules. The modules were evaluated by a group of experts (Appendix-F). These experts have evaluated modules according to the objectives and provided feedback. After expert evaluation, the modules were revised and were tried out on the students in phase II.

Phase II

Phase II was the tryout of the instructional modules. After tryout, e-modules were improved in the view of feedback. The researcher has used quasi-experimental design.

1.8 Population of the Study

All the prospective teachers of BSEd Hons program from Federal College of Education H-9 Islamabad were the population of the study. Total number of students in BSEd Hons were 358. The students were the future prospective teachers or administrators as they were enrolled in the BSEd Hons program.

1.9 Sample

All the students in BSEd Hons 4th semester session 2021-2025 studying Educational Leadership and Management were the sample of the study. The total number of students in BSEd 4th semester was 70. So, the sample size of students was 70. The researcher had taken two groups of BSEd Hons. One group was control group, and the other group was experimental group. The students were further divided into high, average, and low ability students on the basis of their marks in previous semester in each group. The experimental group was taught through e-modules, and the control group was taught through the conventional method of teaching.

1.10 Research Instruments

The study was about to develop e-modules utilizing ADDIE model and to assess students' achievement. The following instruments were developed for the research study.

- Need analysis questionnaire
- Pretest
- Posttest
- Perception questionnaire (to learn about the perception of the students and teacher about e-module at the end of treatment)

1.11 Data Collection Procedure

The students of BSEd Hons 4th semester were selected for the study. There were two groups. Group A was taken as the experimental group and group B was taken as the control group.

1.12 Delimitations of the Study

The study was delimited to the instructional e-modules for the course of Educational Leadership and Management. E-modules were taught to the students of BSEd Hons 4th semester session 2021-2025 from Federal College of Education H-9 Islamabad.

1.13 Operational Definitions

Prospective teachers

The students who were enrolled in the teacher training program. They were also called the future teachers. These students intended to become teachers in the future. That is why they selected the program like BSEd Hons to become a teacher.

E-modules

E-modules here refer to the modules with contents related to graphics, videos, multimedia contents, and interactive contents etc.

Conventional Method

Conventional method here means lecture method, which is commonly used teaching method.

Effect

Effect means that after teaching students with modules, what outcomes (effect) was

on the academic achievement of students? Effect means effect on achievement of students.

Constructivism

Constructivism is a learning theory. Learner constructs his/her knowledge when interacts with the learning environment.

Connectivism

Connectivism is a new learning theory. It refers to the connection of network or digital connection. The learner when interacting with the digital connection, constructs his/her knowledge as well.

ADDIE Model

ADDIE model is the instructional design model. ADDIE model here is used for the construction of instructional modules using e-modular approach.

Analyze

Analyze here means the analysis of the learner and learning situation.

Design

Design here means the methods and resources which were used in the e-modules.

Develop

Develop here means the actual development of e-modules.

Implement

Implement here means the implementation of e-modules in the classroom settings.

Evaluate

Evaluate here means to assess the worth of e-modules in the form of students' achievement.

Achievement

Achievement here is related to the grade or scores of the students in the subject of Educational Leadership and Management.

1.14 Data Analysis

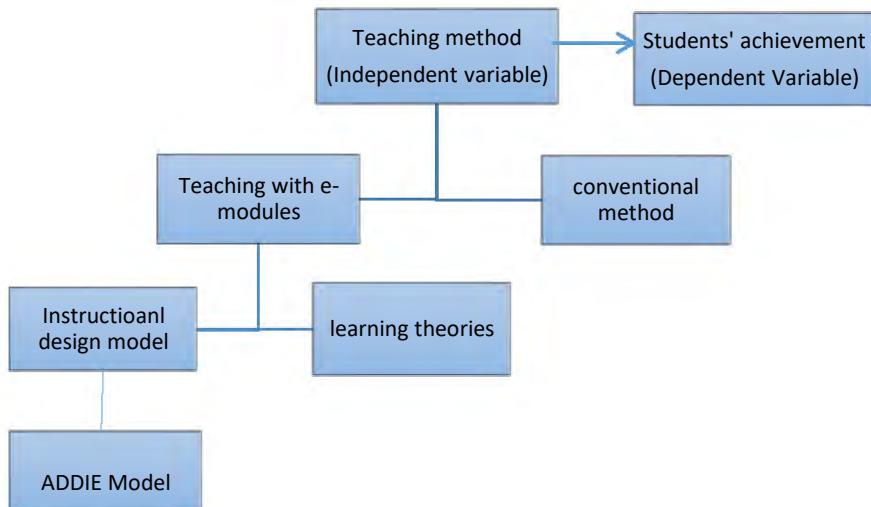
The aim of the study was to determine how e-modules affected students' academic achievement. In order to find the effect of intervention, an independent sample t-test was applied to the data collected from the pretest and posttest. The questionnaire regarding the perceptions of the students about e-modules were analyzed through percentages and mean score. Details of data analysis provided in chapter 4.

1.15 Conceptual Framework

The purpose of this study was to develop and assessed the effect of e-modular approach on the academic achievement of prospective teachers of BSEd in the subject of educational leadership and management.

Figure 1.1

Conceptual Framework of the Study



The e-modules were developed by using ADDIE instructional design model and learning theories. The researcher developed e-modules by using ADDIE model for the subject of Educational Leadership and Management according to the outline of the University of Punjab. After the development of modules, next step in the study was the validation of developed modules. A try out was carried out on the students of the BSEd Hons 4th semester. By using Quasi experimental research design, two groups were taken as control group and experiment group. One group was taught using conventional method and the other group was taught using instructional modules. The conceptual framework guided the whole study. First of all, instructional modules were developed in the light of instructional design model and learning theories. After that try out was carried out. The study was conducted by following the steps of conceptual framework.

CHAPTER 2

LITERATURE REVIEW

The aim of the study was to develop and validate instructional modules for prospective teachers utilizing an e-modular approach in the subject of Educational Leadership and Management. The literature review chapter included the following topics: the concept of module and the historical background of the modular approach. Literature review also explained how modules has been used in different subjects and in different fields of study and the purpose of using modules in teaching. This chapter also explained the kinds of modules along with fundamental characteristics of modules. It explained the concept of e-module and the advantages of using e-modules. While explaining components of modules, it explained the different development stages of modules. After development, the process of validation and the evaluation of modules are also discussed in the chapter. The chapter included learning theories and their role in module development. It included instructional design, instructional design models, and parameters of instructional design. At the end of literature review, researches in module development in Pakistan and International level has been discussed.

2.1 Module: Concept and Definitions of Module

The module is an interactive and self-learning package. It is a type of a lesson plan. But the difference between a module and a lesson plan is that module are prepared by following the steps of some instructional design model. There are different instructional design models, like ADDIE model, ASSURE Module, PIE model etc. The module is prepared for some topic (topics) keeping in mind the objectives. Modules consist of

different steps to be followed; these steps are different according to the Instructional Design Model.

Module are called self-learning packages because they are prepared in such a way that they consist of all relevant learning material (objectives, brainstorming activities, content, assessment, references) so that learners can learn the material themselves. According to Taneja (1989) a module is a self-contained unit in course. It is a teaching method that builds knowledge and skills in a particular unit of subject and explains it so that it can be understood to learners.

In literature and educational resources, there are found variations in the definitions and meanings of modules. Some of these are discussed in the following paragraphs. In the Greek language, the word module is originated from “modus”, which means a working mode with the help of some instructional material. In educational technology, a module is a plan of instruction that is larger than a particular session but smaller than a course (Kulkarni, 1986).

The module is a complete package which allows the learner to continue studying according to his or her own pace and capabilities. It could be used in any setting where it is suitable for the student's social background. It functions as a unique kind of learning resource. A certain subject or group of contents were covered in the module. It encourages students' active participation in order to make the learning process dynamic and alive. Module are being used in developed and developing countries for the learning of students. The modular approach is also used in different backgrounds and cultures of different countries, and it is successful in various situations for different students (Ali, 2005).

Sejpal (2013) has explained that modules are prepared to strengthen teaching, and

they are well-prepared and well-organized learning units. A module is a collection of educational activities centered on a specific subject and featuring tasks that are measured through criteria (Sadiq & Zamir, 2014).

According to Farooq (2015), modules are not just chapters with content that includes questions. They are well planned according to instructional theory. If carefully planned, they are useful in imparting instructions or achieving instructional goals. Fitzgerald and Adams (2016) have defined module as a manageable unit of instruction. Modules contained manageable unit of instruction, self-contained tasks, manageable learning activities etc.

Erizar and Azmi (2017) described a module as an independent work assignment for a course. Modules are self-contained learning packages that are systematically organized and prepared to fulfill learning objectives. A module consists of series of organized activities that are arranged in a systematic way to achieve some specific objectives. Modules are not chapter like units with some questions. Modules are developed according to a specific learning objectives. Modules can contribute towards quality education achievement, which is the purpose of the education system of every country (Rashid et al., 2020).

A modular approach is being used in many ways. In the beginning, it was used in the form of Computer Supported Instruction. With the advancement of technology and ICT, the new concept of e-modular approach is now becoming popular. Now, e-modules or e-content modules, are being used in teaching instead of simple modules due to advancement of technology in educational institutions. Moreover, the covid-19 situation also has a great impact on education and ways of teaching around the globe.

2.2 Modular Approach: Historical Background

The concept of modules is not a new one. It was being used in Open University of UK, United States and Canada in the beginning (Shaheen & Khatoon, 2017). Schools in Canada and United States have been using units, credits and semesters for many years. Unit structure was introduced by the Open University of UK, and it was the beginning of the modular approach and instruction in education. A reference regarding modules was also found in Munn report. The purpose of the Munn report was to redesign and restructure the education system in Scotland. But the modular approach to education was officially approved in 1983 in an action plan report. So, a modular approach was adopted in technical and vocational institutions of UK. After that, this Modular Approach was adopted in the formal education system (Etnwistle, 2015).

A book is divided into manageable sections known as modules in the Modular Approach (MA). The teacher involves the MA students in a variety of activities to make making the lesson engaging, encouraging teamwork in the classroom, and raising students' awareness so they can participate in the learning activities. Because of this, students using the modular approach do not continue to be passive learners as they would in traditional teaching approaches (Stein, 2007).

The first module development workshop was held in 1977 in Bangkok for curriculum of teacher education. This was held in the third phase. The first phase workshop was held in Manila in 1975. It was regarding planning, in which a set of topics for module development were selected and a set of teachers were also selected. The second phase was also held in Bangkok. The prepared modules were presented in this phase. So a final phase of the module was selected in it (Rothstein-Fisch, 2003).

Ali (2005) states that MA is a modification of the widely accepted idea of programmed instruction. The foundation of this approach is that each student is different from other students. This phenomenon necessitates and facilitates the need to adopt new technology that helps pupils advance at their own pace.

A common practice in the past has been to teach staff members using a modular approach. With this method, self-contained, concise content for self-study is created and given to the learners. Trainees learn these materials and become proficient in the core ideas. The value of modular instruction has grown over time, and it is being utilized in training sessions in addition to courses (UNESCO, 2006).

Based on the studies described above, one could conclude that MA is a method of instruction where learning activities are done by using modules. It is an approach that concentrates on meeting the needs of specific learners. Sections provide the students with self-study and self-instructional tools to help them learn at their own pace with little to no help from the teacher. This approach stimulates curiosity in the subject matter, draws students in, and inspires them to complete the learning goal. Students are informed about their learning progress using modular instruction's built-in assessment and feedback mechanism.

The content of the modules is divided into manageable learning tasks. Every stage includes predetermined stated goals, learning activities, assessments, and feedback. Students fully participate in these engaging and self-motivating modules. In modular approach, teacher acts as a facilitator (Shaheen, 2013).

Fraser and Aldridge (2010) described that modular approach was successfully utilized in trainings before the new concept of module. The modularization concept was

being used in higher education in the United States in the mid of 19th century. The Approach was used in United Kingdom in the vocational institutions in 1968. With the passage of time, it was adopted for the different programs of formal education.

2.2.1 Programmed Instruction

Module designing can be traced in 1950s in the form of Programmed Instruction. Programmed Instruction is method of teaching which is based on individualized learning of students. Frames are a succession of very short steps that form the foundation of programmed instruction. Each section has information, a remark, and a blank for students to fill in. The pupil then uncovers the right reply before proceeding to the next question; otherwise, the student recognizes the proper solution. Each section may offer new ideas or revisit previously covered content. Lessons begin with the student's beginning knowledge and progress gradually to the eventual learning goal. Programmed learning is highly effective due to active student participation, short steps, fast feedback, and reinforcement. According to Kurbanoglu et al. (2006), all pupils follow the same learning sequence.

In Programmed Instruction, the material is divided into small units or chunks. Learners are exposed to material. Learners learn the material according to their own speed or pace. Learner is provided feedback or on the basis of feedback learners move forward after completing the particular part of instruction. If the learners have not excelled or master the instruction, he /she again revise that particular part. So learning is controlled by programmer. It is also called the autocratic or individualized strategy of learning.

There are following types of Programmed instruction:

- Linear Programming
- Branched Programming

Linear programming is mostly used in education. It can be used for the teaching of many subjects. In linear programming, the content is divided into small units of knowledge. Learner should be active and get response. It is self-pace learning. Modules for any subject can follow a predetermined instruction pattern. Module-based training promotes student engagement by breaking down knowledge into discrete segments known as frames. It provides immediate feedback and reinforcement. Programs cover a variety of areas, including mathematics, reading, spelling, languages, chemistry, medicine, and more. Some programs are linear, requiring individuals to complete tasks in a specified order based on accurate answers. Others use branching to provide further information at the appropriate level, regardless of correct or incorrect answers. (Zaman et al., 2021).

2.2.2 Audio Tutorial and Personalized Approaches 1960

There are two approaches which were become popular in 1960s. These approaches are discussed below. These approaches provided base guideline to the module instruction.

Postlethwait and Hurst (1972) described that he first delivers his presentations in Purdue University. He started aided his presentations with audio tapes in delivering his lectures in the course of Botany. Afterwards, he designed material which can be used as self-instruction. So, the material he used consists of content according to aims, audio tape material, and extra reference material. The researcher also divided unit into minor sections called “mini courses”.

2.2.3 *Personalized System of Instruction*

Keller with his colleague worked on the personalized system of instruction. After presentation of material to students the researcher in order to know about the students' progress used personalized system of instruction. In order to check the learner progress in some particular area, test was used. Sequential guided materials were provided to learners. Films were associated with the material so that learners can comprehend the material easily. So, personalized system of instruction is known as the "Keller Plan". At that time, it was very useful and became popular (Grant & Spencer, 2003).

2.2.4 *System Theory and Models*

System theory is that in which all dimensions are considered and analyzed in order to solve the problem of learners. In this way, learners' difficulties are properly analyzed by finding solutions. Another name for the approach was "systematic instruction" and "instructional development".

Some steps which are involved with the system approach are followings:

- Initial behaviors of the learners are analyzed.
- Objectives should be specific and well described.
- Learning material should be selected according to the objectives.
- Selection of learning environment to delivers the material to the learners.
- Assessment of learners should be according to the objectives.

Lodhi (2007) used a systems approach to redesign and extend the M.A International Relations (IR) program, incorporating action research for various experiments. A research study. Modules are planned and designed using a system approach. According to Ali

(2005), module design should adhere to each step of the system approach. The steps are outlined below:

- Analysis of the learner's entry behavior
- The objectives are indicated
- Content selection and sequencing
- Learning activities are designed.
- Continuous assessment is incorporated in, with a master accomplishment test started.
- Module effectiveness is reviewed.

2.2.5 Input-Process Output Cycles (IPOs)

The Input-process-output cycle technique has been used in designing teaching modules. The IPO cycle consists of three stages: input stage, processing stage, output stage. There are six steps involved in system theory approach. These steps are merged into the three steps of cycle. So, the first step of input cycle involved the objectives and subject material. In second step of processing involves all the activities and the last step involved the techniques of evaluation in order to assess the learners according to objectives. Ali (2005) developed modules by using the input-process-output cycle.

The researcher has developed her modules that are developed using ADDIE, instructional design model. These modules are available in electronic format of MS Word, MS Power Point and Google Classroom. Students can access these modules from there. Proper animations, video clips and charts along with diagrams are used to describe and for understanding the concepts.

2.2.6 Computer Assisted Instruction (CAI)

Computer Assisted Instruction is the modern version of Programmed Instruction. In Programmed instruction, the work was done manually but in Computer Assisted Instruction, the same work has been done with the help of computer programs. ICT is involved in the development of the package. With the help of computer simulation and games, it has been used (Bianchi & Song, 2022).

In CAI, electronic modules are used. Computers can be utilized for data display or tutoring to assess student comprehension. Instructional Microcomputers, introduced in the 1970s and 1980s, revolutionized education. Later, computer applications were developed for teaching at all levels. When a computer is utilized as a tutor, learners are given with problems or questions to solve. If the response is correct, students are presented with other difficult question. If the answer is erroneous, the computer software identifies flaws in the procedure and skips more difficult questions.

2.3 Modular Approach in the Fields of Study

Modular Approach is being used for instruction of many subjects like English, Science, Islamiyat, Mathematics, Instructional Technology, and Engineering. This method is using not only in Social Sciences but also in Linguistics, Environmental Sciences and Natural Sciences too.

Modular Approach is beneficial in imparting knowledge, facts and information to students. It is also successfully used in Medical Sciences for instruction of theoretical concepts. Medical students or medical practitioner used self-instructional material for the study. A well-defined modular unit's objectives are a crucial requirement for module development that must be adhered to at all costs. The arts and humanities cannot be

disregarded when applying these criteria. It is wrong to rely on this propensity. Upon imprecise generalizations and shield them from humanistic or innovative interpretations. It is crucial to note that the objectives of the modular approach are not limited to those that are indicated in terms of behavior, nor are entire course sections necessarily defined in terms of behavior. That being said, almost every course has some minimum behaviorally defined sections that subsequently become appropriate for that method.

In module development, well defined objectives are very important. This rule can be applied to all subjects including Arts or Humanities too. Objectives should not be so ambiguous generalizable that it would impossible to achieve. The objectives must be achievable for particular subjects. If the objectives are more generalized or ambiguous than it will become difficult to achieve them (Martinez et al., 2014).

2.4 Purpose of Modular Teaching

The basic aim of the Modular Teaching is that every learner can progress at his/her own pace as every learner is different from other learners. All learners cannot learn things at the same speed or pace. So, the purpose of education is also to educate learners according to their unique differences. No two students succeed simultaneously, and not these students are prepared to study simultaneously (Burns, 1971, p.55).

The other purpose of Modular Teaching is that learner should be provided variety of activities and learning modes. A set of different learning resources are also available for learners in modular teaching which enables the learner to understand the concepts in an effective way.

The main goal of modular instruction is to allow students flexibility to move forward at their own speed. Every student has a unique intelligence and mental capacity. Thus, the students are unable to perceive everything at the same pace.

The second goal is to offer a range of approaches to learning based on the subjects and themes required. Numerous modular activities are available, including reading books with additional content, watching movies and videos, doing projects, participating in related extracurricular activities, listening to audio cassettes, and looking at diagrams and images.

The third reason for using modular teaching is to provide a wide range of topics within a specific course and discipline. It is highly helpful because it prevents pupils with varying mental capacities from being motivated to pursue the same objectives. Students had the chance to grow by knowing their strengths and weaknesses. In Modular Teaching, students can come to know about their weaknesses and strengths. Students can improve their leaning in this way (Moore et al., 2011).

Modular instruction consists of various learning activities according to the objectives and learning outcome of the module. Following are some activities which can be included in the module:

- Using diagrams and charts
- Using figures and statistics
- Using tables containing data
- Using Power Points slides
- Using word documents
- Using audio tape or audio information

- Using videos
- Demonstration of projects
- Individual projects
- Group activities or projects
- Assignments (written or oral)
- Social work
- Role play
- Participating in co-curricular activities etc. (Ganiron, 2014; Martinez et al., 2014)

It is a fact that individual differences exist among students in the class. Not all students are ready to learn at the same time or not all students are motivated to achieve the goals. The students have their mood swing and even a single student's attitude varies in a single day. The students' attitude is not remaining same all day long. So modular instruction is useful in this way as in this students are the independent learners and they start teaching anywhere, any time and any place.

The purpose of the modular instruction is the individualized instruction of the learner. So, the purposes of the modular instructions are the following:

- Self-pacing (learns can learn according to their pace).
- Learner can select his/her own mode of learning.
- Learner can take any module first so he /she can choose any topic of the interest.
- Learner can know about their weak areas and strong areas through modular instruction by feedback and can improve them.

2.5 Kinds of Modules

The basic aim of education is to provide education to the students. Different

methods of teaching are using all over the word in different institutions. In one country, there are also different methods using in different institutions for imparting education. Technology has also influenced education too. Same is the case for modular instruction. It has also seemed in various pattern. Some types of modules are explained below:

- Instructional Module
- Academic Module
- Competency Based Module
- Time Module
- Concurrent Module

2.5.1 Instructional Modules

These instructional modules are developed according to the individualized learning of the student. The purpose of these modules is to prepare material which can be used by the learner for individualized learning. These instructional modules are also called individual learning package too.

2.5.2 Academic Module

Academic Module has goals along with different teaching methods and teaching activities. In this type of module, time is less important for achievement of objectives. Students achieve objectives according to their pace so objective achievement is vary from student to student. The important thing is the availability of time and space for the meeting of teacher and students is very important.

Academic modules are not team bound. Time span for achievement of objectives vary from students to students. For some students, it is very short and for other students it can be long. Instructor and students meet on specific places. Learners are not bound of time

like it was in time module as they progress according to their time and space. In Academic module, slow learners are given opportunity to be assisted by their class fellows using peer group discussion.

2.5.3 Competency Based Module

The purpose of the competency based module is the achievement of specific knowledge, skills and attitude which will be based on Blooms taxonomy. So mastering the concepts is very important. These modules are not class time bound but depends on the attainment of particular knowledge, skill and attitude.

In competency based modules, instructional organization's design is based on competency of learner rather than achievement of specific objectives. Attainment of competency is important in it. The evaluation of competency based module, attainment of skill is assessed.

2.5.4 Time Module

In time module, students are bound to time in completing particular course or subject. Students can take three or four subjects for a particular time period. They have to complete these courses. Students have to spend or give time to these subjects in order to complete them on time.

Learners can select single subject too. The learners who select single subject have to take class four to five times a day. In this way, the teachers know the students very well. The teacher knows about all the students and their individual differences. The time modules were implemented very effectively in Martin College Pulaski and Mount Vermon in Washington. In time module, academic session is divided into different length modules. It is latter combined to shape a year-based term or semester for learners.

2.5.5 *Concurrent Module*

Traditional semester systems come under the concurrent module. Students have to follow the traditional workload of taking classes, appearing in exam of mid or final term examination. In semester system, students fulfill their required assignments or individual tasks which have a deadline to complete them. There are almost three or four classes in each week for students. The duration of each class is 50 minutes or 60 minutes. The students have to take classes which are for the entire semester. Focus is on the input and output.

2.6 *Fundamental Characteristics of Modules*

Modules are developed according to the learning theory so there are specific characteristics of modules which are as under:

2.6.1 *Self-Contained Learning Material*

Modules consist of self-contained learning material. It is a complete package for learning. It starts with the objectives and includes activities and resources to achieve those objectives. Modules end on evaluation which is according to the learning objectives.

2.6.2 *Self-Instructional Material*

Modules support individualized learning of the learner. Modular approach supports independent learning of the learner. Modules are designed with the unique characteristics of the students in mind. So learners' progress according to their own pace and speed. The students are the owner of their learning.

2.6.3 *Individual Instruction for Learner*

In a traditional classroom setting, there are number of students having different capabilities and learning speed. It is difficult for a teacher to keep on all the students on the

same lesson keeping in mind their learning pace. Modules play a significant role in it. As slow learner if feels difficulty, they can repeat the same module again unless they master the concepts. Fast learners can go according to the pace and after completing one module can take the other one according to their own pace and speed.

2.6.4 Objectives

In module clearly and well described objectives play a vital role. As module writer select learning material, graphics, contents and design activities according to the objectives of the module. Clearly written objectives also useful for learners too as they know from the objectives where they go after.

2.6.5 Various Media and Learning Resources

Different students learn differently. Some students learn by hearing from others, some students learn by reading, some students learn by writing, some by watching movies, graphics and some students learn by listening to their teacher and class fellows. So, in this way module learning activities should be selected in a way that it fulfills all learners' needs.

2.6.6 Feedback (Reinforcement)

Another salient feature of module is the responses or feedback to learner regarding learning. Module gives immediate response to the learner whether they have achieved their mastery in that particular module or need to revise it again. This thing is very similar to programmed instruction, in which learner also gets immediate feedback or reinforcement. Reinforcement motivates the learner to complete it.

2.6.7 Active Participation

Modules are also designed in such a way keeping in mind the involvement of the learners. As in activities, learners are also engaged, so they easily comprehend the topics.

All activities are designed in a module as when to reply to question, when to perform and when to ask. Active participation of learners is necessarily.

2.6.8 *Evaluation*

In module, evaluation is made to come to know about student former performance in that particular module. When students complete one module they can move on to the next module after that. In this way, students can learn all the concepts and can move forward or complete all modules in a step by step.

2.7 E-Modules

Module is a self-learning, independent learning package. It is developed according to some objectives by following some instructional design model. Electronic module is just like the simple module with some differences. It is also developed by following the steps of some instructional design model. But it is not in printed form. It is in electronic form. It is also presented in a flexible way. It can be used on computer, laptop, mobile phone etc.

Learning material of module is arranged in a systematic way that students can learn it independently to achieve learning objectives. Electronic module can be used many times so in this way it reduced cost as compare to printed media. E-Modules can be used anywhere, anytime and anyplace. E-modules can be developed with less cost as compare to printed material (Kurniawan et al., 2019). Module are also durable and these modules can be used many times. There are also many characteristics of module. One important characteristic of module is that some e-modules are developed to be interactive e-modules. The benefit of interactive e-modules is that its navigation is easy. It consists of e-content, videos, audio, quizzes, assessment, images and enhanced with MS office (Ramadhan & Linda, 2020).

E-module consists of text, graphics, audio and video material. E-modules can be accessed by simple devices easily (Arosyad et al., 2021). E-modules can be accessed anywhere any time by the students. It can be accessed easily by smart phone. E-modules are prepared systematically according to set objectives.

As compare to printed module or simple module, e-modules have lot of advantages. It can be accessed anywhere and it does not require printing cost to print it (Castroverde & Acala, 2021). Material in e-modules is arranged in a systematic way to achieve the goals. E-modules are independent learning material which is carefully designed according to some set theory to achieve the learning outcomes (Sidiq et al., 2019).

2.8 Advantages of Using E-Modules

There are many advantages of using e-modules. It arouses independent learning among the students. It also creates interest among the students. Students learn according to their convenient time. E-module is organized in a systematic way to achieve the learning objectives. It creates self-directed learning among the students.

Many Researches have confirmed that e-modules have positive effect on the learning of the students. Students' understanding increased (Olanrewaju et al., 2021). There are various studies on e-modules in teaching (Arosyad et al., 2021; Hamid et al., 2021; Marvilianti & Sugihartini, 2020; Nardo, 2017; Prasetyo et al., 2021; Rozi et al., 2021; Marriott (2009) & Sidiq et al., 2019). These studies described the advantages of modules on students' academic achievement, in increasing students' critical thinking abilities, understanding and achievement also. Advantages of modules are desctried below.

1. The module should focus on identifying and developing distinct skill patterns.
Module objectives should focus on outcomes rather than abilities.
2. The module's strategy should prioritize self-contained, self-teaching, and self-motivation. In short, instruction should be explicit and autonomous. This could apply to both individuals and groups. Guidance is required to implement a certain module. Careful consideration must be given to all aspects of the process, including module presentation, implementation testing, and feedback.
3. Students should have access to all formative and summative assessment assessments, as well as their rubrics.
4. It should be clarified.
5. The module must include specialized content for the students' instruction.
6. Use a well-organized implementation plan.
7. The module's content must be grounded in reality.
8. Modules should engage students in realistic or simulated scenarios.
9. The module should allow for self-judgment by students, emphasizing the importance of self-assessment.
10. The final goals must be properly stated and understood by both the teacher and the students.
11. It must be able to connect the students' initial knowledge with their final understanding.
12. The information must be tailored to the students' skills; for example, easy and precise content should be provided for those with limited learning capacities, and further content should be made available for those who wish to learn more.

13. Once goals are set, they must be pursued throughout the process, and the actions taken must be carried out in the correct order.
14. The interactive environment is a crucial component that must be present for students to become capable civic members of society (Simunek, 2007).

2.9 Components of Module

The following elements are included in modules, which are primarily built using the same principles:

2.9.1 Guidelines for Using Modules

It is important to explain the form of the module, especially if it comprises units. Any color coding ought to be explained, as well as the module's workflow. Standard symbols can occasionally be useful for representing sections, for instance. Goals, a practice exercise, comments, suggestions, and so forth. If these symbols are used, they ought to be defined and explained. It is important to stress what each and every study segment requires of the pupil.

2.9.2 Purpose and Aim of Modules

The term "purpose" refers to the module's recommendation for whom and where it fits inside the program and a particular course. To include a curriculum grid or syllabus, it is especially useful since it correctly locates the module throughout the entire course. Aims are detailed declarations of the types of anticipated learning outcomes, such as enhancing comprehension or enjoyment of particular skill or knowledge areas. These statements are important since they address the broad topics covered in the module and help employers in understanding the situation.

2.9.3 List of Necessary Skills

Prior knowledge or abilities should be described in order to meet the module's objectives. For example, in the module on the introduction of mechanistic sketches, learners may be necessary to have some understanding of basic geometry concepts and to be able to answer certain basic geometry problems. As a result, these items must be mentioned in order to allow the module to function and facilitate future organization.

2.9.4 A List of the Goals

It is a crucial part of the module. Goals ought to be expressed in terms of behavior, that is, as accomplishments that are measurable and observable. The general objectives of each module should be stated at the outset, and each unit's specific objectives should come first.

2.9.5 A Preliminary Test for Diagnostic

Sometimes a list of predetermined skills alone is insufficient, and it could be necessary to include an exam designed specifically to gauge students' background knowledge requirements for the module. Should they fail the exam, they ought to be suggested on to surpass by reading, solving problems, or completing particular practical activities?

2.9.6 Using Equipment with Additional Resources

If the workshop tools, audiovisual equipment, and other materials are going to be used in the module. It is necessary to compile a list of all necessary items. Responses to real-world tasks, Separate sheets should be used for questions, output, and other forms.

2.9.7 Scheduled Instructional Activities

There are different activities which are already predetermined set of activities. These activities are the main activities of the module. These include input, process and output. Overall impressions that series should include text questions, self-evaluations, and quizzes.

2.9.8 A Completion of Posttest

The post-test items should each be unique and align with the objectives of the modules. Initially, during the module's testing phases, the parallel form or post-test additionally must be included in order to support the modules' efficacy in achieving educational development or measuring the gain. Both before and after finishing the program, learners respond to the questions in order, and the difference in scores between them yields a degree of gain. However, the post-test may be eliminated once the module has been published in its final form and used exclusively to evaluate mastery of the learning objectives.

2.9.9 Positive Reinforcement and Response

Because the module is a self-directed package, there is no direct collaboration between the teacher and the student. The instructor's position in the module is taken for granted. Finally, after the student has completed the course, it's time to provide them feedback and reinforcement attempted to conquer the post-test. As a result, each response to the test's items must be explicitly justified as either correct or incorrect. Thus, by using the crucial feedback process, learners can avoid misunderstandings and receive appropriate reinforcement (Ali, 2005; Farooq, 2015).

After reviewing the literature regarding module development, following are some

common components which the researchers have used regarding module development. These are also called the components of module development. These components include:

- Title of the module
- Duration, Time, Class
- Objectives of the modules
- Main Activities of the module
- Content (for each module and unit)
- Assessment (formative)
- Summative Assessment
- Further reading, references

2.10 Module Development Stages

Prior to developing modules, it's important to address typical questions about 5W and 1H. It is very important to understand that what is the importance of module and what resources are necessary for the development of a module. The answer to when is also important that at how much duration is required for the development of a module. As time is very important element in the development of modules. Cost is also very important in the development of modules.

Determine the target population's demands and select appropriate themes for module creation. Collect accurate information from both the sources on the chosen themes. Create a new application or module. Next is the planning stage. Create a plan for the development of modules. Determine module goals grounded on assessed needs. Then choose suitable learning skills or doings. Organize activities in a reasonable directive to accomplish desired learning outcomes. Decide on the module's format. Select module

components that form the structure for module development. Prepare and review the initial draft of the modules. Revise and adjust language, grammar, and sentence structure as necessary. Experts were consulted for module validation and pilot testing on a sample of participants. To ensure module reliability, target the population. Revise the module based on pilot testing results and expert feedback. Finalize the draft.

Moon (2003) in the book explains how to create modules for various levels that also match standard teaching and learning requirements. It is designed to be easy to understand, straightforward, systematic, and practical, with examples and succinct explanations provided throughout. In modules, there is an introduction about topic, as well as directives on how to use its components. There are also guidelines about how module will be utilized under guidance. There is also guide book regarding how to use specific activities of modules. The module should include guidelines for learning exercises. The handbook may also include questions and an answer section. The guide ought to be concise, offering main information.

Some professors choose to utilize audiotapes in conjunction with written study guides. These approaches can benefit slow readers and may be necessary for those with weak reading skills and non-readers. Instructors should monitor each learner's progress to encourage achievement and reduce frustration. After completing each module, teacher student discussion is very helpful.

Singh (2009) used the ADDIE instructional design paradigm for module development. Instructional design model provides extremely useful suggestions for curriculum designers. ADDIE instructional design model will be utilized for module development. As technology is a very important component today and it is changing every

year. Instructional design is now directly influence by the available technology which is now being used from grade 1 to higher education level. Due to technological advancement in technology, e-modules were developed by using ADDIE model. Following were the stages of module development in the light of ADDIE instructional design model.

1. First stage regarding module development was the analysis of the learner, learning environment. It was very important to know the learner in learning environment. Questionnaire was used for this to know about the learner. This was the first step of ADDIE model. During the analysis phase, the instructional problem was explained, objectives and goals were established, and the learning environment and learners' existing knowledge and skills were chosen.
2. Second stage was the design of the module. According to the objectives of the course main selection regarding teaching methods, strategies were done in this stage of module development. The design process involves determining learning endings, instructional tactics, and assessment technologies.
3. Third stage was the development of module for students in the feedback of first two stages. Throughout this phase, designers generated and organized learning activities and experiences throughout the design process. Technical resources were added.
4. Fourth stage was the actual implementation of module. It was basically done in the real classroom setting or in the setting required for an instruction. During this phase, trainings were necessary for different people. Facilitators receive training that covers course. During this phase, all necessary equipment, software, and CD-ROMs were made available. Books, activity sheets, additional materials, handouts,

etc.

5. Last and final stage was the evaluation of the module. It was done according to the objectives of the module. This phase included both formative and summative/overall evaluations. Former was throughout the ADDIE stages, culminating in a criterion-referenced summative evaluation.

2.11 E-Modular Approach in Teaching

Technological advancements, particularly in information technology, impact teachers' perspectives on teaching and learning activities. This includes preparing and implementing learning strategies. This technique combines computers and Telecommunications contributes to the advancement of information technology. Technological advancements significantly impact how teachers use their resources for teaching and learning (Entwistle, 2015).

Technology can help teachers create more effective teaching and learning activities. Teachers must develop something fresh, creative, and innovative, particularly in media issues. Choosing the proper learning media for pupils involves considering their qualities. Teachers must pay attention to ensure media use is effective and engaging for kids and according to the situation or conditions.

Nardo (2017) described in his study that e-modules are self-contained learning resources that are well planned and organized. Teacher facilitates the learning and explains whenever students face some difficulty. In addition to being imaginative, inventive, and adaptable for the advancement of technology, interactive teaching tools can also help students feel at ease and pleased, which promotes effective and efficient learning. It is necessary to have interactive instructional resources to assist pupils in autonomous

education. Learning necessitates a positive and empowering relationship. In order to keep students engaged and prevent them from becoming quickly disinterested in their studies, fun and empowerment can be achieved through the integration of education and entertainment concepts, or educational content. This type of entertainment might take the shape of tools, materials, or activities that provide students with joy while they engage in educational tasks.

Arosyad et al. (2021) explained that e-modules create autonomous learning among the students. The English e-module's development also paid special attention to the different multicultural ties while attempting to address the issue of conflicts between groups or ethnicities in modern society. As a result, this e-module also gives an overview of how many or diverse ethnic cultures offer beauty, thus understanding different cultures is essential to creating a coexisting life that is full of tolerance and respect for one another. Modules create better self-study skills among the students. Students are motivated to achieve the goals and students feel empowered during study. The development in the era of industrial revolution of 4.0 refers to use technology in teaching learning process (Sanjaya & Djamas, 2019).

Information and communication technology-based learning can help students comprehend the content being studied and lecturers communicate their curriculum more effectively. Interactive e-modules and other multiproduct facility educational resources allow the content to be changed to increase kids' interest in learning and make it more engaging. Teaching materials that are published digitally using text, graphics, or a combination of both are known as interactive e-modules. As technology is available in different form but to use the right technology for right time and according to situation is

very useful. E-modules in this way are very helpful in teaching and learning. E-modules are also effective in education (Prasetyo et al., 2021).

2.12 Validation of Module

Modules are developed according to the objective and they improved the quality of instruction. Modules are validated according to the objectives. Following things should keep in mind when assessing the modules:

- There should be alignment between the course outcome and the aims of the modules.
- There should be alignment between the objectives and aim of the modules.
- The content should be according to the objectives of the modules.
- There should be alignment between the objectives of the modules and assessment.

2.12.1 Objectives

The objectives of the modules mean that after learning that specific modules what knowledge, skills and information the students will be able to gain. Objectives of the module should be written in a clear language. Objectives should not be vague. Following points regarding objectives should be kept in mind.

- The language of the objectives should be clear.
- Objectives should be measurable.
- Objectives should be achievable according to the age and level of the learner
- What type of skills and knowledge the learner will get after going through the modules?

2.12.2 Assessment Criteria

Assessment of the module is an important element in module development. So, it

should be clear that after going through the module how the students should be assessed. There are different criteria for assessment of modules including grading and general criteria.

2.12.3 Assessment Strategy for Modules

Both traditional and modern methods are used for the assessment of the modules. The method which is used for the assessment of the modules contains the following characteristics.

- Objectives can be achieved through this method.
- Method will be helpful in assessing the learning of the students.
- The method will not be overburdened the students.

2.12.4 Selection of Content for Modules

Module should meet the requirements of the students and according to the objectives of the modules. It is the basic part of the module. Necessary knowledge and information is provided to students with the help of content. Following points should be focus while selecting content:

- Modules should be according to the learning outcome.
- While starting any module, students should meet the criteria for selection of module.
- The module should cover the necessary material.
- The selected content should be covered on time.

2.12.5 Strategies for Teaching and Learning

It should clear that in which mode the content will be presented to students. Is the mode will be face to face or online or hybrid mode?

Some important points while selecting appropriate strategy for the modules:

- The selected strategy should be useful in achievement of objectives.
- The strategy will be interesting and provoke students' curiosity for learning.
- The strategy is able to gain required learning outcomes.
- There should also be flexibility in designing or selecting method.

2.12.6 Supportive Material of Modules

At the end of module there is list of supportive material, references and links. These learning material can save the learners' time to reach the relevant material if they want to study more or want to explore more about any topic. The supportive material in the end helps learners to learn the material deeply and enhance the understanding of the learners. The instructional designer should first check all the links presented in the end of instruction. Relevant learning material should be shared with the students.

2.13 Module Schedule

Module schedule is very important. Instructional designer should keep in mind this thing that how that particular instruction will be delivered to students. So, same is the case with module developer, he/she develops modules keeping in mind the time and duration of particular course or subject.

Moreover, module consist of pre-determined learning activities, so time and duration plays a significant role. Developer made complete guidelines for the execution of the modules that how it will be executed in the class or what will be the scheduled to be followed for module execution. The developer also set the time and duration for different assignments, projects, individual and group activities which should be completed according to time line (Areaya et al., 2011).

2.14 Pretest and Posttest of Modules

Pretest and posttest are important components. Pretest is used in the start of any module or experiment. Posttest is used in the end. The purpose of using pretest and posttest is to check the effectiveness of modules. Pretest can also use to check the skills and inclination of learners. Pretest can also check the prior knowledge of students about any subject or course.

There are many uses and benefits of using pretest listed below:

- Pretest can check the willingness of students about some course, skill or for any subject.
- It can also check the required prior skills for any profession or training.
- Pretest and posttest can check the behavior of students and any changing in the behaviors of the students
- Pretest and posttest can be used to take the feedback of the students.
- Pretest and posttest can be used by the developer to take feedback which can be used for improvement purposes.

2.15 Characteristics of Pretest and Posttest

The basic features of pretest and posttest are usability, validity and reliability. Another thing about validity is that it is important for reliability too as if the results are correct but the scale is measuring wrong thing not the correct one than the validity problem. So, validity effects on reliability too. Both validity and reliability are linked with each other. The types of validity include face, content, construct, and concurrent validity (Mills & Gay, 2016).

2.16 Evaluation of Modules

Evaluation is an important component of module. Evaluation provides feedback to the instructor about learners' mastery of that particular knowledge, skills and information. It also provides feedback about learners' difficulties in particular thing. Evaluation of modules can be of different type. It can consist in the form of MCQ's, short question answer, oral test, individual work, and activity etc.

Module developer can use assessment method by using combination of the following types. Evaluation pin point the shortcomings of the learner in particular topic or module. As in module, syllabus is divided into small units so it can be easily pointed out that where the learners are facing difficulties and can be revised or improved in the light of feedback (Singh, 2017)

2.17 Advantages of Modular Instruction

Modular instruction promotes individualized instruction and group activities can also be included to gain the advantages of group learning in modules. Students can learn according to their own pace in modular approach.

Following are some advantages of modular instruction:

- Students can get benefit from modules not only in an educational institution but also at home too.
- Students and teachers both can get advantages from the module. They both can utilize their time in learning from modules.
- These modules can also be used for the training of the teachers. In many countries, modules are using in the professional development of teachers.
- Modules are implemented according to the group size whether it is big or small.

- New changes can be easily incorporated in modules; they are flexible to update for making any new changes.
- Modules in the long run are cost effective to implement.

2.17.1 Advantages of Modular Instruction for Learners and Instructor

Modular approach gives following advantages to instructor and learners:

- The instructor keeps the record of the weak students in the class rather involving every other problem of the class.
- Instructor saves time as the time and resources can be reused again and again, same thing is for learner too that learners can use learning resources again and again.
- Modules are one-time preparation expense and can be used by the institutions again and again. Other institutions can get benefit from the modules.
- Instructor also satisfied in the sense that he/she is getting feedback from the students and students provide feedback to instructor. Same benefits are for the learners. Learners are getting feedback timely which motivate them to excel further.
- Developing modular instruction will be easy for instructor if he/she keeps in mind the questions of how students learn and how the instructor can make the students' learning more easy and interesting.
- The instructor should focus on different learners' capabilities and learning styles. By always keeping in mind these things, learning process or learning can be effective proceeding to quality education.
- Learners cannot be given artificial marks or grading. Learners have to fulfill or complete the module in order to complete it.
- If for some reasons, learners cannot complete the module, learners can easily

complete or finish the module as it is available for learners as compare to traditional teaching which cannot provide this opportunity to learners.

- Module promotes self-directing learning. Learners become independent learner and this thing benefit the learners in their life to become lifelong learner.
- In teaching with modules, instructor can keep an eye on whole class. Instructor can see the individual difficulties of the learners and make them learn and at the same time bright students can get immediate feedback from instructor and complete their task at their own pace.
- Immediate Feedback is beneficial for both instructor and learners. Instructor from feedback can come to know about the success of their teaching. Learners from feedback can come to know about their progress and work according to it.
- As module consist of learning material and activities, so modular instruction cover less syllabus as compare to traditional method.

2.17.2 Difference between Modular Approach and Programmed Instruction

Programmed instruction and modular approach both are very useful technologies.

In programmed instruction, instruction is divided into steps and by using machine students move forward step by step by completing the previous step students can move forward to next step. In Modular approach, modules are developed keeping in mind the self-instructional material for learners according to facility of time and pace of the learners.

There is pretest and posttest used in the modular instruction but there is not any pretest and posttest in programmed instruction. In programmed instruction, learners get immediate feedback and move forward or repeat the same instruction according to the feedback. Programmed instruction is also called individualized instruction.

2.18 Difference between Unit and Module

In modular instruction, specific course is divided into modules and these modules are developed to achieve specific objectives. Time is also important factor in it. All activities are designed to complete them on time. There is also feedback mechanism in modular instruction.

Units are designed to achieve some vocabulary, skill, functions related objectives. Modules are developed to achieve more specific objectives. So, modules are more targets oriented. Units can become part of module or one unit can be divided into one or more modules.

A salient feature of the module is to examine the students according to the objectives. So, students are evaluated after completing module according to the specific objectives. Modules are developed in such a way that learners can revise it again and again until the mastery achieved. There is no such plan in modules. Students get promoted after completing modules and evaluation according to objectives (Frese et al. 2003).

2.19 Learning Theories

Learning theories place an important role in learning. The question about how people learn is not new one. Its roots go back to the Greek when scholars think about how people get knowledge and truth. They mostly believe that people get knowledge by observation around them or by discussing with each other.

In 19th century different scientists, psychologists and scholars also tried to know about this question of how people get knowledge. So, different learning theories came into being. As some people think that people get knowledge only themselves by observing the

environment or things around them. There are different learning theories. These theories include behaviorism, cognitivism, connectivism and constructivism. Learning theories are called the foundation of learning and it is also called the foundation of any instructional design.

2.19.1 Behaviorism

Behaviorism, as its name suggests, is concerned with human conduct. It developed from a cause-and-effect positivist mindset. To put it simply, activity results in reaction. Behaviorism in education looks at how pupils act when they are learning. More particular still, Behaviorism centers on tracking students' responses to certain stimuli that may be recorded, measured, and ultimately regulated for each student, when they are repeated. Behaviorism places more focus on the observable than on the mind or cognitive functions. In conclusion, anything cannot be researched if it cannot be observed.

Behaviorism is based on observable learning behavior. Key proponents of this theory are Pavlov, Watson, Thorndike and Skinner. Behaviorists believe that learning is an observable thing. Behaviorists believe that children learn by observing others. They learn things from adults, peers, parents, society and by observing what they are doing.

B.F. Skinner and Edward Thorndike are two more influential behaviorists. Because he developed operant conditioning, which stressed the use of both positive and negative reinforcement to aid, Skinner is especially well-known. People pick up novel behaviors. This was in stark contrast to Pavlov, who depended on basic reflexive reactions to particular stimuli, even though Skinner and Pavlov both encouraged habit-forming repetition of behavior. Early computer-assisted instructional (CAI) models created by Pat Suppes and others were greatly influenced by Skinner. Early CAI programs frequently

relied on repetition and encouragement to support constructive learning activities (Picciano, 2017).

Children's mind is like a "blank slate" and they are ready to accept knowledge. It is important to give children reinforcement. Repetition is also important in it. They don't believe any cognitive activity. Their major emphasis is on observable learning behavior (Khalil & Elkhider, 2016).

Behaviorism's emphasis on the analysis and assessment of various learning stages contributed to the creation of learning taxonomies. In order to break down and clarify the components of learning, behaviorists examined learning experiences on multiple occasions. In 1956, Benjamin Bloom was one of the first psychologists to emphasize the value of problem solving as a higher order ability and to create a taxonomy of learning that linked to the development of intellectual skills. The *Taxonomy of Educational Objectives Handbook* by Bloom (1956): In the educational world, Cognitive Domains is still a core text and required reading (Huitt, 2011).

2.19.2 Cognitivism

Cognitivism is the opposite of behaviorism. This theory believes that learning involve cognition. Behaviorism emphasis on the external behavior. This theory emphasis on the internal learning process. This theory based on thought process behind the behavior. According to this theory, learner is active in learning process. This theory emerged in late 1950s and lasts until 1970s. This theory has an impact on instructional design.

Despite being primarily written from a linguist's point of view, Chomsky's ideas were well-liked in other disciplines, like as psychology. Being multidisciplinary, cognitive science incorporates elements from psychology, biology, and neuroscience. The brain's

functions as well as the stages of cognitive growth that serve as the basis for learning and information acquisition using computer science and philosophy. Consequently, cognitivism has developed into one of the main theories of learning. With the development of increasingly sophisticated web software into personalized and adaptable learning programs that aim to incorporate learning analytics and artificial intelligence into education, the future of cognitivism is especially intriguing.

It has been suggested that cognitivism is a response to behaviorists' "rigid" emphasis on predictable stimulus and response (Harasim, 2012, p. 58). The idea that the mind plays a significant role in learning was advanced by cognitive theorists, who aimed to concentrate on what occurs in between the stimulation from the surroundings and the reaction of the students. They believed that mental processes like motivation and creativity are essential components of education that serve as a conduit between environmental cues and pupil reactions.

The example of cognitive learning theory is the theory of Piaget. Piaget' theory consist of four stages. This theory explains in steps that how a child learns about the world and in each stage how this learning development occur. This theory has changed the learning (Khalil & Elkhider, 2016).

2.19.3 Constructivism

Lev Vygotsky, John Dewey, and Jean Piaget were among the education theorists whose work ran parallel to behaviorism and cognitivism. They used social constructionism as a lens through which to view teaching and learning as intricately interwoven social processes between both educators and learners. According to Vygotsky, learning is the process of addressing problems, and the foundation of learning is the social building of

solutions. According to Vygotsky, learning occurs when a student, a teacher, and an issue that needs to be resolved constitute a "zone of proximal development."

The instructor creates a social setting where students can piece together or build the information needed to solve the challenge with others. John Dewey also believed that education is a sequence of real-world social experiences that students participate in Learn by doing, working with others, and sharing your reflections. Even though it was created in the early 20th century, Dewey's ideas are still heavily included into a large portion of social constructivist instructional design today. Whether in a face-to-face or online class, the use of reflective practice by both the teacher and the student is a pedagogical cornerstone for interactive discussions that replace direct lecturing

Constructivism is a learning theory. John Dewey, Vygotsky and Jean Piaget are the main proponents of this theory. According to this theory, learner constructs his knowledge when he encounters a problem in real life. Learner when interacts with the environment increase his or her knowledge (Anggraini & Putri, 2020). John Dewey in this way explained that learning happens when the learner is involved in some situation, it is learning by doing. Application of this theory in education implies that when learners find educational activities, learners construct knowledge when interacts with the learning environment (Jirasatjanukul & Jeerungsuwa., 2018; Picciano, 2017).

Warliani et al. (2017) stated that technology-based constructivism has positive contribution to the understanding and achievement in the subject of physics. Students are more confident and they learned concepts easily.

With a background in both psychology and biology, Jean Piaget built his learning theory on four phases of cognitive development, which start at birth and last until a person

reaches adolescence and beyond. When creating the Logo programming language, Seymour Papert drew The idea of developing socially engaged micro worlds or communities—where kids work with teachers to solve problems while studying social topics, scientific and math equations, or case studies—came from Jean Piaget. It is simple to apply Papert's method of using computer technology into problem solving to a variety of instructional design aspects.

2.19.4 Connectivism

One of the first MOOC pioneers, George Siemens (2005), has been the primary proponent of connectivism, a learning model that recognizes significant changes in the way knowledge and information develops, evolves, and changes due to extensive data communications networks. Online Learning is now more collaborative, community, and even crowd-based thanks to technology, rather than internal, individualized activities. Siemens praised the strength of networks and Alberto Babasi's work in establishing the idea. Connectivism is another learning theory of this digital age. It is also called the learning theory of 21st century. Main proponent of this theory is Siemens. He explained about learning that it does not happen within an individual it happens outside also (Jirasatjanukul et al., 2021).

Siemens pointed out that the information flow dynamic is what propels connectivism as a theory. Pupils must comprehend and be given opportunities to navigate and identify vast, ever-changing information environments. Siemens put forth eight guidelines for realism. Connectivism works especially well in classes with large enrollments and when the goal of the learning process is knowledge creation rather than knowledge dissemination.

According to this theory, learning does not occur within an individual. Learning also occurs when an individual interacts with the digital world. This theory implies that knowledge change on daily bases. As technology is changing day to day, an individual must learn new technology or change his knowledge according to the need of the time (Jirasatjanukul & Jeerungsuwa, 2018; Picciano, 2017).

Downes (2019) explained in detail about connectivism in his book. He explained that knowledge is distributed among networks and learning is ability to construct and traverse those networks. This theory tries to make effective use of technology as technology is an effective tool for learning for today's and future generations. Example of using connectivism in teaching is arrange activities like in which students have to write a blog or launch a podcast for particular subject.

2.20 Instructional Design

In instructional design history, there is no particular event that make the beginning of instructional design. There are number of events that contributes towards instructional design. Comenius was the first who used the visual aids in teaching. He designed the first illustrated text book for children's use.

In 20th century, John Dewey worked for the idea of "linking science". But there were no specific organization at that time which worked for how people learn and how to deliver instruction effectively. The focus of the organizations at that time was only curriculum and content but not focus on the learner. The discipline of educational psychology began after the formation of APA in 1892.

At one time the purpose of getting education in USA was to read the pages of Bible before World War 1. It was changed as time passed and with the struggles of many scholars

who played an effective role in the development of instructional design field.

Instructional design is an emerging field and profession. ID improves not only individual performance but also improve the productivity of an organization. The designer is not only prepared any instruction but also to search and identification of problems and their solution. Their role is now challenging in today's era. They have to consider the learners, their learning style, environment, organization, available technology (Rothwell & Kazanas, 2015).

The main job of the instructional designer is to design instruction and develop something to know about some particular knowledge, skill and inspires the learner to further investigate about that topic. The “something” means the learning material or learning experiences which the instructional designer develops. It can be in the following forms:

- Lecture
- Power Point Presentations
- Curriculum
- Some type of software
- Demonstration for topic
- Some booklet
- Simulations
- Animations
- Graphics
- Audio Visual Aids

An instructional designer can use one type or mixture of these for developing

learning material for students.

2.21 Instructional Design Parameters

In instructional design, the most important thing is the target group and learners. It is very important to know about the students, their learning style, previous knowledge, culture, learning styles, classroom communication, barriers in classroom communication etc. instructional designer should have enough knowledge about all for preparation of any instruction.

Parameters of instructional design are included those parameters which play an important role. For online instruction like MOOC, parameters of instructional design include video, lectures, notes, activities and assessment. These parameters are also considered in classes in physical setting. So, it also depends on the instruction whether it is in physical setting or online setting. Instruction should be more interactive and should engage the learners in learning. Instructional activities should create curiosity and interest among the learners (Shukor & Abdullah, 2019).

2.22 Instructional Design Model

Models are called the “reflection of reality”. Basically, the models are used to explain things more accurately without which it is impossible to explain them. For example, model houses are prepared to show some examples to the customers. From this the people get an idea about them. The things can be changed in somewhat but the model present an idea into reality (Smith & Ragan, 2005).

Instructional design model also provides basic idea to the instructional designer that how the instructional designer will develop learning experiences or learning material for

students.

Instructional design model was first time appeared in 1960. Instructional design model can be used for course development, training and lesson planning and module development also. In literature, there are hundreds of instructional design models. Which instructional design model should be used; it depends on the learners, course, training, learning environment, learning context, available physical, financial resources, available technology and learning objectives too (Khan & Law, 2015).

Instructional design model provides only guidelines to follow during developing instruction. These guidelines are not hard rules to follow for development of instructions. So, instructional designers can change or adjust according to their organizational guidelines or restrictions. Different organizations follow different rules and procedures as there are different procedure for education in school and university. University follow credit hour system and school follow yearly system. There is also difference in the system of private institutions and government institutions too (Reigeluth, 2013).

Instructional design can be an individual or consist of a team. In case of an individual, individual can play all possible roles which are required for an instruction like of content manager, graphic designer, programmer etc. if there is a team for instructional design development, every member of team have to fulfill their role. Today, instructional design teams consist of following members in team:

- Artists
- Writers
- Subject-specialists

- Programmers
- Project Manager
- IT Expert
- Software Developers
- Media Experts
- Social Media Experts
- Assessment Specialists
- Human Resource Specialists
- Assessment Experts
- Evaluators

Instructional design team consist of various personnel. So, it depends on the instruction. Sometimes leaning objectives can be achieved by simple learning resources. It is not possible to use same model for all learning situations and scenarios. So, an instructional designer very carefully selects instructional model keeping in view all the above discussed things. Details of some instructional design models are discussed below.

2.22.1 ADDIE Model

The general word "ADDIE" refers to an organized method of developing instructional materials. With five main components, analysis, design, development, implementation, and evaluation, ADDIE is a fundamental and universal instructional design that draws its inspiration from system theory. Since there are more than 100 ID Models based on the generic ADDIE framework, the term can also refer to a family of models that have similar underlying structures (Molenda, 2003)

E-modules are developed using ADDIE instructional design model. ADDIE model

is appropriate for developing educational resources and products. It is very helpful in developing educational modules also. Constructivism, connectivism will be the learning theories for modules development. Incorporation of the learning theories makes ADDIE model very effective, interdependent, student-centered learning and systematic. Acronym of ADDIE is Analyze, Design, Develop, Implement and Evaluate. ADDIE can be applied on various environments and in various paradigms (Dick & Carey, 2014).

Not only is ADDIE a process in its entirety, but each of its phases is a distinct process with unique guidelines and protocols that must be followed. Since each phase's output becomes the subsequent phase's input, poor management at any point might have an impact on the entire procedure. Because of this, evaluation has been regarded as a continuous process and is essential to preventing errors at the conclusion of each stage. In order to create effective classroom education that takes into account the needs and expectations of students from varied backgrounds, ADDIE offers a baseline. While researchers and instructional designers have created and developed a number of instructional design models, ADDIE is the most general, fundamental, and straightforward depiction of instructional design that includes all of the necessary processes for an educational system. Thus, the goal of the current study was to use ADDIE to create an instructional design in the subject of Educational Leadership and Management.

ADDIE model is based for performance based learning. The purpose of using this model is that learning should be student centered, inspirational and innovative. Learning should be inspirational. Students should be active during learning process. ADDIE model is appropriate for developing educational products. ADDIE is also basis for guided learning. In guided learning, the teacher and students both mutually search for the ways to

share the knowledge and skills in the same learning space etc.

Figure 2.1

ADDIE Model



Basic purpose of using ADDIE here is to use this model in the development of e-content modules based on constructivism and connectivism learning theory. The purpose of using ADDIE here is the construction of students' knowledge. Their learning should be student centered innovative and using connections of networks also (Branch, 2009). Below is the brief description of the phases of ADDIE model.

Analyze

Analyze is the first phase in ADDIE model. Purpose of this phase is to analyze the performance gap. In this phase, it is analyzed who is the intended audience, who is learner. It is determined in this phase that what will be learning objectives, intended goals to fill the gap. It is also determined in this phase that what type of resources need in order to achieve the learning objectives. Summary is the deliverable of this phase which is the overall report about all analysis (Branch, 2009).

Design

Second phase in the ADDIE model is design phase. This phase aims to identify the desired performance and methods. So, for these various procedures are associated with this phase. Some procedures which are involved in this phase are composition of objectives,

strategies for testing etc. The deliverable of this phase is design brief (Dick & Carey, 2014).

Develop

The purpose of this phase is the actual development of learning modules according to objectives. Development of learning material and content, selection of appropriate teaching methodology, teaching methods all are there in this phase. The procedures which are involved in this phase are including: to generate the content, selection of media If available and if the media is not available than develop the appropriate media. Students' guidelines are also developed. It is also included formative revision a conduction of pilot test.

Implement

Actual implementation is done in this phase. The purpose of this phase is to prepare learner and learning environment for learners. Learners should be engaged in learning. Teacher and student both should be prepared in this stage. All learning content or material which is developed according to the learning objectives it is delivered in the learning environment. The main purpose of learning is to achieve the learning objectives. Implementation strategy is the deliverable of this phase.

Evaluate

Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives. Evaluation is done that what were changes have done or what improvement have been in the students before and after instruction of that particular learning material. So evaluation tools are also developed to assess the learning and material improvement. The deliverables of this phase is the

evaluation plan which explains that how the students are evaluated and assessed.

2.22.2 The Smaldino, Lowther, Russell, and Mims Model

ASSURE model was originally developed by Heinrich, Molenda, and Russell (1981). Afterwards Smaldino joined the team in their work. They continued their work in the development of model. Smaldino, Lowther, Russell and Mims have worked in the eleventh revision of the model. Their book is widely used in college by teachers for developing instructional media content (Karakış et al., 2016).

ASSURE is acronym for

A-Analyze learners

S-State the objectives

S-Select media and materials

U-Utilize media and materials

R-Require learner participation

E-Evaluate and revise

Figure 2.2

ASSURE Model



ASSURE model is a liner model like all other models used in the classroom. Here

A stand for Analyze learners. It is important to know about the learners. It is not necessary to take all information about learners but the necessary information a teacher should know about the learners it will help in designing the instruction. S stands for state the objectives. Objectives should be clear, specific and measureable. On the basis of objectives selection of content, material, learning strategy, assessments are determined. S stands for select media and materials. Usually, teachers in classes don't have much time for selection of media as they are overburdened. But this step is also very important. Next U stand for utilize media and material. After selecting the appropriate content their utilization is important in classroom settings. R in model stand for requires learner participation. So here learners' participation is important. Learner should be active in learning process. Learner feedback is also important in instruction. So, last step is the Evaluation. Evolution means to assess the success of instruction and performance of learners according to the objectives (Branch & Dousay, 2015).

ASSURE model is excessively used by teachers in the classroom. Its liners approach is also important in selecting the classroom content and content should be interactive and according to the age and interest of the learners.

2.22.3 The Morrison, Ross, Kalman, and Kemp Model

Originally developed by Kemp, this well-known ID model was modified in 1994 by Kemp, Morrison, and Ross. Kalman joined the group of writers in the sixth edition of their book, but the Kemp's significant influence is still evident. The incorporation of design concerns for technology-based training is the most notable modification to this paradigm. The five categories of computer-based, web-based, and remote learning instruction include drill-and-practice, tutorials, games, simulations, and hypermedia. The advantages of every

style of training are enumerated, and both group- and individual-based instruction's design factors are covered in detail. A curriculum planning-focused instructional development paradigm is presented by Morrison, Ross, Kalman, and Kemp in 2011 (Branch & Dousay, 2015).

The four interconnected framework elements as they relate to other parts and continuing activities make up the entirety of the Morrison, Ross, Kalman, and Kemp model. That, as the figure's outer ovals show, persist over the course of an instructional design project. The model developed by Morrison, Ross, Kalman, and Kemp expresses their conviction that ID is a never-ending cycle in which revision is an ongoing process linked to all other components. They believe that the educator or designer can begin at any point and work in any sequence. This is basically a general system perspective of growth, in which each component is interrelated and can be carried out separately or concurrently depending on the situation (Branch & Dousay, 2015).

The Morrison, Ross, Kalman, and Kemp model presents the developer's freedom to begin wherever, but in their story, it follows a traditional framework that begins with themes, tasks, and purposes. The phrases, themes, and subject matter that the model chooses to determine what will be taught make clear its attitude toward the classroom.

They have explained that instructional design is a cyclic process. Addition of technology can give modern touch to this model. Kemp has made significant additions in the model particularly regarding technology based instruction, web based instruction, including or adding technology in the instruction. So they have classified instruction into five categories by including: "drill and practices, tutorials, simulation, games and hypermedia". They have described the benefits of using these for individualized and group

instruction.

Figure 2.3

Morrison, Ross, Kalman and Kemp model



2.22.4 The Bates Model

Bates developed a model which can be used for distance learning. He developed this model based on his experiences regarding distance learning. He knew that mostly students face the problem of interaction in distance learning. Bates model consists of four phases. It was similar to ADDIE model. Drawing from his experiences in Canada, Bates first proposed a model (Figure 18) for the development of open and distance learning. Taking into consideration the model's constraints and the next training, he observes that much pre-planning and design are required for remote learners, who frequently operate mostly on their own schedules and possibly independently. Bates expresses special concern about the lack of interaction and flexibility in many distant learning programs and emphasizes the necessity of giving this problem careful consideration when creating new courses (Branch & Dousay, 2015).

There are four stages in Bates' "front-end system design" model: creation of the course outline, media selection, material development and production, and course delivery.

He specifies the necessary team roles for each step as well as the activities or problems that must be resolved. Bates claims that this model is based on a systems approach, however it just suggests some of the ADDIE features rather than addressing them explicitly.

Bates takes a distinct approach to distance learning and e-learning because of its emphasis on technology and context philosophy. With the help of the ACTIONS framework, multiple technologies can be assessed in particular learning environments, such as the four forms of e-learning (full online, mixed mode, print- or broadcast-based distant learning, or supplementing classroom instruction).

2.22.5 Sims and Jones Model

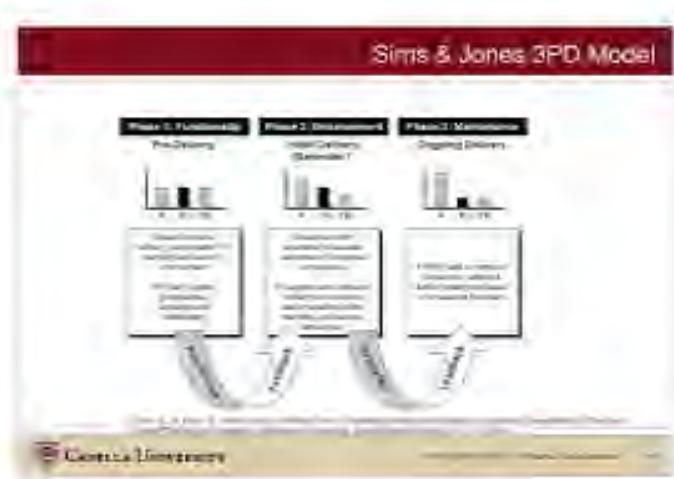
Sims and Jones Model is a three phase model. The model 3PD (Three Phase Development model) can be used in instructional design for web based and online learning. The authors said that traditional method of instructional design was not appropriate for instruction due to change and advancement in technology. In order to concentrate on the production of end-to-end learning content and assessment, Sims and Jones introduced the Three-Phase production (3PD) approach for instructional design in 2002 especially for online learning on the web (Branch & Dousay, 2015).

According to Sims (2003), the author believes that conventional paradigms of instructional design are not appropriate for the varied skill sets needed to execute successful online learning or the dynamic learning settings typical of online training. What distinguishes the 3PD model from others is its intriguing focus on scaffolding, which serves as the foundation for its inclusion in our survey.

The idea of successive approximations, or iterative development, is also fundamental to the 3PD model. The writers point out that the goal of first development is to give functionality. Subsequent iterations are subsequently improved using resources.

Figure 2.4

Sims and Jones Model



The authors also acknowledge that applying the 3PD model suggests that the initial environment is constantly subject to change, necessitating resources to keep things moving forward for the duration of the project. An explanation of particular staff resources used in planning, constructing, and upholding the learning environment is another distinctive feature of the 3PD approach. For designers who do not have access to all of the specified resources, these factors can be seen as model restrictions. However, 3PD offers an adjustable approach for organizations and instructional designers just starting out in the field that caters to the needs of learning designers in online contexts (Branch & Dousay, 2015).

2.22.6 PIE Model

The PIE model is presented by Newby, Stepich, Lehman, Russell, and Ottenbreit-Leftwich (2011) in a book that is mainly intended for in- and pre-service teachers. The three "phases" are planning, implementing, and evaluating, or P-I-E of the prototype. It is obvious that the emphasis is on leveraging media and technology to support the same person or small group of people who are creating and delivering the lesson in the classroom. PIE, according to the authors, emphasizes the actions that educators and students may take to influence learning. According to them, media, and especially developing technologies, can be very important as long as its usage is properly thought out, carried out, and assessed.

Information about what, when, why, and how students will learn is gathered as part of the planning process. Special attention is paid to the ways in which technology may help in the creation of efficient and inspiring instruction during this stage. An outline, lesson plan, or blueprint that will address a desired goal is the artifact developed during planning. The implementation phase deals with carrying out the strategy through a variety of media and techniques, with an emphasis on integrating computers into the classroom. Evaluation covers learner performance as well as the application of data to enhance teacher and student performance over time. It can be used by teachers in classroom instruction. According to this model, new technology can play an effective role in classroom instruction (Branch & Dousay, 2015).

Figure 2.5

Newby, Stepick, Lehman, and Russel model.



2.22.7 The Gerlach and Ely Model

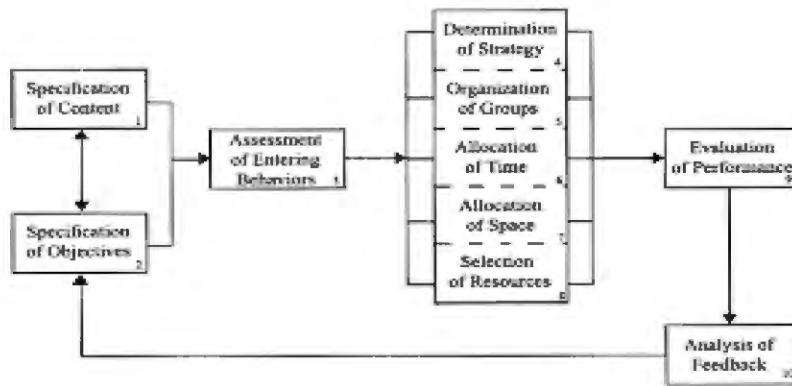
The model developed by Gerlach and Ely. It is linear in nature. This model starts with the two activities regarding objectives and content at the same time. Gerlach and Ely has specifically described that specification of objectives is the first task in the model and then selection of content come. Learning objectives should be clear and objectives provide the basis for other activities. Next comes the learners' entry. This step is included in many classroom oriented model. Then there are five activities to be performed in next step. Evaluation and feedback is at the end of the model.

The assessment of student performance comes next in this sequence of five decisions made at once. This step focuses the teacher's or designer's attention on gauging the attitude, and in the direction of the lesson and its substance. The learner objectives and evaluation are tightly related, with special emphasis placed on assessing the overall

efficacy and efficiency of the instruction. In their model, providing feedback to the teacher evaluating the success of the instruction with the option to make changes for the next time this topic is presented, is the final phase. Reviewing all of the previous processes in the model is the main goal of feedback, with a focus on revisiting decisions made about the objectives and methods selected.

Figure 2.6

Gerlach and Ely Model



The Gerlach and Ely Model can be used in the instruction by the teachers. This model describes the instruction steps in a comprehensive manner (Gerlach & Ely, 1980).

2.22.8 The Wiggins and McTighe Model

The model developed by Wiggins and McTighe is called “Understanding by Design (UbD)” or also called “backwards design or backward planning”. UbD model has basic eight principles.

UbD model has three stages. First stage is to determine the required results of the instruction that what will be the long term goals and targets that learners will achieve or will do after the instruction. Second step in the model is the assessment that what type of assessment will achieve the required results or outcome. In second stage, that particular

assessment criteria will be discussed. Actual planning comes in the 3rd stage. In this stage, learning experiences, activities are to be selected to attain the required result of stage one outcome. As, this model is called backward model so that is why it starts with the desired results of instruction and in the end come towards the actual planning. Wiggins and McTighe stress to the need that all three things should be aligned to one another (Branch & Dousay, 2015).

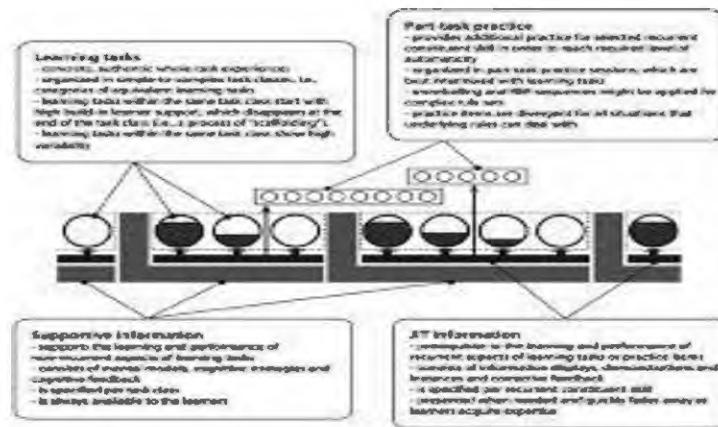
2.22.9 *The Van Merriënboer Model*

The 4CD/ID (Four-Component Instructional Design) model was originally developed by Jeroen van Merriënboer. This model proposed a holistic approach in designing instruction as compare to traditional instructional design. This model focuses on the integration of procedural, affective and declarative learning. This model is simplified into ten steps and these ten steps are distributed among four components. Following are the four components of the model:

- Learning tasks
- Supportive information
- Procedural Information
- Part-task Practice

Figure 2.7

Van Merriënboer Model



These four components are further divided into steps. These are the blue prints of complex learning. 4CD/ID provides a different approach in designing an instruction. However, there is focus of model on designing instruction and there is lacking of evaluation of instruction here. All things considered, the 4C/ID model offers a distinctive method for creating educational experiences. But the emphasis is on creating and implementing instruction; there is little mention of turning on, assessing, and updating instruction (Branch & Dousay, 2015).

2.22.10 Dabbagh and Bannan-Ritland Model

Dabbagh and Bannan-Ritland has spent a long time in the designing, developing of instructional model which can be used in online learning environment. So, they have created Integrative Learning Design Framework (ILDF). Basically, this model used an iterative approach in designing instruction.

Figure 2.8

Dabbagh and Bannan-Ritland Model



There are three major components of this model. Following are the three components of the model:

- Pedagogical model or constructs
- instructional and learning strategies
- online learning technologies

According to Dabbagh and Bannan-Ritland, the three elements work together to create a never-ending cycle in which educational models are predicated on learning methodologies made possible by the application of learning technologies. The emphasis on usage-centered design that distinguishes ILDF from other instructional design methods is arguably its most distinctive feature. The needs of the final user are taken into consideration and interface design is typically the focus of usage-centered design. With the emphasis on online learning, some instructional designers may find this emphasis to be both advantageous and challenging. ILDF provides an integrated approach in traditional instructional design models (Branch & Dousay, 2015).

The social and cultural context is the final component of the ILDF paradigm. This focus on context places design and development in a setting that is similar to many contemporary instructional models constructivist setting. This categorization does not necessarily make the model unique, but it does allow for some leeway in terms of expectations and how collaborative and interesting online learning might be designed. With more educators attempting to create online courses, ILDF offers an integrated method of approaching conventional instructional design.

Nonetheless, the ILDF model's general architecture is adaptable enough to support applications pertaining to the creation of goods and programs. The focus on this paradigm differs from other classroom-oriented models in that it is designed for online situations through course development.

2.23 Traditional Approaches of Instruction

Traditional approaches of instruction include chalk and talk methods of instruction. Teacher centered approach is the common traditional instructional approach. It is not according to the needs of the learners' interest and intellectual level. So, in traditional type of instructional approach, teacher is considered the expert in knowledge. The focus is on the text book and teacher's knowledge. So, students are most of the time passive and dull in the classroom. They are just limited to the bookish knowledge and not more than that. Focus is on the memorization of facts and figures.

One of the traditional instructional approaches is lecture method. The origin of this method was in the time when printing was not common. So, at that time students were compelled to rely only that information that teacher present in the class. The role of the student in this method is passive and it is not according to the learner' needs and interests

(Shaheen & Khatoon, 2017).

2.24 Difference between Traditional Teaching and Modular Teaching

There is difference between traditional type of teaching and modular teaching.

Following points show the difference between traditional teaching and modular teaching.

- Objectives are defined properly and specifically in modular teaching where as in conventional teaching there are no objectives which are specifically and properly defined. In conventional teaching, teacher is just teaching and learners are unaware of the objectives of learning.
- Modular teaching consists of learning activities which support the learning of the learners where as in conventional teaching, teacher is mostly busy in giving lecture or assignments to the students or just give task of reading or within any topic. So, students are unable to understand anything or just memories the concepts in order to pass the examinations.
- In modular teaching, students are presented material which is mostly consist of individualized instruction. In conventional teaching, teacher present material which is group based material.
- In modular teaching, learners remain active during lectures; where as in conventional teaching learners remain passive.
- The main focus of the modular teaching is to improve the performance of the learner and traditional teaching, teacher focus on the performance of the teacher instead of the learners' performance.
- Teacher role in the modular teaching is of facilitator or motivator where as in conventional teaching teacher's role is of disseminator of information.

- Students are assessed in modular teaching objectively, here different tasks are given to students on the basis of these tasks teacher assess the students. In conventional teaching, students are assessed subjectively.
- Students are given enough time to complete the tasks and students are given chance to complete that particular module if not complete the required task. In conventional teaching students are failed if not perform well.
- Students are rated in modular teaching on the basis of their performance. In conventional teaching students are rated on the rate of class.
- Students are reinforced after small topics and units of module. In traditional teaching, students are reinforced after the major exams which are the annual examination (Malik, 2012).

2.25 Difference between Modular Approach and Lecture Method

To examine the structural variations between the methods mentioned above, a comparison between the lecture method and modular instruction can be made. Postlethwait and Hurst (1972) had explained the difference between modular approach and lecture method in the following:

- i. The main difference between the two methods involves emphasis rather than kind, and degree that are important in learning.
- ii. The instructor is estimated to examine and describe many characteristics of training in exact, comprehensive, visible, and developmental terms while using modular instruction. The instructor carries out the lesson plan in order to maximize learning based on this analysis. However, with the lecture style, the instructor arrives, gives the lesson, and then leaves.

- iii. Students participate completely in their studies when learning through modular teaching, as opposed to the generally passive nature of lecture-based learning.
- iv. In modular education, a complex task is broken down into manageable chunks to bring it down to the students' level, and in traditional there are units that explain concepts according to the topics' nature, which makes them difficult for students to understand.
- v. In order to assess the efficacy of modular teaching, a rigorous pre- and post-testing procedure is required; however, the lecture method lacks this structure.
- vi. While these concepts are considered in lecture courses, they are not as heavily emphasized. In contrast, the learning materials provided to students in modular courses are clear, concise, and up to their level.
- vii. During modular education, students are told exactly and as clearly as possible what they need to learn and how to apply what they have learned. The lecture approach imparts significantly less knowledge to the students. Regarding the classroom environment and the teacher's expectations. They are informed that they will be tested on this content, given specific reading assignments, and required to attend the lectures. In this way, pupils are left with uncertainty by the lecturing style.
- viii. The majority of studies comparing the efficiency of lecture versus modular instruction have found that students prefer and find modular instruction to be more effective. They show a clear preference for it and are more engaged, hardworking, and learn more from it.

ix. Compared to the lecture style, the modular instruction is quite structured. It gives the student a sense of security. It discourages taking shortcuts and enables pupils to pursue deeper knowledge.

Traditional Pakistani education often employs the lecture method; however, the modular approach is a teaching strategy that divides information into manageable modules. Modules are self-contained, self-study resources that cover a single conceptual unit at either speed of teacher or students. The modules' content is divided into manageable chunks, with distinct learning objectives and results for each chunk.

2.26 Learning Activities in Modules

Various studies have mentioned some ideas that are useful for developing the module activities. The following are these guiding principles: Initially, the educational tasks need to be connected to the past information that the prior to engaging in the learning activities. The results that follow the use of the module, which denotes the terminal behavior, make up the second principle. The basis of the third principle is the requirement for learning activities in order for a student to acquire a specific skill. This only occurs when the learners have an understanding of the learning process's goals and objectives and the learning activity is beneficial. In order to help them make the required adjustments, it is imperative that you inform them of the outcome of their pre-test. Fourth, accurate grading is required in order to properly assess the students. Simple to complex tasks should be designed into learning activities. Fifth, the fundamental component of the learning process is freedom and flexibility. Every learner's compatibility ought to be valued. The sixth principle pertains to the implementation of learning activities, signifying increased practice and improved learning outcomes. Each learner needs to be given the

time they require in order for their behavior to ultimately change.

The seventh principle has to do with how each person learns from their learning activities.

They ought to be made aware of their progressive nature and rate of change (Kelting-Gibson, 2005).

- For students to be satisfied with their learning differences, a variety of learning experiences and activities are required.
- The learning activities should employ a multi-media approach.
- The usage of learning activities with several modules by the instructor is possible.
- Multi-content learning exercises are available for use by instructors.
- Various methods could be applied to educational tasks.
- Various modules could be employed for educational purposes.

In 1987, the "United Nations Educational Scientific and Cultural Organizations" held a workshop in Asian countries to address certain issues related to the proper execution of the modular program. The workshop focused on these issues.

- Is the material included in the module relevant to society?
- Does the module's content make a connection between education and the advancement of the country?
- Is the unconventional teaching approach supporting the modules that ultimately correspond to the roles?
- Is this module helping students around the country with their problems?
- Will this module establish the connection between formal and non-formal education?

2.27 Module and E-Modules Related Researches in Pakistan

Students must be given self-learning activities to do as part of the lifelong learning process. Learning never stops even after receiving a degree; rather, it is a lifelong process that can be extended at any time. Feedback is a helpful tool at any stage of life for the appropriate reflection of the content to the students. There are a variety of learning activities available without the need for rubrics. Additionally, self-learning could take the form of self-assessment with the use of rubrics (Sikand, 2017).

Ali (2005) compared the traditional method with the teaching of Biology in the modular method. The modular method was effective in teaching. The proper training of the instructor in using modules in the classroom is necessarily. Moreover, the modules should be developed in order to check its effectiveness in skill, aptitude, behavior, intelligence, self-concept, academic and social adjustment etc.

According to Sikand (2017), modular activities are helpful for teaching "Mechanical Physics," and the NUST has confirmed this. The competency-based curriculum forms the cornerstone of these kinds of modular programs. Regarding the appropriate idea introduction, the foundational knowledge is more beneficial for "Technical Education" instruction at the bachelor level.

Ahmed (2007) carried out a study to investigate the efficacy of the modular method in secondary chemistry education. He created modules based on two chemistry chapters and applied them to particular topics. A notable distinction in terms of improvement was observed between the conventional group and the modular group. The modular group outperformed the traditional group in terms of improvement.

A study on the restructuring, enrichment, and modular technique of content reorganization in the master's level International Relations curriculum was carried out by Lodhi (2007). It was shown that master class students who received training through modular methods outperformed those who received instruction through traditional methods in terms of sensitivity, national interests, culture, and core values. When it came to choosing a political profession, the experimental group showed 20% more attention than the control group.

Khalid (2011) developed modules for his study. The experiment was conducted on the students of B.Ed. program. This was a yearlong study. It was conducted through proper activities like role play, discussion method, with the help of related literature. It was found that the tolerance can be developed and its level can be improved in the students' subject to the conditions that the efforts should be consistent and continuous for that.

Malik (2012) examined the differences in the effects of traditional and modular teaching methods on secondary students' overall comprehension. Ninth-grade students from one male and one female secondary school were selected at random to serve as a sample for the experiment. To gather information, a general comprehension scale created by teachers was used. The independent sample t-test was employed for data analysis. When comparing the general text comprehension of children using conventional versus modular techniques, significant disparities were observed. In a teacher-made scale, students who learnt using the modular approach had a higher mean score than those who learned using the traditional strategy. There was a noticeable gender difference in the scores, with male students outperforming female students on the general comprehension measure. There was a noticeable gender gap, with male students performing better.

Marwat (2013) suggested that for effective comprehension, one is single subject module. This kind of module explains every concept in a subject. To help students understand the topics more fully, this technique is beneficial.

Shaheen (2013) carried out an experimental study at the secondary school level to determine the effect of a modular strategy incorporated with ICT on students' achievement and retention in biology. Differences in ability and gender were also investigated. Biology book modules for grade IX were created and connected with ICT by adding images, animations, and movie clips. The study used a control group pre-test post-test design. Using the stratified random technique of selecting, 172 pupils from two schools in Islamabad were chosen as a sample for the 2012–2013 academic year. ANOVA and the independent sample t-test were used for data analysis at the 0.05 level. In terms of post-test, accomplishment, and retention, the experimental group performed better. For the experimental group's low, moderate, and high achievers, the modular approach proved to be equally helpful. Underachievers developed in a unique way. The modular approach has been shown to be generally quite effective in raising biology students' academic performance and retention.

Researchers Sadiq and Zamir (2014) investigated the efficacy of the modular approach to look at student performance, learning, and achievement as well as to determine whether approach—modular teaching or traditional methods—is more beneficial. For testing, an equivalent group design was used. Thirty university students pursuing a "Master in Educational Planning and Management" made up the sample. Mean, Standard Deviation, and t-test were used for data analysis and interpretation from both the experimental and control groups. The outcomes endorsed the application of the modular strategy. Compared

to traditional teaching approaches, modular instruction has been demonstrated to be considerably more helpful in the teaching and learning process. Because pupils in modular instruction progress at their own pace. It is an unrestricted method of self-learning where practice is immediately given feedback and reinforcement, picking the learners' interest and inspiring them. Modular training helps to raise the likelihood that students will attend class and finish specific assignments right away. The student feels liberated to study how they like as a result.

Javed (2016) developed computer supported modules. The researcher found that constructive computer supported instruction were helpful for high, average and low achiever students. The computer supported modules have a significant impact on the academic achievement of students.

Behlol and Khan (2016) developed and validated Blended learning module for expository writing of English. Experimental method was used to carry out the research. The students taught through Blended Learning modular approach perform better than the students taught through traditional method of teaching. The researcher found that students were very motivated and modular approach was helpful for creating self-individualized instruction for students. Computer supported instruction created interest and motivation for learning among students.

Shaheen and Khatoon (2017) conducted research with by usage ICT modules in the subject of Biology at secondary level. The students studying in 9th grade in FDE were the sample of the study. The researchers used developed modules which were consist of Subject material supported with movie clips, animations and pictures. After the treatment,

it was found that ICT modules have a positive impact on the students of experiment group and students scored high on achievement test as well as in retention test.

Kausar (2018) has developed social site for educational purpose keeping in focus the 5Cs of online education. The researcher has developed social site in the subject of “Instructional Technology Basics” has recommended in her studies that social sites mediated course were helpful on the learning of students. The course was taught two groups online using Facebook. After the course, the researcher used electronic inbuilt semi structured interview to know about the reflection, experiences regarding the course from the students. The students expressed their satisfaction about the modules. The researcher suggested that all sort of long theoretical long and short course or vocational courses can be taught to students using social sites mediated course.

Sidiq et al. (2019) in their study explored the use of interactive e-modules in teaching and learning of students. They found that the modules were developed and used by lecturers in the history Education Department in Medan state University. Students' were evaluated using questionnaire. Students were highly satisfied by teaching using interactive e-modules.

Alam et al. (2019) conducted research to investigate the impact of the modular approach on teachers' English-speaking proficiency. A module on English speaking abilities was created and verified. The study's sample consisted of fifty aspiring teachers enrolled in Bachelor of Education programs. An experimental design of pre-test-post-test was employed. To analyze the data, an independent sample t-test was employed. It was discovered that the program was beneficial for enhancing English-speaking abilities. Both low and high ability pupils reported the same level of effectiveness.

Azhar (2019) developed adaptive learning modules using attributes of power point and found in the study that these adaptive learning modules have significant difference in students learning and achievement. She suggested that using adaptive learning modules is a simple way and it is also a best way in individualized learning.

Manzoor (2019) developed modules for teaching peace at university level. The researcher conducted his study on university students. One group pre-test post-test design was used. The researcher found that there was a significant difference in the scores of pre-test and post-test. There was significant difference in the attitude of students taught through modular approach. He suggested in his study that HEC may recommend a separate course for teaching peace at university level and should also organize training of teachers to use modular approach in teaching.

Modular instruction is useful for all students whether high achievers or low achievers. For low achievers, this instruction is like a motivating factor to further excel. So, modular instruction is useful for all kind of learning abilities.

Rashid et al. (2020) conducted a study on the “Teaching of Human Rights through Modular Approach at Higher Education Level”. The researcher developed modules using UNESCO-APNIEVE guidelines on the Human Rights. The Researcher conducted an experiment of nine weeks on university students. After the treatment, the researcher found the significant difference in the attitude of students towards Human Rights. The researcher suggested that Higher Education Commission of Pakistan may suggest a new course on Human Rights at Higher Education Level. It will increase awareness about Human Rights among students at University level and they will become a good citizen of the country to perform their role in a better way.

Ramadhani and Andriani (2024) conducted research on e-modules and its' effectiveness in enhancing students learning. Interactive e-modules were developed aiming to enhance students' cognitive learning. Interactive e-modules were very helpful in increasing students' learning outcome as there was difference in the pre-test and post-test scores of students. Findings of the research revealed that interactive e-modules were very feasible and helpful in increasing learning outcome of the fourth grade students.

Meilinda et al. (2024) developed module using ADDIE module in teaching of Islamic Scouting Education. Findings of the study revealed that a very informative and comprehensive pocket books were prepared by adding useful learning resources and related educational material. Students also showed their satisfaction in using these scouting teaching modules. Students showed their interest in new developed material as compared to the previous available material which created boredom among the students.

Li and Abidin (2024) developed modules for pre-service music teachers. Due to advancement in technology and teaching methods, the researchers felt need to improve existing material. So by utilizing the five phases of ADDIE instructional design model, the researcher developed modules for pre-service music teachers. The findings showed that these modules were very helpful in improving the teaching skills of the students.

2.28 Module and E-Modules Related Researches in International Level

There are a number of researches that have been conducted to find out the effect of module on students' performance, attitude and achievement. Modules have been developed by using different instructional design model, different theories, and different philosophies and approaches. Several research studies (Nardo, 2017; Shaheen & Khatoon, 2017; Istuningsih et al., 2018; Aksoy, 2019; Djafar et al., 2019; Sanjaya & Djamas, 2019;

Arosyad et al., 2021; Njoku et al., 2021; Prabakaran & Saravanakumar, 2021; Sunarno & Supriyanto, 2021) are conducted to determine the effectiveness of e-module in teaching, on students' achievement and understanding. Modules are being used in online and in classroom teaching too.

Ainscow and Sandill (2010) laid the stress of importance of acquiring education for everyone regardless of race, color, gender, language, marital status, ethnicity etc. In this way, modular approach provides equal chances of education to everyone.

Arnold (2014) in his study described that modular approach is useful for the subject of "civil technology". To achieve goals related to instructional technology, this method was more effective in imparting instruction, skills and knowledge to students. Modular approach consists of content and activities related to topic to achieve the specific objectives is useful and effective for the teaching and learning of the students.

Ganiron (2015) conducted the study on selected topics of physics. The researcher found in his study that module was effective in teaching physics. It was effective for both high and low achievers' students. It was found that students showed their interest in learning through modular approach.

In order to determine the efficacy and validity of created modules in the 2009–10 university-level subjects of "Social Orientation" or "Personality Development and Public Relations" (PDPR), Laroza (2015) carried out a study. Fifteen PDPR professors and thirty second-year students participated in the study as respondents. The research approach used was descriptive-experimental. The instruments used to collect the data were the test results and the questionnaire-checklist. The PDPR professors validated the modules based on the following standards: goals, content, structure and presentation, language and style, and

module efficacy. Pre and posttest design was used to determine whether the control and experimental groups had succeeded. For data analysis, the mean, standard deviation, and rank distribution were used. The post-test results indicated a substantial disparity in the mean score between the experimental and control groups, which was measured using the t-test. Modules were determined to be effective teaching tools. Both the experimental group's performance and the pre- and post-test findings were excellent. Both teachers and students thought that the modules were quite effective.

Melad (2016) looked on the efficacy of math teaching modules, specifically focusing on quadratic functions. A total of 40 students were enrolled in the study, 20 of them were assigned to the experimental group and another 20 to the control group. The control group was taught using the traditional chalk-talk method, while the experimental group received a module. Six math teachers were surveyed regarding their opinions of the module prior to the implementation of remedial instruction. Both groups took the post-test after finishing the remedial instruction. After the remedial instruction was finished, there was a statistically significant difference in the experimental group's achievement level compared to the control group. Compared to the control group, the experimental group achieved higher levels of success. One important function of the self-instruction package is to teach mathematics. Furthermore, the self-taught program helps both poor achievers who need remedial education and the group of quick learners. The use of modular approach practices, such as the Quadratic Function as a remedial teaching material, greatly raised the achievement level of the students, especially in the experimental group.

Germain-Rutherford and Kerr (2016) conducted study to find out the issues, problems and challenges which the foreigners professors faced while teaching in Canada.

Questionnaire, interviews and focus group discussion were conducted to explore the issues so that a module will be developed to help the students in that case.

Viswanathan and Viswanathan (2017) conducted a study on the students of MBBS 9th batch at "Sree Gokulam Medical College and Research Foundation". E-modules were used in teaching of MBBS students in addition to the lectures in the classroom for the experiment group. A substantial difference was found in the academic performance of the students. There was a difference in the mean score of the students of experiment group and the students of control group. Students of experiment group which were taught using e-modules performed better.

Yanikoglu et al. (2017) used modules for the students of first grade education. The researchers have developed e-module application in hand written technology. Students were excited in using these modules. E-modules were developed in handwriting and mathematics. There were some concerns of teachers using this technology based hand written modules over pen paper method. The researchers have explained their point of view of teachers too.

Nachimuthu (2018) described in a research study that e-content module was effective in the subject of botany. Students' achievement increased due to e-content modules. In order to evaluate if modular instruction is more effective than the conventional technique, Ibyatova et al. (2018) conducted a study to investigate the effectiveness of the modular approach in the teaching and learning process. The study assessed learners' motivation, achievement, and performance. Two groups of students studying English at a technical institution participated in an experiment. The effects of modular learning, teaching, and evaluation on engineering students were examined using a combination of

quantitative and qualitative study approaches. The trial showed that students taking modular courses found them to be helpful and motivational, adding that it "encourages them to do better on the next modules." Concurrently, the workload and stress associated with traditional methodologies persisted despite the use of modular assessment and learning. Teachers appreciate the well-planned opportunity about tests and the obvious focus on teaching requirements in the modular approach. The experiment's module strategy and structure still require development and improvement.

Anggraini and Putri (2020) developed modules using mind maps for the material of Excretion and Coordination System for 11th grade students. The researchers worked on the problem of students' difficulties in understanding new content and their difficulty in making connection of that content with the previous content. Mind maps were used as a treatment or solution for this problem. Mind maps modules play a positive role in achievement and retention of material for students.

Astalini et al. (2019) in study of "*Effectiveness of Using E-Module and E-Assessment*" found that e-modules were useful in the teaching of physics to students. It is time to teach students about new ways of learning as this is age of technological era. Students should compete the world if they are learned through modern technologies and should also be assessed online anywhere any time.

The Interactive E-modules were developed using instructional design model using ICT skills. These modules were based on Hybrid Guided Inquiry. It was found that interactive e-modules were useful in the improvement of the students and these modules have made ease the learning process of the students (Utami et al., 2020).

Prabakaran and Saravanakumar (2020) used E-Content Modules in the subject of

Mathematics for the students of High School. The researcher found that students' retention was increased and their mathematical achievement was improved using e-content module. Performance of students using E-content module were better as compare to the students which were studied through traditional method of teaching.

Haryanto and Rustana (2021) developed module in the subject of Physics for XI students. The researchers developed modules using ADDIE instructional design model. Quasi-experimental research was used in the research study. The researcher used images, text, MS Office, animations, videos and "3D Page Flip Professional Software" for development of E-modules for enhancing critical thinking in the subject of Physics. After the implementation of modules on small and large group, it was found that the developed modules were effective in enhancing students' critical thinking skills.

A research study on e-modules efficiency was conducted. E-modules was used to improve scientific literacy and cognitive learning ability. It was found that problem based learning e-modules have improved students' science literacy skills and also their cognitive learning outcome (Rahmawati et al., 2021).

Prasetyo et al. (2021) conducted study using STEM based E-modules in order see the effect on students' science literacy skills. The researchers found that E-modules have contributed effectively in increasing learning outcome of the students. Using STEM-based E-modules, the researchers used videos, graphics, pictures etc. in the subject of environmental pollution. E-modules have contributed effectively in improving learning of the students.

E-modules were developed for the subject of English and used for the teaching of class five students. E-modules developed were equipped with audio video resources,

graphics resources, electronic dictionary were also added which contributed effectively in the comprehension of students in the subject of English grammar and literature. The results showed that these e-modules have positive effect on the learning outcome of the students (Arosyad et al. 2021).

Serevina et al. (2022) found in study that students' critical thinking skill and achievement improved with the help of e-modules. Modules are developed and used for different purposes. As, modules are used to find its effectiveness, effect on academic performance, attitude, skill development, science literacy, critical thinking, language development etc.

Digital modules were developed for 10th class students in the subject of Physics which is considered tough and full with mathematical formulas. In developing modules, some material of physics was used. After experiment, students showed higher score than before experiment. The researchers recommended that students should be taught using digital module for better understanding and comprehension in the subject of physics (Sunarno & Supriyanto, 2021).

Researchers in a research study wanted to explore the effect of video modules on the achievement of students. They used two groups for experiment. One was control group and the other was an experiment group. Both groups were treated differently. Video modules were used in the treatment and it was found that video modules have positive contribution towards the achievement of students. Students' learning was high using video modules in the subject as compare to the other students (Njoku et al. 2021).

Putri et al., (2024) conducted study on augmented reality to increase students' interest in learning. The purpose of this study was to evaluate how well interactive media

may be used to produce E-LAPEN-based augmented reality and raise students' interest in learning. Research and Development was used in the study utilizing the development model ADDIE. Pre and posttests, together with interest-in-learning questionnaires, were the instruments employed in this study. With scores of 90% for media and 95% for material, the validation conducted by specialists in the respective fields demonstrates that the criteria are highly practicable. A pre- and post-test on the participants' interest in learning was administered following the media's implementation. The study's findings demonstrate an improvement both before and after using the E-module. In comparison, 57% of all inquiries in the prior period shown high to extremely high curiosity enthusiasm in learning, but following the module's use, this proportion rose to 98% and was bolstered by higher test results. Pre- and post-test percentages equaling 20.98%.

Sundari et al., (2024) conducted study for analysis of teacher needs in subject of Physics. The purpose of this study was to outline the demands of educators in creating instructional materials. Students' idea understanding was crucial, and in order to help them grasp concepts better, instructional resources were required. Teacher needs analysis questionnaires and interview sheets served as the data instruments surveys to find out about the learning tools that instructors use, the challenges that students faced when learning physics, and the resources that teachers required to help students. In all, nine physics instructors from high schools across Padang city participated in this study. 83% of teachers reported using printed teaching materials in their classrooms, according to analysis results. Up to 36% of educators use their own creations for instructional materials. Up to 86% of educators have never teachers are insufficient as learning resources while using digital instructional materials. Up to 83% of respondents were in favor of creating physics

education resources to help pupils grasp the content. Findings of this study served as the foundation for creating digital modules based on the POE model to enhance kinematics concept understanding.

2.29 Critical Summary of Literature Review

Modules are self-contained learning package which is systematically organized and prepared to fulfill learning objectives. Modules are prepared to strengthen teaching and learning. They are well prepared and well-organized learning units. Concept of module development is not new. It is being used in Open University of UK, United States and Canada in the beginning. E-module consists of text, graphics, audio and video material. E-modules can be accessed by simple devices easily. As compared to printed module or simple module, e-modules have lot of advantages. It can be accessed anywhere and it does not require printing cost to print it. The chapter explained the advantages and characteristics of modules in detail. Modular approach is being used in many developed and developing countries including USA, UK, Malaysia, Indonesia, India, Turkey, Iran etc. Although, it has a long journey. This approach is used for natural sciences, social sciences, English language learning etc. As far as concern about Pakistan, there are modular studies available in the subject of English, Urdu, Islamiat, science subjects also. But there is lack of studies in e-modules and e-modular approach. As there was no study available in the subject of Educational Leadership and Management. The modules are also developed at school and college level.

Modules are also developed in the guidance of learning theories. The learning theories are discussed in detail in the literature review. New learning theory connectivism is also discussed in the literature review. Learning theories play an important role in

learning. Learning theories are called the foundation of learning. These are an integral part in module development. Learning theories provide the basis for learning styles and about learners. Learning theories are discussed in detail in literature review.

Instructional design also plays an important role in learning and developing learning material. Instructional design model can be used for course development, training, and lesson planning and module development also. In literature, there are hundreds of instructional design models. Which instructional design model should be used; it depends on the learners, course, training, learning environment, learning context, available physical, financial resources, available technology and learning objectives too. Many instructional design models are also presented in literature review. Present research will use ADDIE instructional design model. ADDIE Model is also explained in detail in literature review.

Module development related researches at local and international level are presented at the end of chapter. These researches are conducted at school, college level for various subjects. Module related Pakistani researches are also presented in the literature review in detail.

CHAPTER 3

RESEARCH METHODOLOGY

The aim of this study was to develop instructional modules utilizing an e-modular approach and to assess the effect of instructional modules on the achievement of prospective teachers of BSEd Hons in the subject of Educational Leadership and Management. This chapter explained the methodology that was adopted to achieve the objectives. ADDIE instructional design model was used in developing modules. In the first phase of the ADDIE model, need analysis was required, which was done in the first phase. Second and third phase of the ADDIE model was the design and development of the modules. Fourth phase of the ADDIE model was the implementation of the ADDIE model, and last phase of the ADDIE model was the evaluation of instructional modules in the form of formative evaluation (module assessment) and summative evaluation (post-test). This chapter also described the research design, population, sample, research instruments. It also explained the procedures for research, data collection and data analysis.

3.1 Philosophical Paradigm

The study had used a constructive paradigm of research. A Constructive paradigm was being implemented to carry out researches in various fields of education. This paradigm is considered to be a tool for researches in teaching at different levels (Adom et al., 2016).

3.2 Research Design

The study was research and development by purpose. Research and development is used where new instructional material, learning contents is created for students to increase

their achievement. The basic purpose of the research was the development of the modules. After development of modules, next step was the validation of the modules. A tryout of the developed modules was carried out. So, quasi-experimental research design was used for this.

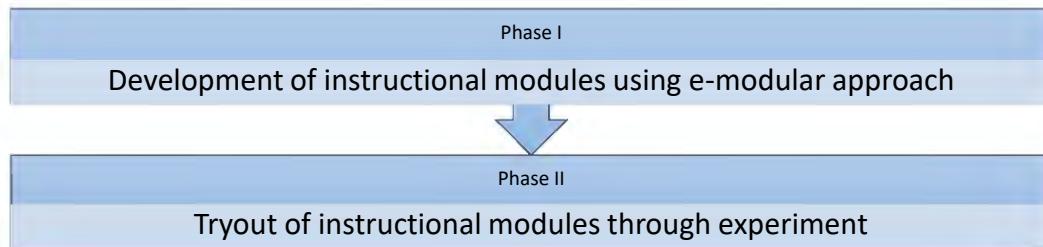
Feng et al. (2010) explained about experimental research. The researchers described that in experimental research, students can be evaluated within groups or between groups. E-learning and LMS can be compared with the conventional method of teaching.

In this second phase, students who were taught using e-modular approach had to compare with the students taught using conventional method of teaching. So, quasi-experimental design was used to compare the academic achievement of students of experimental group and students of control group. The study was consisted of two phases.

Figure 3.1 showed the phases of the research study.

Figure 3.1

Phases of the Study



3.3 Phase 1: Development of Instructional Modules

Phase I was the development of instructional modules using e-modular approach. The researcher had developed modules in light of literature review and ADDIE

instructional design model in the subject of Educational Leadership and Management. The total number of Instructional modules that have been developed were twelve. These modules were developed according to the subject outline of Educational Leadership and Management.

ADDIE model has five steps: Analyze, Design, Develop, Implement and Evaluate. There were five stages in the development of e-modules, according to the ADDIE instructional design model. The first stage regarding modules development was the analysis of the learner, and the learning environment. It was very important to know the learner in the learning environment. A questionnaire was used for this to know about the learners. The second stage was the design of the modules. According to the objectives of the course, main selection regarding teaching methods, strategies was done in this stage of modules development. The third stage was the development of modules based on the feedback of first two stages. The fourth stage was the implementation stage, and the last one was the evaluation of e-modules in the form of summative assessment (posttest).

3.3.1 Validation of Instructional Modules

The modules were sent to a list of experts for validation purposes. The experts had expertise in assessment, Informational Technology and education. The certificate from list of experts is attached as appendix F. The experts' suggestions regarding betterment of modules were incorporated in the modules. The experts suggested some corrections, and these corrections were made in the respective modules.

3.3.2 Reliability of Instructional Modules

After the validations of the modules, the next step was to check the reliability of modules. One out of the twelve modules was pilot tested with the 20 students in the class

of BSEd Hons 6th semester. Observations were made during pilot testing and were discussed with the supervisor. Necessary modifications were made in modules. As students showed interest in videos and necessary clips. So, researcher added more material in the form of references. Some students were confused with some new terms. These things were made simple and easy for them to make it more interesting.

3.3.3 Finalization of Instructional Modules

After the validation and reliability checking, these modules were finally ready for implementation in the class.

3.3.4 Details of Modules / Self-contained Learning Material

Modules consist of self-contained learning material. It is a complete package for learning. It starts with the objectives and includes activities and resources to achieve those objectives. Modules end on evaluation which is according to the learning objectives.

The modules were developed according to the outline of the University of the Punjab. Total number of units in the outline were 7 and total number of developed modules were twelve.

Figure 3.2

Module 1 on Leadership and Management

ADDIE Phases	Instructional Activities	Learner Activities	Resources
Analysis Design Develop Day 1 (Module 1) Implement Presentation of the material	Ice breaking activity: "Names and Adjectives" Introduction of students	Learners will think of an adjective to describe how they are feeling or how they are. The adjective should be start with same letter as learner name, for example, <i>I am Hana and I am happy.</i>	PPT for
	• Orientation of course to the students • Course outline	A brief orientation will be given to students about this course and its modules to students.	Video/PI Classro
	Bridge in:	Learners will answer the questions.	Paper si connecti link)
	Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics. Teacher will tell the objectives of the lesson to the students.	Students will observe the clip and will respond to teachers. Students will listen and respond to teachers regarding objectives.	Video ar <a href="https://w
atch?v">https://w atch?v Interacti of no int
	Teacher will play multimedia PPT for explaining the concept and definition of leadership and management	Students will observe and can ask questions during presentation. Note: In case of no internet video will be available in Google class room.	PPT (g)
Content	Teacher will guide the students regarding topic		
Assessment	Teacher will ask question regarding content. Explain leadership and	Students will respond.	White br Chart Paper

Figure 1 shows module 1. Details of all modules are described in Appendix J. The following table showed the chapter number and corresponding modules along with topics of modules.

Table 3.1*Details of Modules with Corresponding Chapter*

Unit #	Unit name	Number of Modules	Topics of Modules
Unit 1	Introduction to Management	Module 1	Definitions of Management and Leadership. Difference between leadership and management
			Difference between general and educational management and Leadership.
Unit 2	Process of Management	Module 2 Module 3	Planning, Organizing, Staffing Communicating, Controlling ,Budgeting
Unit 3	Resource Management	Module 4 Module 5	Human resources, Physical resources Financial resources, Information and learning resources (Library, AV Aids and instructional material)
Unit 4	Rules and Regulations	Module 6	Rules regarding appointment, leaves, pay and allowances.

		Efficiency & Discipline rules	
	Module 7	Terms of reference of various personals in the school	
		Code of ethics	
Unit 5	Records in Educational Institutions	Module 8	Attendance register Leave register Stock register
		Module 9	Cash register (fee, different kind of funds)
			Personal files of teachers and other staff
			Other academic record (students result, staff meetings etc.)
Unit 6	Theories of Leadership	Module 10	Trait Theories Contingencies Theories
Unit 7	Leadership Style	Module 11	Democratic Autocratic
		Module 12	Laissaiz-faire Leadership style and Headship

3.4 Phase II: Tryout of the Developed Modules

Phase 2 was the tryout of the instructional modules. After the development of modules, the next step was to determine the validity of the modules. For this purpose, the modules were tried out. After tryout, e-modules were improved in terms of feedback. The study employed an experimental research design. This study design was regarded as scientific. Hypotheses pertaining to cause-and-effect relationships were tested in study. It was thought to be particularly applicable to the resolution of instructional issues. One or more independent variables were used in experimental research designs, although control over related factors was also taken into account, and the effects on one or more dependent variables were examined.

The researcher had used a Quasi-Experimental design. The following research design was used in the research study.

Table 3.2

Research Design of the Study

Group	Pretest	Treatment	Posttest
E	O ₁	EX	O ₂
C	O ₁	conventional	O ₂

Key:

E = Experimental Group

C = Control Group

O₁ = pretest

O₂ = posttest

EX = treatment will be provided to experiment group in the form of e-modules

3.5 Population

All the prospective teachers of BSEd Hons program of Federal College of Education H-9 Islamabad were the population of the study. The Federal College of Education is a teacher training institute. The researcher has selected FCE as she has been teaching in Federal College of Education H-9 Islamabad since 2012. Total number of students in BSEd Hons were 358 as per admission office record of Federal College of Education. The students were the future prospective teachers or administrators, as they were enrolled in the BSEd Hons program.

3.6 Sample

All the students in BSEd Hons 4th semester session 2021-2025 studying Educational Leadership and Management were the sample of the study. There were only two groups of BSEd Hons 4th semester in Federal College of Education. So, the researcher had taken these two intact groups of BSEd Hons. The researcher had taken one group as control group and the other group as the experimental group by using basket method. The total numbers of students in both groups were 70. So, the sample size of students was 70. The students were further divided into high, average and low ability students on the basis of their marks in previous semester. The experimental group was taught through e-modules and the control group was taught through conventional method of teaching.

3.7 Research Instruments

The research study was about to develop instructional modules utilizing an e-modular approach and to assess the students' achievement. The following instruments were developed for the research study.

1. Needs analysis questionnaire (Appendix-A)
2. Pretest & Posttest (Appendix-B)
3. Perception questionnaire (Appendix-C)

A needs analysis questionnaire was administered before the experiment to get the information about the students of experiment group. A pretest was administered to both groups of control and experimental in the start of experiment. A posttest was administered to both groups after 12 weeks to come to know about the achievement of students in the both groups. A perception questionnaire was administered to the students of experimental group in order to know about their perceptions about the developed modules, their teaching and learning experience with the modular approach. Details of all these instruments are discussed below.

3.7.1 Needs Analysis Questionnaire

First of all, a needs analysis questionnaire was developed. The researcher had developed this questionnaire with the guidance of supervisor. Initially, this questionnaire consisted of 18 items. 03 items were deleted on basis of required information which was the need of the research. Finally, needs analysis questionnaire was consisted of 15 statements. The purpose of this questionnaire was to gather information about the experimental group.

The needs analysis questionnaire was about to know about learners and learners' knowledge and skills. The students had to answer in the form of yes or no. It was necessary to know about the learners and learner proficiency in different areas before joining the course of educational leadership and management. The parameters of needs analysis questionnaire were the following.

- Using of computer
- Using internet
- Technology usage in education
- Interest in taking this course etc.
- Gmail
- Google Classroom
- MS Office

It was important to know about learners and their skills as it was the basic point of ADDIE model. Table of specification of needs analysis questionnaire is expressed in table 3.3.

Table 3.3

Table of Specification for Needs Analysis Questionnaire

Domain	Knowledge	Comprehension	Application	Total
Using the computer	1	1	1	3
Using internet	1	1	2	4
Gmail	-	-	1	1
Google Classroom	-	-	1	1
MS Office	-	-	2	2
Technology usage in -	-	1	1	2

education

Interest in taking this - 1 1 2
course

Total	2	4	9	15
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3.7.2 *Pretest & Posttest*

The researcher had developed a pre-test and post-test with the help of two teachers who had more than ten years of experience in teaching in Federal College of Education, H-9 Islamabad. The test was validated by the list of experts (Appendix-F). Initially, there were 31 statements in pretest and posttest. Corrections were made according to the suggestions of the experts. Three statements were deleted and some statements were paraphrased. So after corrections and deletions, number of statements in pretest and posttest were 28. The pretest and posttest were constructed according to the specific table of specification. It is explained in table 3.4.

Table 3.4*Table of Specification for Pretest & Posttest*

Domain	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Total
Knowledge	1	1	1	2	1	1	1	8
Comprehension	2	2	2	1	2	1	1	11
Application	1	2	1	2	1	1	1	9
Total	4	5	4	5	4	3	3	28

Both tests were same from the contents of the course of Educational Leadership and Management. The pretest and posttest both consisted of multiple choice questions. Total number of statements in pretest and posttest were 28. Bloom's taxonomy was utilized in the construction of test items for pretest and posttest.

3.7.3 *Perception Questionnaire*

It was very important to know about the perceptions of the students about using modules in teaching. As the whole teaching process revolves around the students. So to know about the perceptions of the students a perception questionnaire was developed to know about the perceptions of the prospective teachers regarding e-modules. The researcher had developed perception questionnaire with the guidance of supervisor. It was finalized after many drafts. Initially, there were 20 statements but with the guidance and suggestions of supervisor some statements were included in the questionnaire. Finally, the instrument consisted of 26 items and was structured on a five point Likert scale. This

instrument was graded as strongly agree, agree, neutral, disagree and strongly disagree. In perception questionnaire, there was also one open ended statement. The aim of this instrument was to get students' perception of about e-modules, content, teaching and pedagogy etc. The parameters of the perception questionnaire were the following.

- Awareness about course material and objectives
- E-module material
- Connection between theory and real life
- References used in the modules, videos, graphics etc.
- Activities of modules
- Encourage to participate
- Group work and communication among students
- Access of module material any time, any where
- Teacher's encouragement
- Satisfied with teacher's performance
- Internet resources
- Improvement in learning

Table 3.5*Table of Specification for Perception Questionnaire*

Domain	Knowledge	Comprehension	Application	Total
Awareness about course content and objectives	1	1	-	2
E-Modules material	-	1	1	2
Connection between theory and practice	-	1	1	2
References, videos, graphics	1	1	1	3
Activities of modules	-	1	1	2
Encouragement of teacher	-	1	1	2
Group work and communication	1	-	1	2
Learning through e- modular approach	1	2	1	4
Access of module material	-	1	1	2
Satisfied with the teacher	-	1	1	2
Internet resources	-	1	0	1
Improvement in learning	-	1	1	2
Total	4	12	10	26

Table 3.5 showed the all factors which constituted the table of specification. Criteria for evaluating mean score was also important to set before. Following table showed the criteria for evaluating mean score.

Table 3.6*Criteria for Evaluating Mean Score of Perception Questionnaire*

Mean Score	Criteria for Evaluation
4.21 to 5.00	Strongly Agree
3.41 to 4.20	Agree
2.61 to 3.40	Neutral
1.81 to 2.60	Disagree
1.00 to 1.80	Strongly Disagree

3.8 Research Instrument Validity

The validity of the needs analysis questionnaire, pretest, posttest, and perception questionnaire were determined through expert opinion. The initial draft of the needs analysis questionnaire, Pretest, posttest and perception questionnaire along with course outline of Educational Leadership and Management, were sent to the list of experts for their suggestions in the instruments.

The researcher had developed needs analysis questionnaire with the guidance of supervisor. Initially, this questionnaire consisted of 18 items. Three items were deleted on suggestions of the experts and supervisor. Finally, needs analysis questionnaire was consisted of 15 statements. The purpose of this questionnaire was to gather information about the experiment group.

The researcher had developed pretest and posttest with the guidance of supervisor. Initially, there were 31 statements in pretest and posttest. Corrections were made according to the suggestions of the experts and supervisor. Three statements were deleted and some

statements were paraphrased. So after corrections and deletions, number of statements in pretest and posttest were 28.

The researcher had developed perception questionnaire with the guidance of supervisor. It was finalized after many drafts. Initially, there were 20 statements but with the guidance and suggestions of supervisor some statements were included in the questionnaire. Finally, the instrument consisted of 26 items and was structured on a five point Likert scale.

The experts have expertise in assessment, Informational Technology and education. Their comments were taken on initial drafts. The suggestions of the experts were incorporated in the instruments. The needs analysis questionnaire, pretest, posttest and questionnaire were modified in the light of feedback of the experts. The content of these instruments was validated by a list of three experts (Appendix F).

3.9 Reliability of Research Instruments

The researcher has developed the instruments of pretest, posttest, and questionnaire with the guidance of two teachers. These teachers were teaching the subject of Educational Leadership and Management to the students at the college. After the validation of the instruments and these instruments were pilot tested. The instruments were pilot tested to the 20 students of BSEd Hons 6th semester. These tests were checked by the teachers and rechecked by the researcher. After the pilot test, item analysis (item difficulty, item discrimination and power of distractors) were determined. Some items were discarded. The reliability of test was determined through split-half method. The reliability of the instruments was measured by SPSS. The reliability coefficient for the pretest and posttest instruments was .811.

The reliability of the questionnaire was determined through Cronbach Alpha after pilot testing. After the complete procedure, these instruments were used for data collection.

Table 3.7

Reliability of the Instruments

Instrument	No. of items	Reliability
Pretest & Posttest	28	.811
Perception Questionnaire	26	.823
Needs Analysis Questionnaire	15	.782

Table 3.7 shows the reliability of the instruments. The reliability of the pretest and posttest was .811, the reliability of the perception questionnaire was .823 and the need analysis questionnaire was .782. All the instruments were highly reliable.

3.10 Finalization of Research Instrument

The pretest, posttest and questionnaires were finalized after validation by experts and reliability checking.

3.11 Independent Variable & Dependent Variable

Teaching method was the independent variable of the study. As a result of independent variable intervention, students' achievement was a dependent variable.

3.12 Control Variable

The following variables were controlled during experiment.

- Teachers' qualification
- Teachers' experience

3.13 Moderating/Intervening/Extraneous Variable

Following were a list of moderating variables that were not under control of the researcher:

- Home environment of students
- Students' social and economic background
- Qualification of parents of students
- Different facilities available at home regarding internet and ICT

3.14 Federal College of Education

This research was carried out at Federal College of Education H-9 Islamabad. Federal College of Education was equipped with two computer labs and one language lab fully equipped with the latest computers, internet connection, multimedia, and related equipment. The researcher obtained a request letter from the Dean Faculty of Education, International Islamic University Islamabad to conduct study at Federal College of Education (Appendix D). This letter was submitted to FCE along with an application from the researcher to get permission to conduct research in FCE (Appendix E). The Director FCE directed the required teachers and supporting staff to help the researcher in conduct of research. So with the cooperation of Director, teaching and supporting staff, the whole process was conducted smoothly and successfully.

3.15 E-Modular Approach

Instructional Modules were developed using e-modular approach. Students of

experimental group had accessed the modules using Google Classroom. Experimental group teacher had given accessed only students of experimental group to join and accessed the modules material. Students of experimental group had accessed the module material anywhere and time.

3.16 Formation of Groups

For implementation of instructional modules, a quasi-experimental design was used. The researcher took two intact groups of BSEd Hons. One group as control group, and the other as experimental group. The total number of students in the group were 70. The total number of students in group A was 32, and in group B was 38. Students of both groups were further divided into low, average and high-ability students on the basis of their marks in the previous semester. The table showed the criteria of high, average and low achievers students.

Table 3.8

Criteria for High, Average and Low Achievers

Category	Criteria
High Achievers	65% marks or above
Average Achievers	45% to 64% marks
Low Achievers	Below 45%

Table 3.8 showed the criteria for high, average and low achieves. Students who got 65% and above marks come under the category of high achievers and the students who got below 45% marks come under the category of low achievers.

Table 3.9

Categorization of Students in Group 1 on the Basis of Criteria of High, Average and Low Achievers

Category	Criteria	Total	Percentage
High Achievers	65% and above	12	37.5
Average	45% to 64%	14	43.7
Low Achievers	Below 45%	06	18.7
Total		32	100

Table 3.9 shows the number of students in the high, average and low achievers category. This category was assigned on the basis of the marks students had got in the previous semester. According to this table, maximum students come under the category of average achievers, followed by high and low achievers.

Table 3.10

Categorization of Students in Group 2 on the Basis of Criteria of High, Average and Low Achievers

Category	Criteria	Total	Percentage
High Achievers	65% and above	9	23.68
Average	45% to 64%	19	50
Low Achievers	Below 45%	10	26.31
Total		38	100

Table 3.10 shows the number of students in high, average and low achievers

category. This category was assigned on the basis of the marks students had obtained in the previous semester. According to this table, maximum students come under the category of average achievers followed by high and low achievers.

3.17 Orientation of Teachers

The researcher was working at Federal College of Education, which was a teacher training institute for in-service and pre-service teachers. The researcher had also served as a master trainer too. She had also acquired training regarding module development in NCC. The researcher, with the help and guidance of administration, selected two teachers which were equivalent in qualification and teaching experience. The researcher trained the teachers of both groups regarding experiment procedure. The researcher guided the teacher of control group regarding experiment and also guide them about the role of control group teacher in the experiment. The researcher guided the experimental group teacher and lab assistant regarding modules and how they would be implemented in the classroom setting, about daily activity break ups and about pre-test and post-test.

One week of orientation was provided to the teachers of experimental group and the lab assistant, and two days' orientation was given to the teacher of control group separately. The experimental group's teacher was guided about e-modules, objectives, activities and all other necessary material was provided. Whereas the control group teacher was also provided guidance about objectives, methodology and importance of the experimental study.

Students in both groups were provided training. One week of training was provided to the students of experimental group. Students were guided about how to use e-modules. An orientation session was held in computer lab of the college. The researcher acted as

resource person in these sessions.

3.18 Threats to Validity

Validity is very important in experiments. There are many threats to validity. It is very important to control it so that a researcher can be sure that the intervention is successful. Research design plays an important role in this matter. Every research design faces some threats. Following were some actions which were executed in order to ensure validity in research.

- Daily attendance in class was marked.
- Both groups were taught at the same time for same duration.
- Teachers who taught both groups were equal in qualification and experiences.
- The novelty effect was minimized as the duration of experiment was long.
- The students of control group had not accessed the modules material as the teacher had the authority to join only relevant students in the Google classroom. So, students of control group were not able to access module material.

3.19 Procedure of the Study

The purpose of this study was to assess the effect of instructional modules on the academic achievement of the prospective teachers of BSEd. Hons in the subject of Educational Leadership and Management. Details of the procedure are described below:

- The researcher had reviewed the literature regarding module development, instructional design models, and e-modules in detail. Teaching through modules was being implemented successfully in different countries in different disciplines.

The researcher has been teaching in Federal College of Education for more than 10

years. The subject of Educational leadership and Management was also being taught to students through the lecture method.

- Researcher felt a strong need to teach this subject of Educational Leadership and Management to students by utilizing a modular approach. So, it was also important to know about the students' skills of using technology. A need analysis questionnaire (Appendix A) was provided to students to come to know about their skills in using technology.
- The data gathered through this questionnaire was very useful for the researcher. It provided useful information to the researcher. This information was very beneficial for research, as the researcher planned according to it.
- While reviewing relevant literature about modules, researcher could not find any modules or e-modules in the subject of Educational Leadership and Management. The researcher felt a strong need to develop modules on the subject of Educational Leadership and Management. After thoroughly reading literature on Instructional Design Models, the researcher developed modules in the subject of Educational Leadership and Management by using ADDIE Instructional Design Model. These modules were self-learning instructional material. The researcher also got help from literature review and also utilized guidelines for module development.
- As Educational Leadership and Management subject was mostly conceptual, consisting rich theories as well. To make it more interactive, the researcher included relevant videos, graphics, tables, related articles, web references, and power point presentations in the material. The researcher developed 12 modules for the entire course outline of Educational Leadership and Management.

- On the basis of literature review and by following the guidelines of ADDIE (Analyze, Design, Develop, Implement and Evaluate) Instructional Design Model, the researcher developed modules. The general layout of module was approved by the researcher supervisor with necessary additions. After that, the researcher developed all other modules on that format.
- The researcher tried to design learning experiences in an interactive way. The researcher included necessary brainstorming activities. To make content more interactive and interesting, PowerPoint presentations, MS Word files, PDF files, articles, websites links, relevant graphics, animations, videos, pictures, tables, and charts were included. Students were given individual and group activities based on the content. To check the achievements of the students, they were assessed at the end of the module in the form of an activity or some other assessment.
- One out of 12 modules was pilot tested on the students in the 6th semester of BSEd Hons. Observations were noticed. Necessary changes were made in the modules, and after that modules were submitted for validation to the relevant experts (Appendix-F). After the validation by the experts, the modules were implemented on the selected sample.
- The researcher developed pre-test and post-test with the help of two teachers who had more than 10 years of experience in teaching at Federal College of Education, H-9 Islamabad (Appendix B). The test was validated by the list of experts. Corrections were made according to the suggestions.
- A pilot study of the pretest and posttest was administered to the students of 6th semester of BSEd Hons. After checking the test, the test scores were analyzed using

SPSS software. The test was reviewed. Item analysis was done. Some items' distractors were rephrased or changed. A few items were deleted. The reliability of the test was 0.81 which was very good. After assessing the validity and reliability of the tests, they were finalized for administration to the selected sample of students.

- Federal College of Education was a teacher training institute. All the students of the BSEd Hons constituted the population of the study. For a try out, the students of 4th semester studying the subject of Educational Leadership and Management were the sample of the study. For the tryout, permission was necessary from the concerned authority.
- The researcher obtained a request letter from Dean, Faculty of Education, and International Islamic University Islamabad, to conduct research study in Federal College of Education (Appendix D). This letter was submitted to FCE along with an application from researcher to get permission to conduct of research at FCE. The Director of FCE directed the required teachers and supporting staff to help the researcher in conducting research.
- After getting permission from the concerned authorities, the researcher conducted an experiment with the students of BSEd Hons 4th semester for a period of 12 weeks (19th June 2023 to 6th October 2023). The teaching schedule of modules is attached as Appendix L. The researcher has taken two intact groups of BSEd Hons 4th semester. Both groups were further divided into high, average, and low achievers on the basis of their previous semester result and following criteria: -

High achievers = 65-100 %

Average achievers = 45-64 %

Low achievers = below 45 %

- One group was taken randomly as control group, and the other as experimental group. The total number of students in both groups were 70. Two teachers with equivalent qualification and experience were selected by the administration to teach the experimental group and the control group. The control group was treated with conventional teaching method whereas the experimental group was given intervention for the whole semester, which was about 12 weeks (3 months) long. Students of the experimental group filled out a need analysis questionnaire at the start to get necessary information about students' including their marks and other relevant information.
- After getting the necessary permission from the concerned authority, one week of orientation was provided to the teachers of the experimental group, and two days' orientation were given to the teacher of the control group separately. The experimental group's teacher was guided about e-modules, objectives, activities, and all other necessary material was provided. The control group teacher was also provided guidance about objectives, methodology, and importance of the experimental study. Three days of training were also conducted for the students of experimental group. Students were guided about how to use modules and get required information.
- Before the start of the treatment, a pre-test was administered to both groups in order to check their knowledge. (Appendix B).
- Students in the control group were taught using conventional method of teaching,

whereas students of the experimental group were taught using an e-modular approach.

- Students in the experimental group were taught using an e-modular approach. So, students have to take their classes in a computer lab using multimedia. The sound system was properly used to play relevant videos for the modules.
- These modules were self-instructional material. So, they were designed in such a way that students could utilize them. Students could access these modules anywhere any time. Students could access these modules by using Google Classroom, as all the material were available in Google classroom too. All the students in the experimental group could access all the material of modules from the Google classroom.
- Modules were designed in such a way that if students missed the class in some way, they could access the study material from Google classroom. These modules were available in MS Word and MS Power Point format.
- There was also midterm for students conducted by the university. After the exam, the students' classes were regularly conducted.
- A posttest was administered to the students of both groups the next day at the end of treatment.
- All the tests were first checked by the teachers and then rechecked by the researcher.
- All the data regarding students' score were entered using SPSS 26 (Statistical Package for Social Sciences). Data were analyzed using independent sample t-test, frequencies and percentages.

- The data regarding students' perception were also analyzed using SPSS 26.
- The data were analyzed in the light of research hypothesis and research question.
- On the basis of findings, conclusions were drawn.

3.20 Some Glimpses from Experiment

Some pictures from the experiment have shown below. Figure 3.3 and 3.4 have taken during different time. These pictures were taken during modular experiment. Students have also participated in class, presentations etc.

Figure 3.3

During Class Discussion



Figure 3.4

During Individual Participation in Class



3.21 Test Administration and Data Collection

A pretest was administered to the students of both groups before the start of teaching. A pretest was administered to the students at the same time, same test, and same duration, and in the same environment. After the period of three months, a posttest was administered to the students of both groups on the same day, for same duration and in the same environment. It was made possible that all students should submit their responses. Although, very few students were absent on data collection day, they were given tests as soon as they reached college on the very next day. Some students who forgot to fill some demographic information column were approached to fill the required column. The researcher with the help of two teachers checked tests in order to see that no students should left any data or column without answering the questions. Some students were told to fill the missing column on the spot.

3.22 Scoring of Instrument

All the tests were checked by the class teacher. Teacher allotted 1 mark for every right answer and mark 0 for every wrong answer. The papers were rechecked by the researcher.

3.23 Data Analysis

The study was aimed at finding out the effect of e-modules on the academic achievement of the students.

Table 3.11*Alignment of Research Objectives, Hypotheses and Analysis Techniques*

<i>Research</i>	<i>Research</i>	<i>Data Analysis</i>	
<i>Objective</i>	<i>Question/hypothesis</i>		
<i>Objective 1</i>	-		<i>Instructional module</i>
			<i>development</i>
<i>Objective 2</i>	<i>Hypothesis 1-5</i>	<i>Independent sample</i>	-
			<i>t-test</i>
<i>Objective 3</i>	<i>Hypothesis 1-2</i>	<i>Independent sample</i>	-
			<i>t-test</i>
<i>Objective 4</i>	<i>Question 1</i>	<i>Percentages, mean</i>	-
			<i>score</i>

Data were entered in SPSS 26, and the results were analyzed. In order to find the effect of the intervention, independent sample t-test was applied to the data collected from the pretest and posttest. The questionnaire regarding the perception of the students about e-modules was analyzed through percentages, frequency, and mean score.

3.24 Ethical Consideration

Ethics is very important feature of the research. As with the expansion of internet and technology, large data sets are being used in research. There are many frameworks in the field of data collection and security. In social sciences, work of Hosseini et al. (2022) is commendable, they have discussed the challenges and issues which data researchers faced in social sciences. They have proposed the ethics framework of David. David has emphasized the feature of honesty, respect the opinion of the participants, transparency and responsibility in data collection and data security.

Keeping in view the ethics of the research, the researcher got the necessary permission from the required officials before conducting the research. As well as, it was very important to tell the students in the start about the study. It was important to say that the study was only for improving the quality of teaching and learning. It was very important to tell the students about the importance of the intervention. Students of both groups were ensured that their data would be kept confidential and it was for the purpose of improving the quality of education.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATIONS

The purpose of the study was to develop and determine the effect of instructional modules on the academic achievement of the students. The researcher had developed 12 instructional modules in the subject of Educational Leadership and Management with the help of literature review and ADDIE instructional design model. The modules were validated and finalized for implementation after the pilot study. For tryout of the modules, the researcher had taken two intact groups of BSEd Hons 4th semester. The researcher had taken one group as the control group and the other group as the experimental group randomly. Two teachers having the same experiences and qualifications were selected to teach both groups. Pretest were conducted for all students before the actual treatment. After the treatment, the students of the control group were taught through conventional method, whereas the students of the experimental group were taught using modular approach. Duration of try out was 12 weeks. After the treatment, a posttest was administered to both groups, and data were collected. The data were analyzed by entering in SPSS 26. This chapter includes the data analyses and interpretation of the data. For data analyses, independent sample t-test, frequencies and percentages were used. An independent sample t-test was used at the 0.05 level of confidence. There were total five hypotheses and one research question for the study.

There were four objectives of the study. First objective was about to develop the instructional modules. To achieve the first objective, 12 instructional modules were developed. To achieve the second and third objectives, five hypotheses were developed. One question was formulated to achieve the objective four. For hypothesis 1-5,

independent sample t-test was used. Each independent variable had two options like students of control group and students of experimental group, and high achievers of control group with high achievers of experimental group etc. Pallant and Tennant (2007) stated that when there are two groups, independent sample test can be used. Percentages and mean score were used for question number 1.

Quasi-experimental design was used for the study as there were only two groups of BSEd Hons 4th semester. The researcher had taken two intact groups, one as experimental and the other as the control group. Instructional modules were used to teach the experimental group and conventional method was used for the control group. Teaching method was independent variable and students' achievement was dependent variable.

The data analysis has been divided in four parts. Part 1 presents the analysis of the need analysis questionnaire. Part 2 presents the analysis of demographic data. Part 3 presents the analysis of hypothesis and research question; and part 4 presents the analysis of perception questionnaire.

Part 1: Need Analysis Survey Questionnaire

In Part 1, a need analysis questionnaire was analyzed. Need Analysis was also the first phase of ADDIE instructional design model. The researcher had used a need analysis questionnaire to get necessary information about the students regarding Computer, MS office, ICT equipment, and ICT skills before the start of experiment. This information was useful for researcher in conducting experiment. The respondents' responses were described in the form of percentages and frequencies in table 4.1.

Table 4.1*Analysis of the Need Analysis Questionnaire*

Sr.#	Questions	Frequency of		Percentage of	
		responses		responses	
		Yes	No	Yes	No
1	Do you have the facility of computer at home?	25	7	78.12	21.87
2	Do you have the facility of computer at college?	30	2	93.75	6.25
3	Do you know how to operate computer/laptop?	28	4	87.5	12.5
4	Do you have the facility of internet at home?	27	5	84.37	15.62
5	Do you have the facility of internet at college?	29	3	90.62	9.37
6	Do you know how to search article on the internet?	26	6	81.25	18.75
7	Do you have Gmail id?	30	2	93.75	6.25
8	Can you use Google classroom?	27	5	84.37	15.62
9	Can you use MS Word?	28	4	87.5	12.5
10	Can you use MS Power Point?	26	6	81.25	18.75
11	Can you play video clips/audio clip on internet?	30	2	93.75	6.25
12	Do you have basic knowledge about operating a computer?	28	4	87.5	12.5
13	Do you search required information on internet?	29	3	90.62	9.37
14	Do you think technology help in learning?	30	2	93.75	6.25
15	Do you want to learn educational leadership and management using modular approach with the help of technology?	26	6	81.25	18.75

The above results are presented below in the form of graphs of individual statements:

Q#1. Do you have the facility of computer at home?

Figure 4.1

Facility of Computer at Home

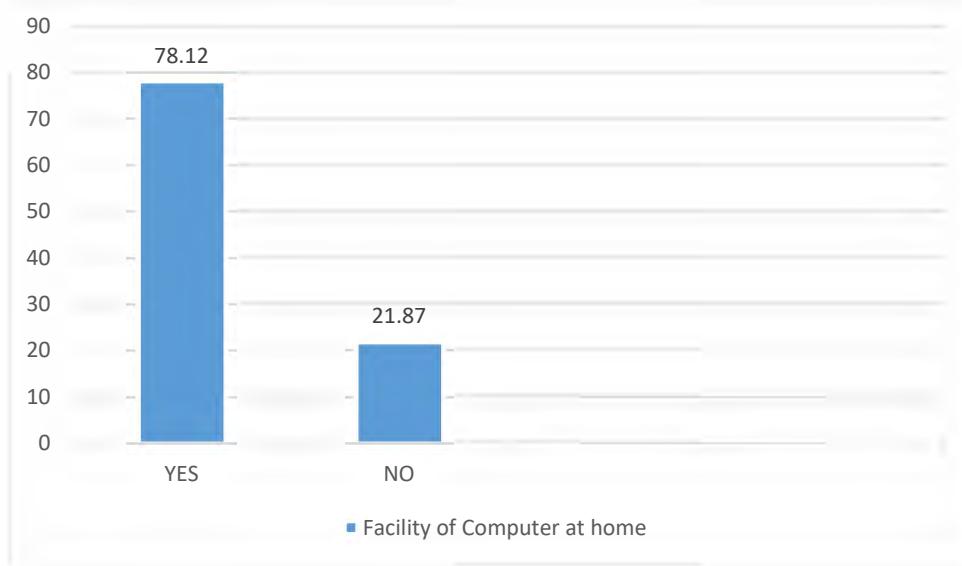


Figure 4.1 showing the responses of students who have the facility of a computer at home. It shows that 78.12% have the facility of a computer at home, and 22% don't have the facility of a computer at home. It means that maximum number of students have the facility of computer at home.

Q#2. Do you have the facility of computer at college?

Figure 4.2

Facility of Computer at College

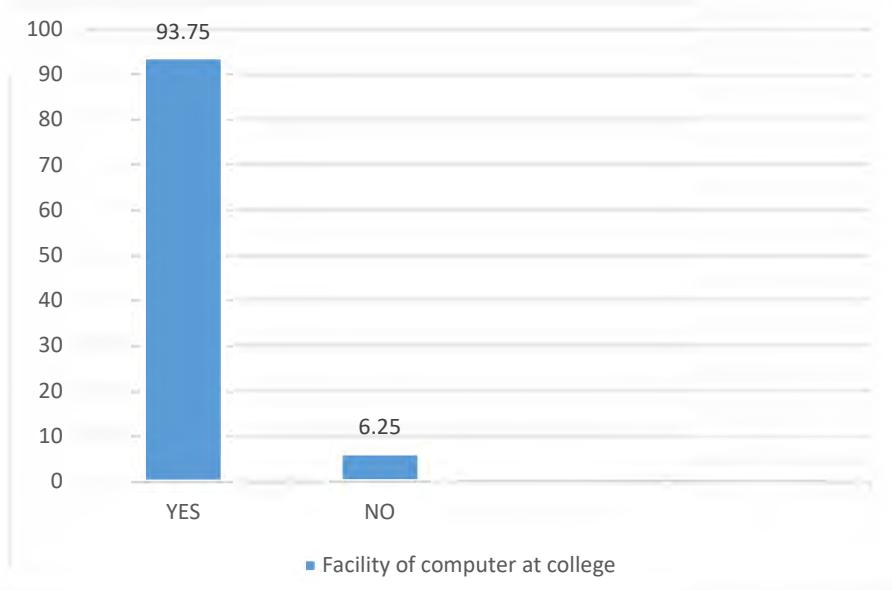


Figure 4.2 showing the responses of students who have the facility of computer at college. It shows that 93.75% have the facility of computer at college, and 6.25% don't have the facility of computer at college. It means that maximum number of students have the facility of computer at college.

Q#3. Do you know how to operate computer/laptop?

Figure 4.3

Responses Regarding Knowledge to Operate Computer/Laptop

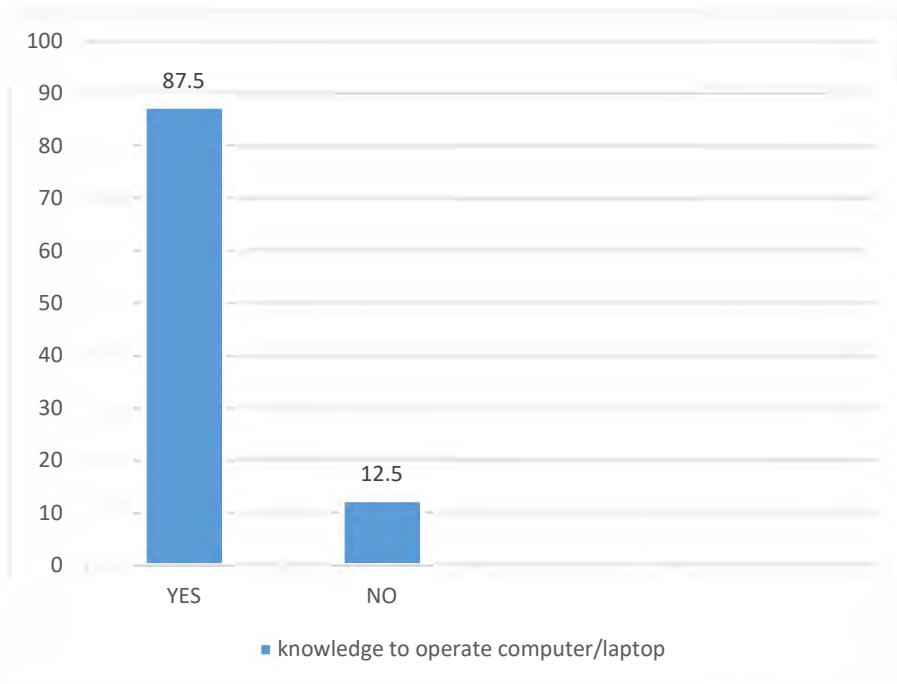


Figure 4.3 showing the responses of students who know how to operate computer or laptop. It shows that 87.5% students know how to operate computer or laptop, and 12.5% don't know how to operate computer or laptop. It means that majority of the students have the knowledge to operate computer/laptop.

Q#4. Do you have the facility of internet at home?

Figure 4.4

Facility of Internet at Home

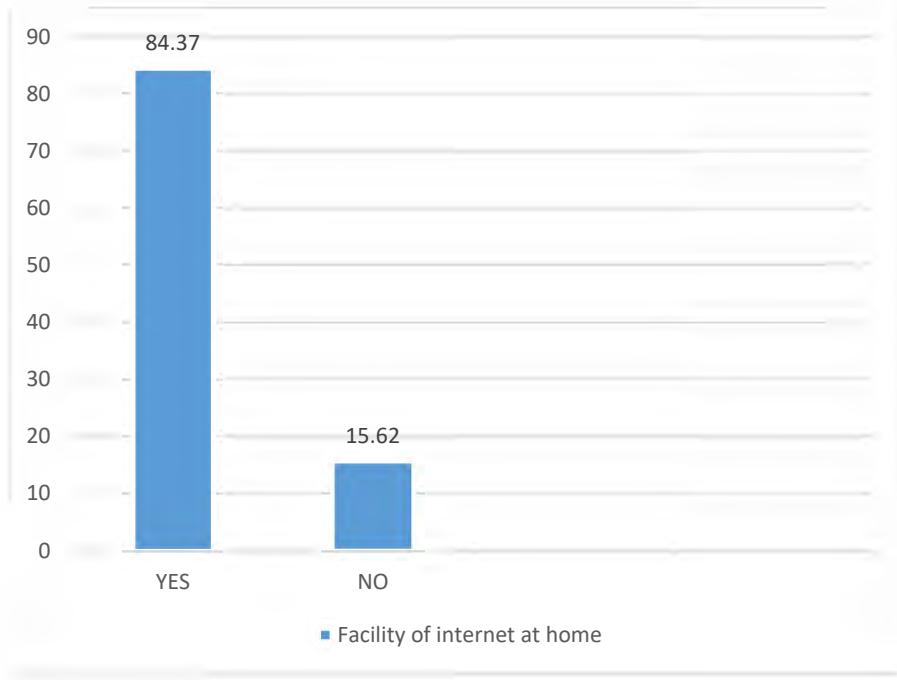


Figure 4.4 showing the responses of students who have the facility of internet at home. It shows that 84.37% students have the facility of internet at home, and 15.62% don't have the facility of internet at home. It means that majority of the students have the facility of internet at home. It is good that students are using internet at home.

Q#5. Do you have the facility of internet at college?

Figure 4.5

Facility of Internet at College

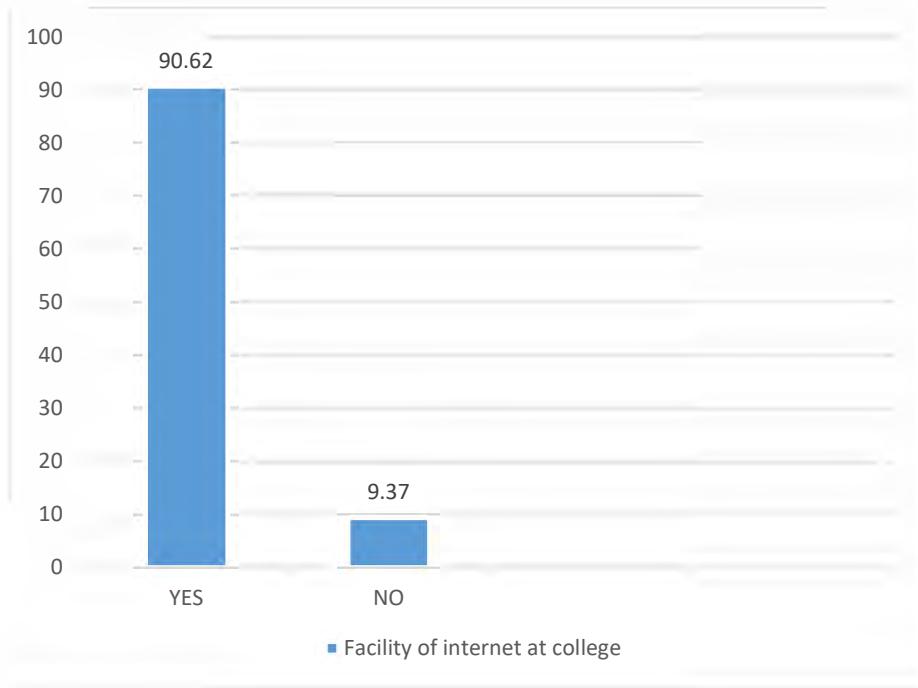


Figure 4.5 shows the responses of students who have facility of internet at college. It shows that 90.62% of students have the facility of internet at college, and 9.37% don't have the facility of internet at college. It means that maximum students enjoyed and used the facility of internet at college.

Q#6. Do you know how to search article on internet?

Figure 4.6

Students' Searching Article on Internet

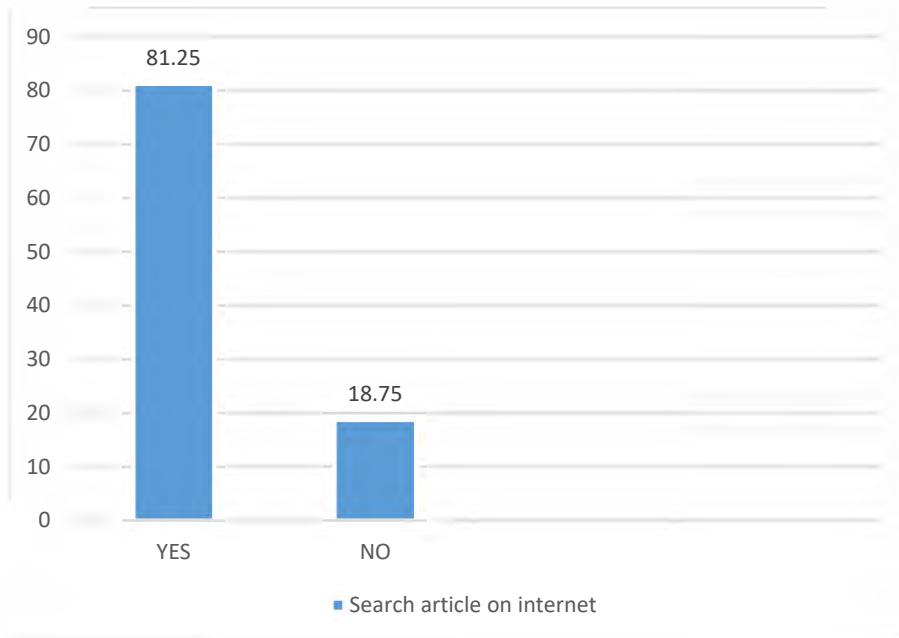


Figure 4.6 shows the responses of students who know how to search article on the internet. It shows that 81.25% of students know how to search article on the internet, and 18.75% don't know how to search article on the internet. It means that maximum students searched articles and know about its uses already.

Q#7. Do you have Gmail id?

Figure 4.7

Information Regarding Students' Gmail ID

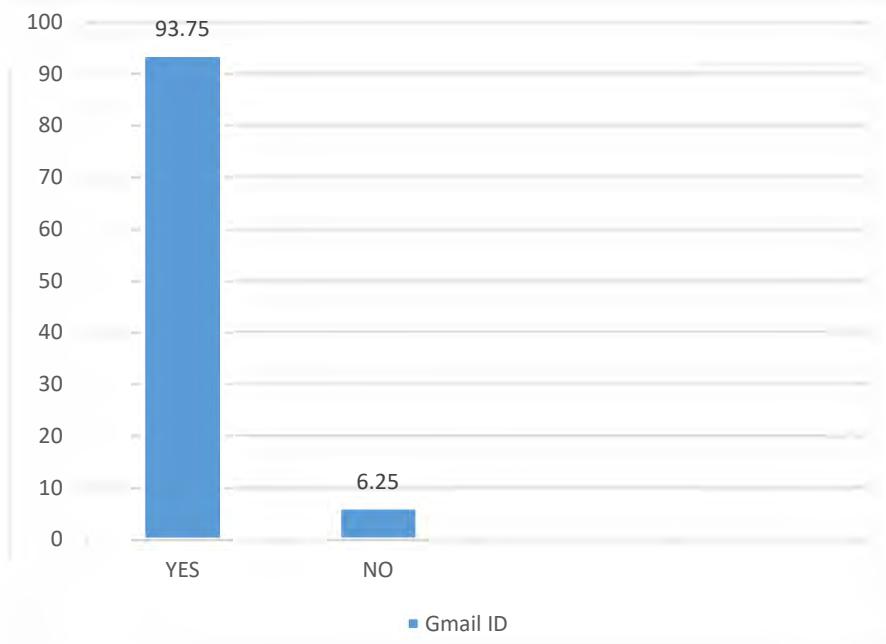


Figure 4.7 shows the responses of students who have Gmail ID or not. It shows that 93.75% of students have their Gmail id, and 6.25% students don't have Gmail id. It means that maximum number of students have already using emails. Students are using emails already.

Q#8. Can you use Google classroom?

Figure 4.8

Information Regarding Google Classroom Use

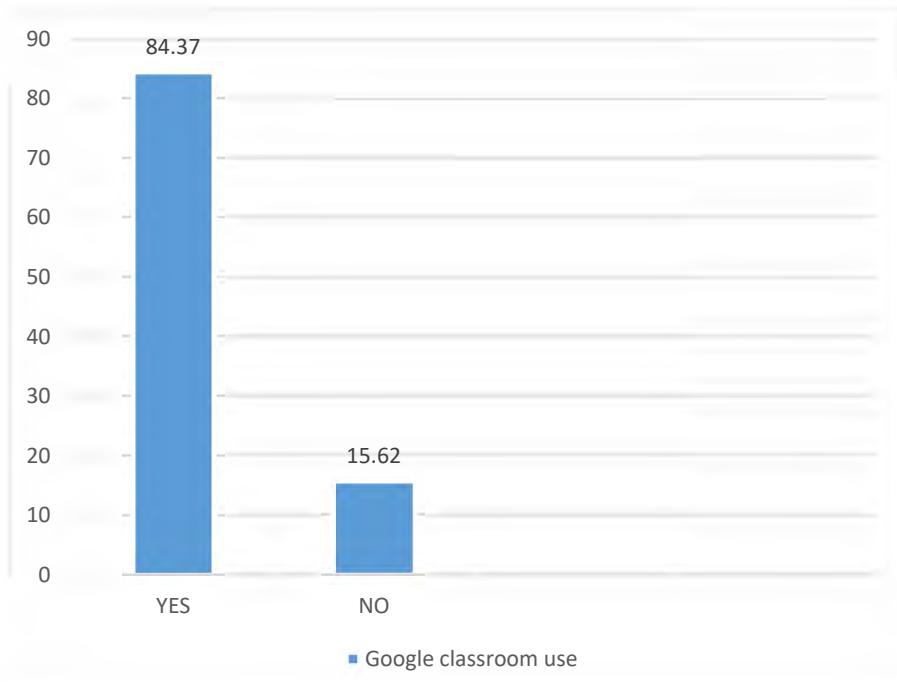


Figure 4.8 shows the responses of students who know using Google classroom. It shows that 84.37% of students know how to use Google classroom, and 15.62% students don't know how to use Google classroom. It means that majority of the students already know about the usage of Google classroom. It is very good tool in learning.

Q#9. Can you use MS word?

Figure 4.9

Information Regarding MS Word Usage

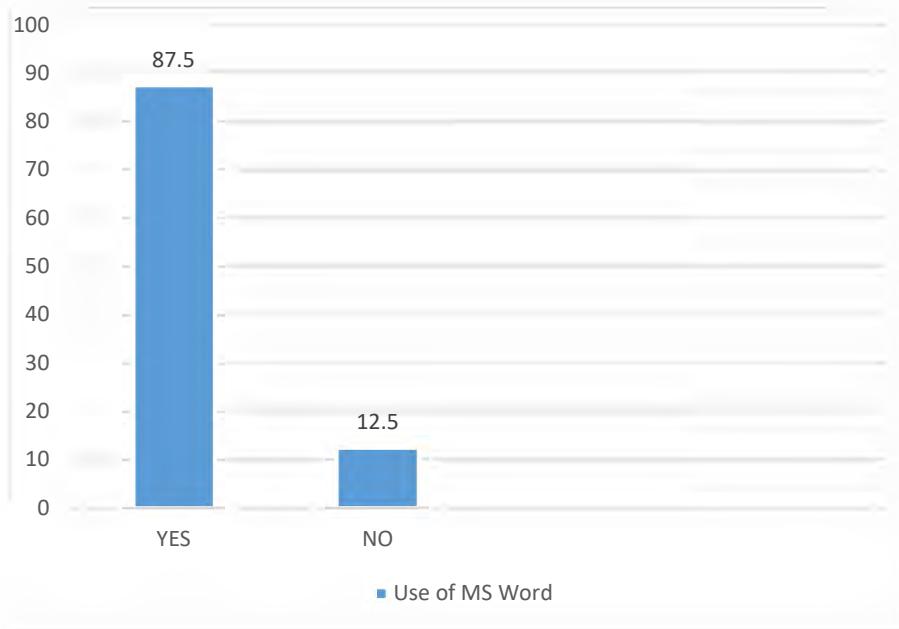


Figure 4.9 shows the responses of students about using Microsoft Word. It shows that 87.5% of students know how to use MS Word, and 12.5% students don't know how to use MS Word. It means that maximum number of students already using Microsoft Word. It is very helpful tool in learning, making assignments and academic related work.

Q#10. Can you use MS Power Point?

Figure 4.10

Information Regarding MS Power Point Usage

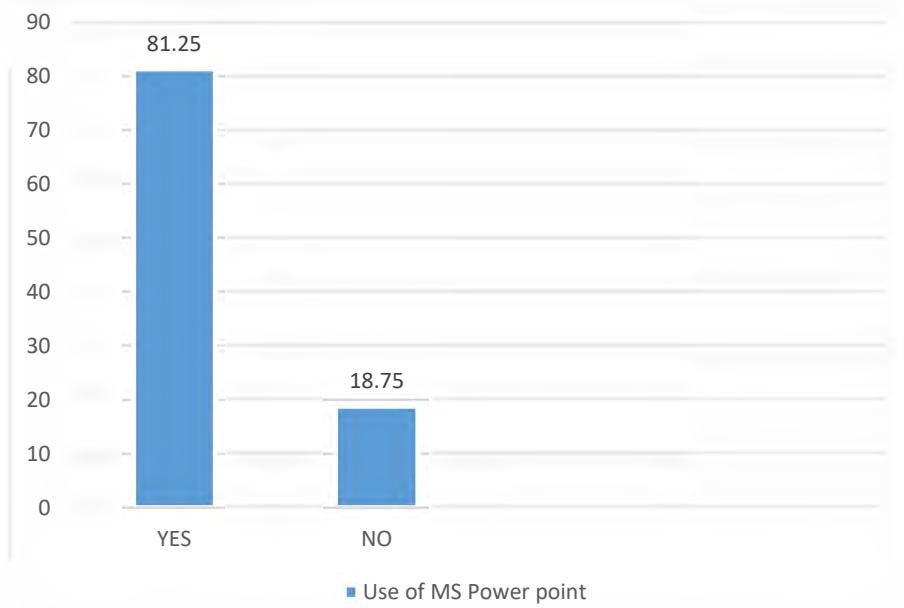


Figure 4.10 shows the responses of students about using Microsoft Power Point. It shows that 81.25% of students know how to use MS Power Point, and 18.75% students don't know how to use MS Power Point. It means that majority of students already know the usage of MS Power Point. It is very helpful tool in learning and delivering presentations.

Q#11. Can you play video clips/audio clip on internet?

Figure 4.11

Information Regarding Playing Video/Audio Clips

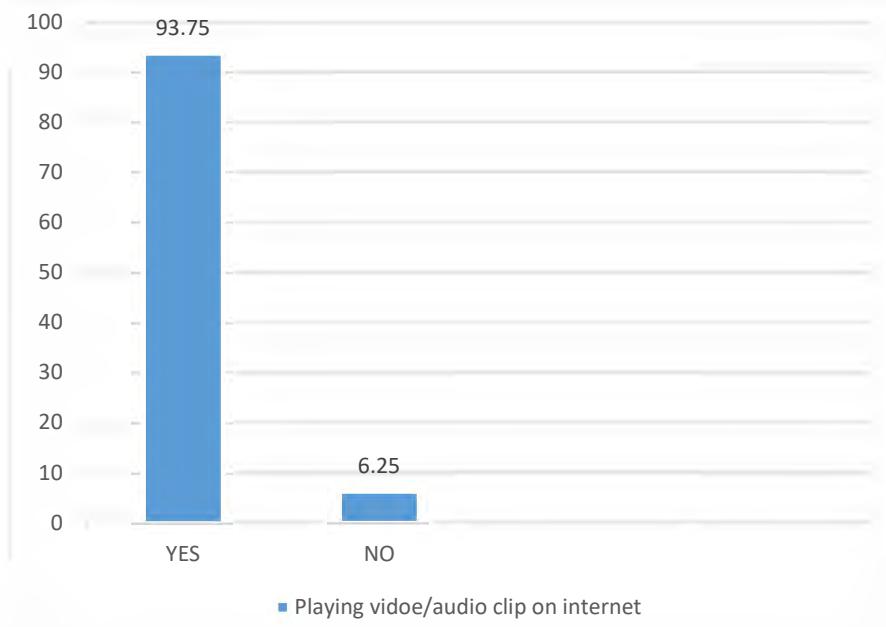


Figure 4.11 shows the responses of students about playing video/audio. It shows that 93.75% of students know how to play video/audio clips, and 6.25% students don't know how to play video/audio clip. It means that maximum students have the information about playing audio and video clips. It is very helpful in students learning. As students can learn abstract and difficult subject very easily by playing different clips.

Q#12. Do you have basic knowledge of operating computer?

Figure 4.12

Students' Basic Knowledge in Operating a Computer

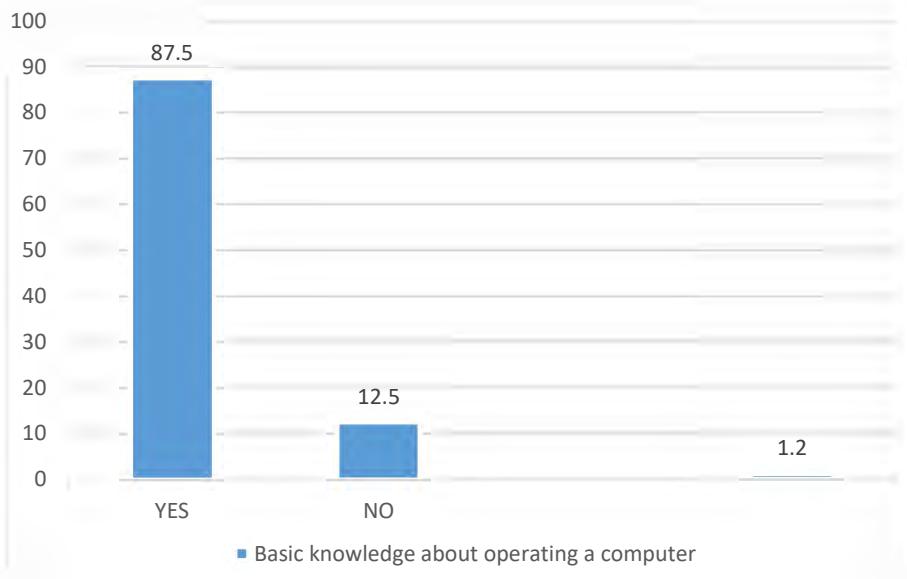


Figure 4.12 shows the responses of students about basic knowledge in operating a computer. It shows that 87.5% of students have basic knowledge about operating a computer, and 12.5% students don't have basic knowledge in operating a computer. It means that maximum students have the basic about operating a computer. As now a days digital learning is vital for the students of every grade.

Q#13. Do you search required information on internet?

Figure 4.13

Searching Information Online

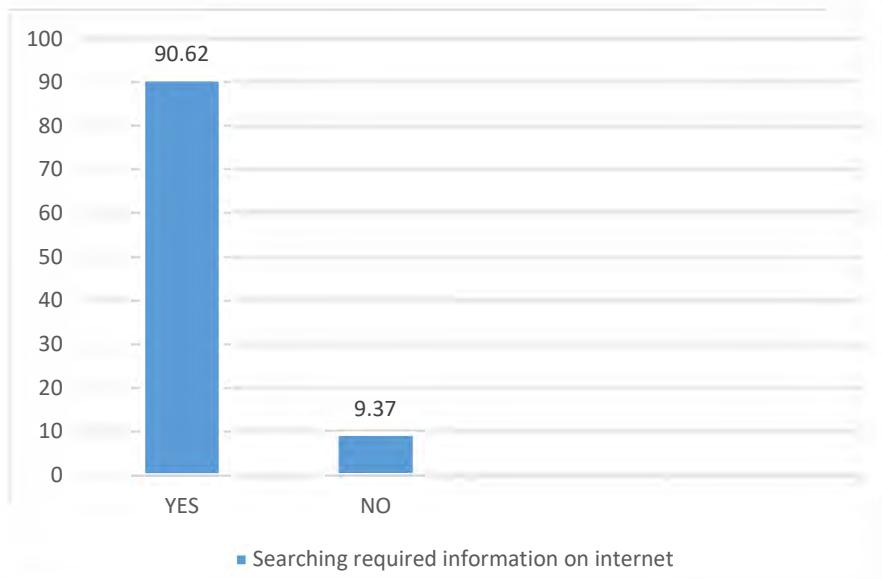


Figure 4.13 shows the responses of students about searching required information online. It shows that 90.62% of students can search required information online, and 9.37% students don't search required information online. It means that maximum students can find any topic related information on internet. As computer has become an integral part of our life so students must be able to search any information on internet.

Q#14. Do you think technology help in learning?

Figure 4.14

Responses Regarding Technology Help in Learning

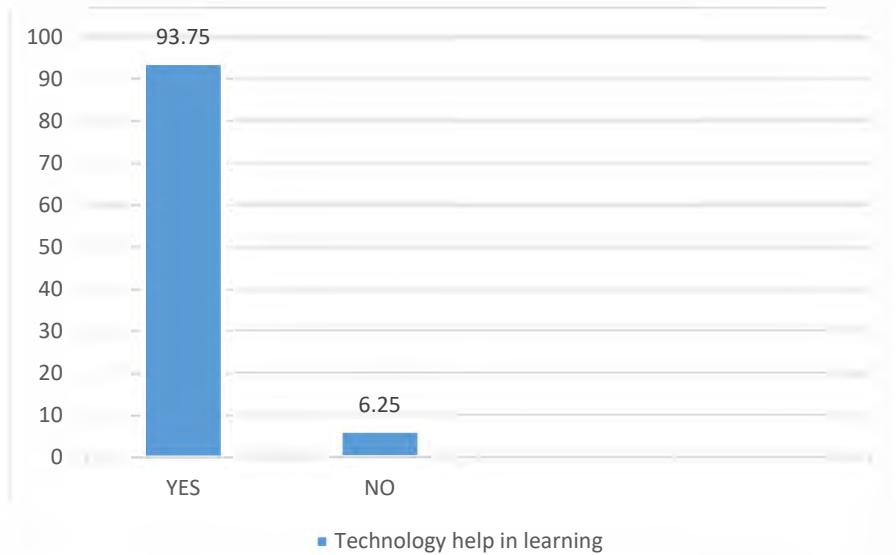


Figure 4.14 shows the responses of students about technology help in learning. It shows that 93.75% of students' responses that technology help in learning, and 6.25% students show their response in negative. It means that maximum number of students are familiar about the fact that technology help in learning and after knowing the fact they can use technology for their need and benefits.

Q#15. Do you want to learn educational leadership and management using modular approach with the help of technology?

Figure 4.15

Responses of Students about Learning through Modular Approach

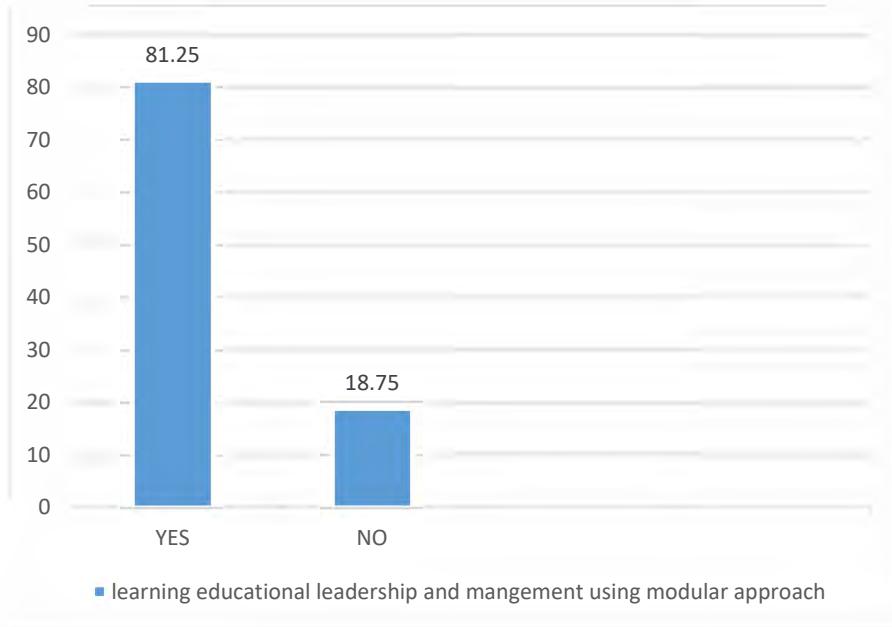


Figure 4.15 shows the responses of students about learning educational leadership and management using modular approach. It shows that 81.25% of students' responded that they want to learn educational leadership and management using modular approach, and 18.75% students show their response in negative. It means that maximum number of students are willing to learn this subject using modular approach.

Part 2: Demographic Information of Participants

Details of demographic information of the student participants are described below:

Table 4.2

Age of Participants

Age	Frequency	Percentage
17-20 years	21	30
21-24 years	49	70
Total	70	100

Table 4.2 shows the age range of participants. It shows that the maximum number of students come under the age range of 21-24 years. A few students fall under the category of 17-20 years old.

Figure 4.16

Participants' age range

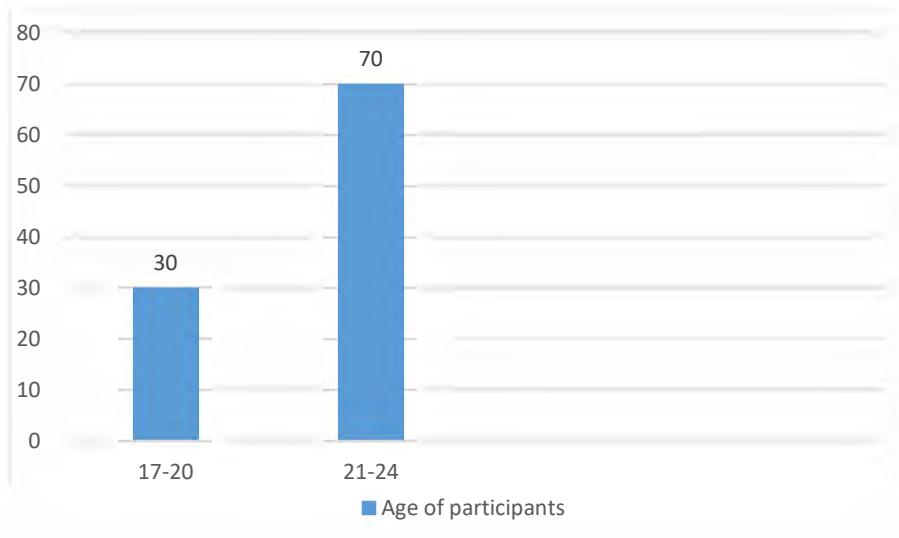


Figure 4.16 shows the age range of participants of the study. Figure shows that

maximum number of participants come under the category of 21-24 years.

Table 4.3

Gender Wise Distribution of Participants

Gender	Frequency	Percentage
Girls	53	76%
Boys	17	24%
Total	70	100

Table 4.3 shows that the girls' participants are the majority in BSEd Hons program. The percentage of girls for this program is 76% and the percentage of boys in BSEd Hons is 24%.

Figure 4.17

Gender Distribution

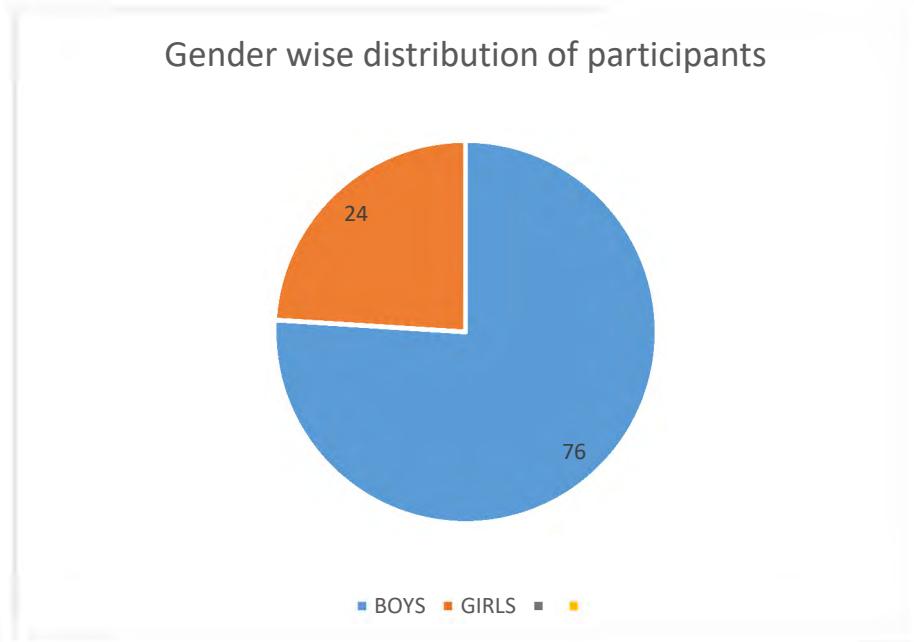


Figure 4.17 shows the gender distribution of participants. It shows that girls are in

the majority in strength in BSEd Hons program. Total percentage of girls is 76 % and boys' percentage is 24%.

Table 4.4

Ability wise Distribution of Students in Both Groups

Ability Group	Frequency	Percentage
65-100 (High Achievers)	21	30%
45-65 (Average Achievers)	33	47%
0-45 (Low Achievers)	16	23%
Total	70	100

Table 4.4 shows the ability of students in both groups. It shows the three ability levels of students including high achievers, average achievers, and low achiever students. The maximum number of students come under the category of average achievers.

Figure 4.18

Ability wise Distribution of Students

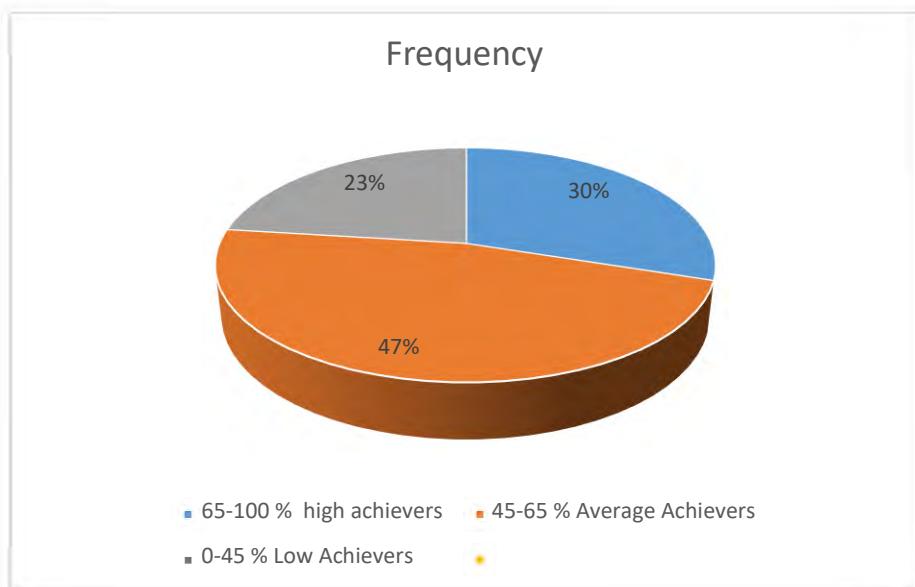


Figure 4.18 shows the ability wise distribution of students. Figure shows that 47% of the participants come under the category of average achievers. After this, the percentage of high achievers come, and then comes low achievers whose percentage is 23%.

Part 3: Analyses of Data

H_{01} There is no significant difference in the mean pre-test scores of the students of experimental group and the students of control group.

Table 4.5

Mean and t-value on Pretest of Experimental Group and Control Group

Group	N	Mean	df	t-value	p-value
Experimental	32	11.31	68	1.15	0.254
Control	38	10.76			

Table 4.5 shows the mean difference between the scores of the experimental group and the control group on the pre-test. The mean score of the experimental group is 11.31, and the mean score of the control group is 10.76. The value of p is 0.254, which is greater than .05. Therefore, the null hypothesis is accepted, which states that there is no significant difference in the mean pre-test scores of the students of the experimental group and the students of the control group. It means that both groups were same before the start of the treatment.

Figure 4.19

Mean Score of Experimental Group and Control Group on Pretest

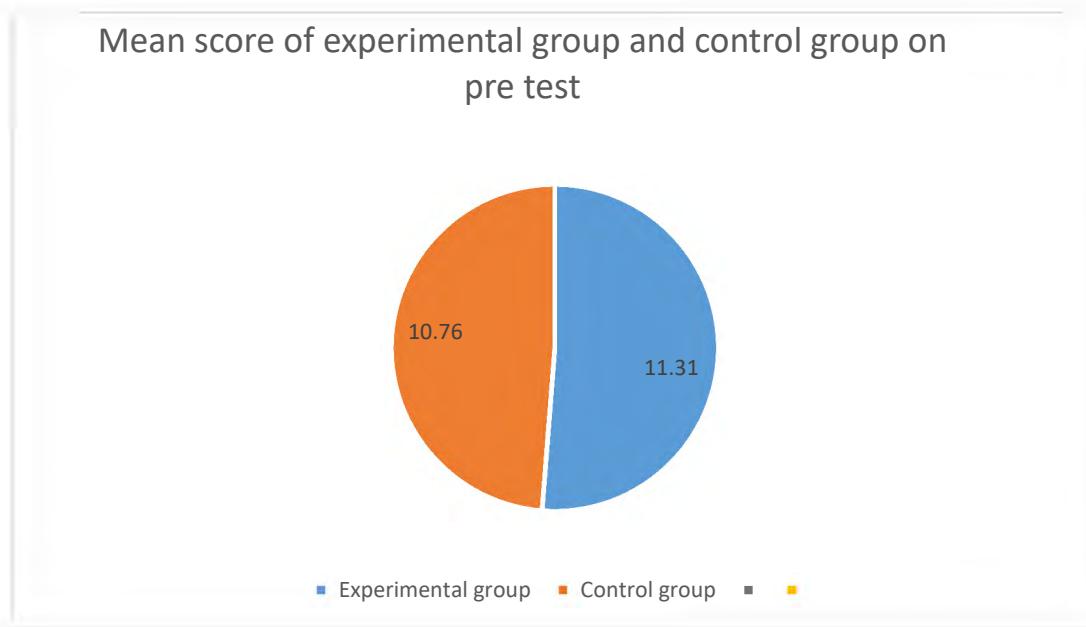


Figure 4.19 shows the scores of the experimental group and the control group on the pre-test. The figure shows that there is very little difference in the mean score between the experimental group and the control group and both groups were same before the start of treatment.

H₀₂ There is no significant difference in the mean post-test scores of the students of experimental group and the students of control group.

Table 4.6

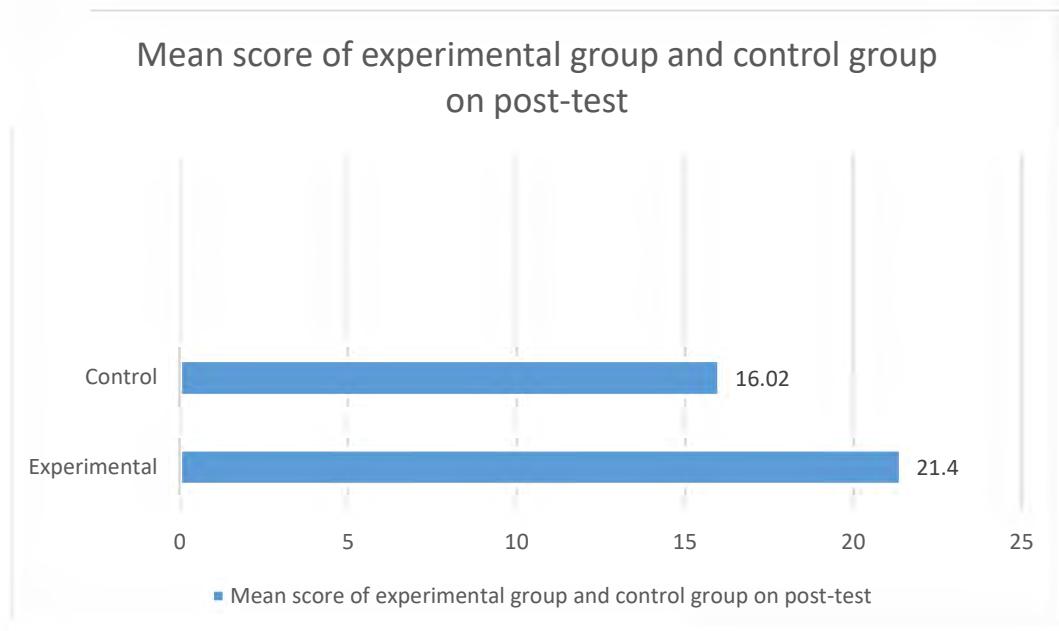
Mean and t-value on the Posttest of Experimental and Control Group

Group	N	Mean	df	t-value	p-value
Experimental	32	21.40			
			68	8.416	.000
Control	38	16.02			

Table 4.6 shows the scores of the experimental group and the control group on the post-test. The mean score of the students in the experimental group is 21.40, and mean score of the control group is 16.02. There is a difference in the mean score of both groups. The value of p is .000, which is also less than .05. Hence, the null hypothesis that there is no significant difference in the mean post-test scores of the students of experiment group and the students of control group is rejected. There is a difference in the mean score of both groups. Therefore, it means that there is a difference in the mean score between the students who taught with instructional modules and the students who were taught with conventional method.

Figure 4.20

Mean Score of Experimental Group and Control Group on Posttest



4.20 shows the mean score of the experimental group and the control group on post-test. The figure shows that there is a significant difference in the scores of both groups on post-test. Mean value for control group is 16.02, and the mean value for the experimental group is 21.4.

H₀₃ There is no significant difference in the mean post-test scores of high achievers of experimental group and high achievers of control group.

Table: 4.7

Mean and t-value of High Achievers of Both Groups on Posttest

Group	N	Mean	df	t-value	p-value
Experimental	12	24.00			
			19	5.458	.000
Control	9	19.00			

Table 4.7 shows the mean score of high achievers in the experimental group and high achiever in the control group on the post-test. The mean score of the high achiever students in the experimental group is 24.00, and the mean score of the high achiever students in control group is 19.00. There is difference in the mean score of both groups. The value of p is .000, which is also less than .05. Hence, the null hypothesis that there is no significant difference in the mean post-test scores of high achiever students in the experimental group and high achiever students in the control group is rejected. There is difference in the mean score of both groups. High achiever students in the experiment group scored high in post-test as compare to the students in the control group. Therefore, it means that there is difference in the mean score of the high achiever students in the experiment group who taught with instructional modules and the high achiever students in the control group who were taught with conventional method.

Figure 4.21

Mean Score of High Achievers of Experimental and Control Group on Posttest

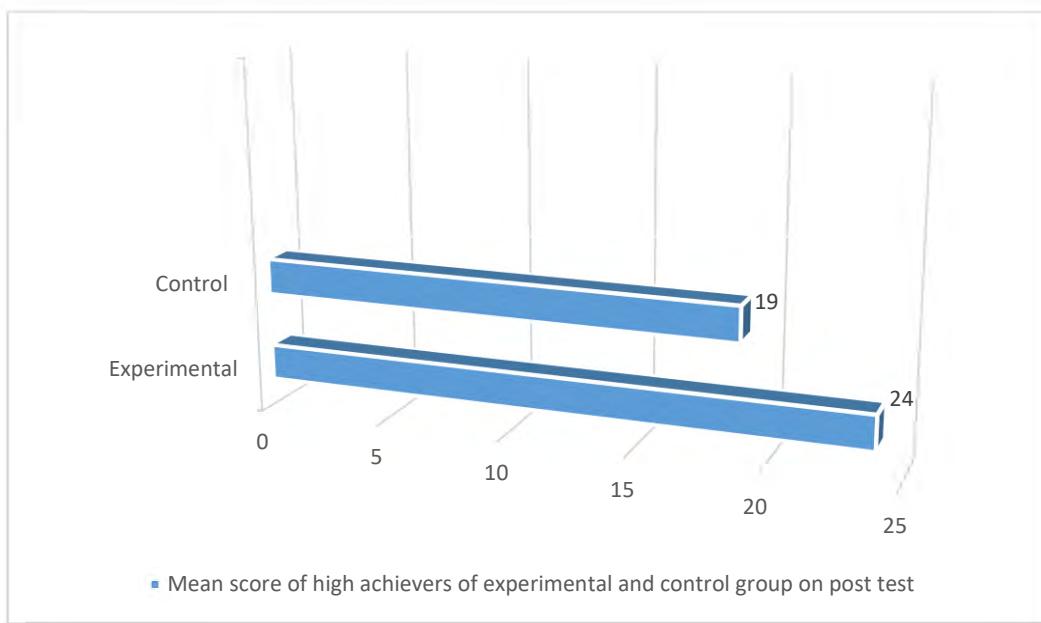


Figure 4.21 shows the mean score of high achievers in the experimental group and the control group on post-test. Figure shows that there is a significant difference in the mean scores of high achievers in experimental group and high achievers in the control group. The mean score of high achievers in the experimental group is 24 and high achievers in the control group is 19.

H₀₄ There is no significant difference in the mean post-test scores of average achiever students of experimental group and average achiever students of control group.

Table 4.8

Mean and t-value of Average Achievers of Both Groups on Posttest

Group	N	Mean	df	t-value	p-value
Experimental	14	20.07			
			31	6.089	.000
Control	19	15.73			

Table 4.8 shows the mean score of the average achiever of the experimental group and the average achiever of the control group on the post-test. The mean score of the average achiever students in the experimental group is 20.07, and mean score of the average achiever students in the control group is 15.73. There is a difference in the mean score of both groups. The value of p is .000, which is also less than .05. Hence, the null hypothesis that there is no significant difference in the mean post-test scores of the average achiever students in the experimental group and the average achiever students in the control group is rejected. There is a difference in the mean score of both groups. Therefore, it means that there is a difference in the mean score of the average achiever students in the experiment group who taught with instructional modules and the average achiever students in the control group who were taught with the conventional method.

Figure 4.22

Mean Score of Average Achievers of Experimental and Control Group

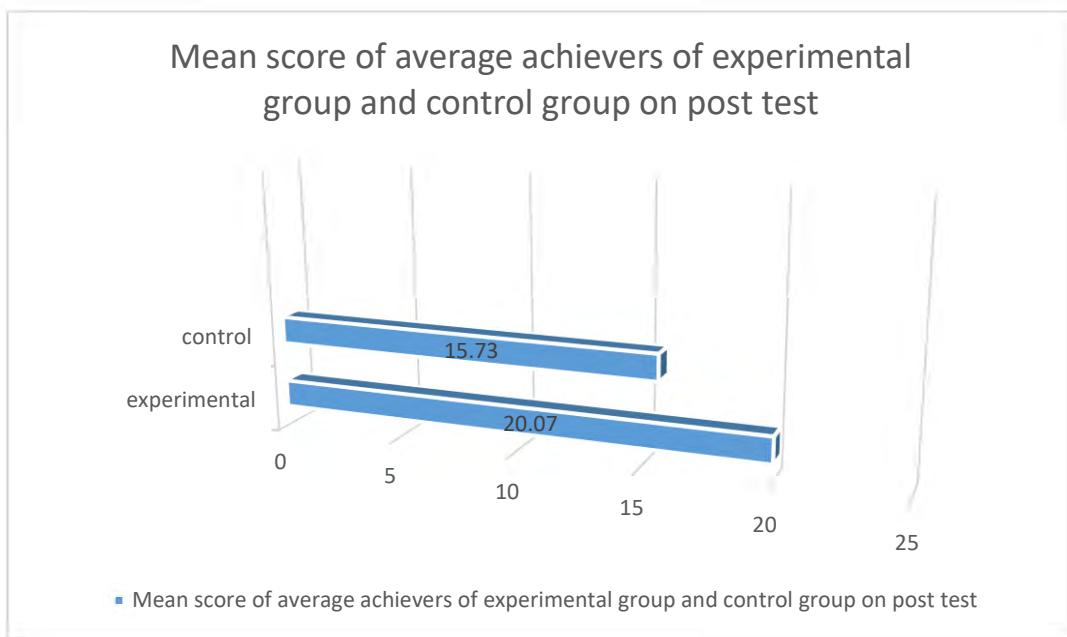


Figure 4.22 shows the mean score of average achievers in the experimental group and control group on the post-test. The figure shows the difference in the mean score of average achievers in the experimental group and average achievers in the control group. The mean score for the experimental group was 20.07, and mean score for the control group was 15.73.

H₀₅ There is no significant difference in the mean post-test scores of low achievers of experimental group and low achievers of control group.

Table 4.9

Mean and t-value of Low Achievers of Both Groups on Posttest

Group	N	Mean	df	t-value	p-value
Experimental	6	19.33			
			14	9.77	.000
Control	10	13.90			

Table 4.9 shows the mean score of low achievers in the experimental group and low achievers in the control group on the post-test. The mean score of the low achiever students in the experimental group is 19.33, and mean score of the low achiever students in the control group is 13.90. There is a difference in the mean score of both groups. The value of p is .000, which is also less than .05. Hence, the null hypothesis that there is no significant difference in the mean post-test scores of low achiever students of experimental group and low achiever students of control group is rejected. There is difference in the mean score of both groups. Therefore, it means that there is a difference in the mean score of the low achiever students in the experiment group who taught with instructional modules and the low achiever students in the control group who were taught with conventional method.

Figure 4.23

Mean Score of Low Achievers of Experimental and Control Group on Posttest

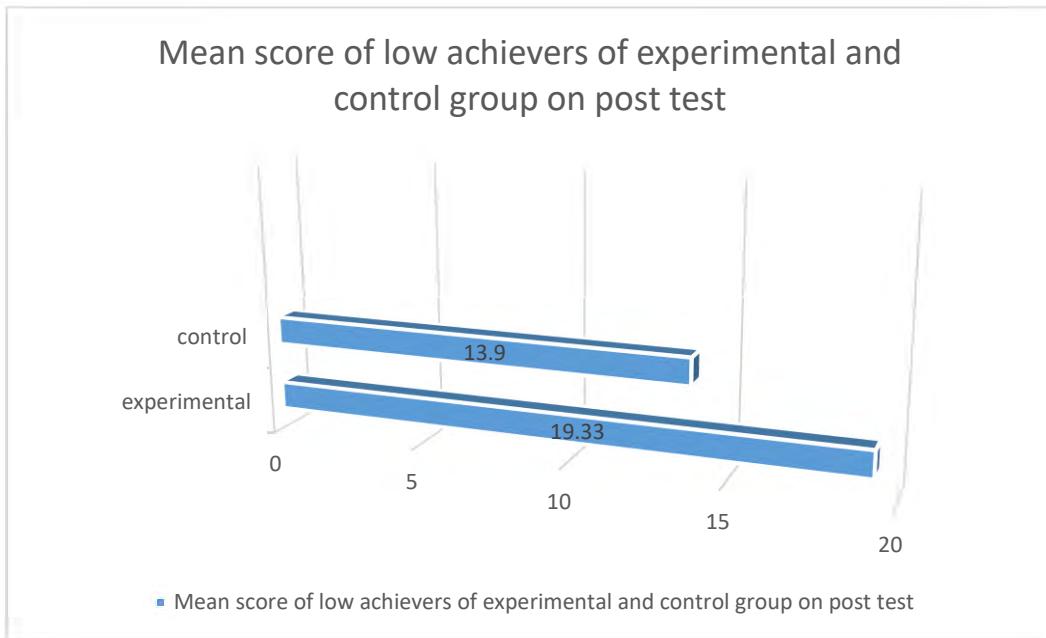


Figure 4.23 shows the score of low achiever of the experimental group and the control group on post-test. There is a difference in the score of low achievers of the experimental group and low achievers of the control group. The mean score of the control group is 13.9, and the main score of the experimental group was 19.33.

Part 4: Analysis of Perception Questionnaires

In part 4 the perception questionnaire was analyzed. A perception questionnaire was used to know about the perceptions of students and teacher of experiment group about instructional modules after the experiment. The perception information was obtained from the students in the experiment group. Perception of students and teacher are discussed following.

Research Question 1: What are the perceptions of prospective teachers about instructional e- modules?

A perception questionnaire was developed and administered to know about the perceptions of the prospective teachers regarding e-modules. This instrument consists of 26 items and was structured on a five point Likert scale. This instrument was graded as strongly agree, agree, neutral, disagree and strongly disagree. The aim of this instrument was to get the perceptions of students about e-modules, content, teaching and pedagogy etc. The analysis of the perception questionnaire is described below in table 4.10:

Table 4.10

Analysis of the Perception Questionnaire

Sr. #	Statement	%	Mean	SD
1	I was clearly informed about the objectives of course, class assignments and evaluation criteria.	96.9	4.21	.490
2	The teacher pointed out the connection between the course content with real life examples.	96.9	4.25	.508
3	The videos used in the modules help me to understand the content.	93.8	4.15	.627
4	The activities of the modules were very useful.	100	4.28	.456
5	The activities of the modules were related to the content.	96.9	4.21	.608
6	During module presentations, students were encouraged to participate (discussion, asking/answering questions).	100	4.28	.456

7	The teacher encouraged group work and communication among the students.	96.9	4.25	.508
8	Learning through e-modular approach was useful and meaningful.	100	4.28	.456
9	Concepts in the modules are clear to me.	93.7	4.15	.723
10	I can access modules material anywhere, anytime according to my ease.	93.7	4.18	535
11	Graphics used in the modules were relevant and useful.	90.6	4.12	659
12	The teacher was motivated during lectures.	93.8	4.18	.644
13	I am generally satisfied with the content of instructional modules.	93.8	4.18	644
14	Study materials were available to the students (teaching material, readers, and course books)	90.6	4.06	.715
15	I am generally satisfied with the teacher.	96.9	4.18	.592
16	Lectures and other forms of teaching were well-balanced (exercise, seminar paper presentations, practical work, etc.)	81.2	3.96	.932
17	Internet resources were also incorporated in instructional modules.	81.1	3.87	.870
18	References share in the modules were also helpful and relevant.	90.6	4.15	.677

19	Students can also use the modules again and again.	90.6	4.15	.574
20	Learning using instructional modules were very interesting	93.7	4.18	.535
21	Students have actively participated in individual and group presentations	84.4	4.03	.694
22	Instructional modules are helpful for all the students of the class.	90.06	4.12	.751
23	I have improved my marks by learning through instructional modules.	87.5	4.03	.822
24	Students were fully engaged in all the activities of the modules	90.6	4.09	.817
25	The teacher has delivered the content in a clear and effective manner appropriate to my level of study.	96.9	4.18	.592
26	I want to study other subjects using e-modular approach in the future.	93.8	4.18	.644

Table 4.10 showed the data regarding the perception of students about modules. The mean value for each statement is described along with percentage and standard deviation value. Students were informed about the objectives of course, class assignments and evaluation criteria. The mean score was 4.21 with standard deviation value of .490. While responding to the question number 2 which was about the connection between the course content with real life examples, the mean value for this question was 4.25 with standard deviation value of .528. It means that students were informed about it. In response to the question number 3, the mean value was 4.15 with standard deviation value of .627.

It means that students responded that the videos used in the modules help students to understand the content. The mean value for question number 4 was 4.28 with standard deviation of .456. Students responded that the activities of the modules were very useful. In response to question number 5 regarding activities of modules related to the content, mean value for it was 4.21 with standard deviation value of .608. In response to question number 6, students show that they were encouraged to participate in discussion and answering questions. The mean value for question number 6 was 4.28 and standard deviation value was .456.

Students responded in question number 7 that teacher encouraged group work and communication among the students. The mean value for it was 4.25 with standard deviation value of .508. Question number 8 was regarding learning through e-modular approach. The mean value for it was 4.28 with standard deviation value of .456. Students showed that their learning through e-modular approach was useful.

The mean value for question number 9 was 4.15 with standard deviation value of .723. Students showed that the concepts in the modules are clear to them. Question number 10 was about access of module material anywhere, any time. The mean value for this question was 4.18 with standard deviation value of .535. Students' responses show that students can access material anywhere and anytime.

The mean value for question number 11 was 4.12 and standard deviation value was .659. Students showed in their response that graphics used in the modules were relevant and useful. In response to question number 12 about teacher motivation during lectures. Mean score for the question was 4.18 with standard deviation value of .644. It shows that teachers were motivated during lectures.

The mean value for question number 13 was 4.18 and standard deviation value of .644. The mean value is high for the question regarding students' satisfaction regarding instructional module content. In response to the question number 14 regarding availability of study materials for students. The mean value for it was 4.06 and standard deviation value was .715. The mean value shows that study material was available to students.

The mean value for question number 15 was 4.18 with standard deviation value of .592. The students' responses show that they were satisfied with the teacher. While responding to the question number 16 regarding lectures and other forms of teaching, the mean value for the question was 3.96 and standard deviation value was .932. The mean value shows that lectures and other forms of material were well balanced.

The mean value for question number 17 was 3.87 and standard deviation value of .870. The mean value shows that internet resources were incorporated in instructional modules. The mean value for question number 18 was 4.15 and standard deviation value of .677. The mean value shows that students were satisfied that references share in the modules were helpful and relevant.

The mean value for question number 19 was 4.15 and standard deviation value was .574. The mean value was high for the question regarding using of modules again and again. While responding to the question number 20 of learning using instructional modules, the mean score for the question was 4.18 and standard deviation value was .535. The mean value shows that learning using instructional modules were very interesting.

The mean value for question number 21 was 4.03 with standard deviation value of .694. The mean value shows that students have actively participated in individual and group presentations. The mean value for question number 22 was 4.12 and standard deviation

value was .751. The mean value shows that instructional modules are helpful for all the students in the class.

The mean value for question number 23 was 4.03 and standard deviation value was .822. The mean value shows that students have improved their marks using instructional modules. The mean value for question number 24 was 4.09 and standard deviation value was .817. The mean value shows that students were fully engaged in the activities of instructional modules.

The mean value for question number 25 was 4.18 and standard deviation value was .592. The mean value shows that students responded that teacher has delivered the content in clear and effective manner. The mean value for question number 26 was 4.18 and standard deviation value was .644. The mean value shows that students responded that they want to study other subjects using e-modular approach.

Data analysis showed that most of students have positive attitude toward learning thorough modular approach and using instructional modules. Overall mean score was high which means that students want to learn using instructional modules in the future and students were highly satisfied with the course content, delivery, activities, internet resources, class activities, discussions, references given in the module. Students showed that these modules can be accessed by any one anytime and anywhere by all the students. Respondents felt that they were clearly informed about course objectives, assignments, and evaluation criteria. The modules were perceived as relevant and useful, with activities and group work encouraging engagement. Most respondents appreciated the flexibility of accessing course materials anytime, anywhere. While satisfaction is generally high, there are some areas with lower mean scores, such as the balance between different forms of

teaching and the incorporation of internet resources. Based on these results, it seems that the e-modular approach is generally effective, but there may be opportunities to further enhance the balance of teaching methods and incorporate additional resources to improve the overall learning experience.

What are your suggestions for further improvement of this course using e-modular approach?

One question in the perception questionnaire was open-ended, in which suggestions were taken from students in the experiment group about improvement in the course. The suggestions of the students are described below.

- There should be more real-world case studies and examples incorporated in e-modules to provide practical applications of the content.
- In increase interactivity in e-modules more simulations and interactive quizzes should be included.
- New technologies and online tools like virtual reality and gamification should be included in e-modules to make it better.
- Students should be provided chances to know about leadership and management in the form of seminars or workshops.
- Feedback of students should be gathered regularly for improvement of course.
- Content about great leaders should also be included in the instructional modules.
- Similarly, more videos regarding Pakistani leaders should be included in e-modules.
- Student should visit some institutions and observe leadership style.
- Students also wanted to see some school records physically.

Perception of Experiment Group Teacher Regarding Instructional Modules

It was also important to take the perception of the teacher who taught experiment group to know about her perception regarding instructional modules. An open ended questionnaire was used to come to know about experiment group teacher perception.

1. Which one modules do you think students find more effective?

Students find module 12 more interesting as this module was about leadership style and students have performed role play on different leadership styles.

2. Where you think students feel motivated?

In modular teaching, students took part in different activities. There was different type of activities, individual and group activities. Students were motivated in their group presentation in class.

3. Do you think students learning was effective using modules?

Students learning was effective as students take interest in classes and class activities.

4. Do you feel any difficulty in using modules?

Students feel difficulty in theories in the start so by using online learning resources, videos and discussion, they understand it in a better way.

5. Which thing students find more interesting in modules and want to do again and again?

Students took interest in watching videos as their learning becoming clearer using these resources.

6. What are your suggestions for further improvement of this course using e-modular approach?

For further improvement of this course here are some suggestions.

- Students can visit different schools and observe leadership styles.
- Students can physically examine the different records by visiting different schools as this was not possible due to time constraints.

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

Instructional modules are successfully being used for different purposes including increasing achievement of students. Different developed and developing countries are using modular and e-modular approach in teaching of various subjects of natural sciences and social sciences. Keeping in view the advantages of modular approach, the researcher intends to develop modules and to assess its effectiveness in the academic achievement of students.

The purpose of the study was to develop and validate instructional modules for prospective teachers of BSEd Hons 4th session 2021-2025 semester in the subject of Educational Leadership and Management. The study was conducted to achieve the objectives of developing self-contained learning material for prospective teachers in the subject of educational leadership and management, to ascertain the effect of e-modules on high, average and low achievers, and to assess the effect of teaching with self-contained learning material and traditional method on the academic achievement of prospective teachers. The need analysis was done to check the feasibility of the modules. The research study was consisted of two phases. The first phase was the development of the modules. The second phase was to tryout the modules. In the first phase, 12 instructional modules were developed with the help of literature review and by following the steps of ADDIE instructional design model. The modules were prepared both in MS Power Point and MS Word format. These modules were incorporated with graphics, animations, tables, relevant

videos, and articles were hyperlinked there. The instructional modules were not only delivered face-to-face using multimedia, but these modules were also presented in Google classroom too. Students had accessed the instructional modules using Google classroom. Moreover, each module was designed in such a way that there was also an assessment at the end of each module. Students had the facility to check their learning before moving to the next module. These modules were designed for the course outline of the University of Punjab. Modules were self-learning material that students could learned the material step by step and then moved on to the next topic of module. The modules were validated by a list of experts. One module was pilot tested to the students of BSEd. Hons 6th semester. After the validation and reliability checking, these modules were finally ready for implementation in the class. Second phase was the tryout of the modules. The total number of hypothesis for the study were five. There was one research question for the study also.

After getting permission from the concerned authorities, the researcher tried out the modules. The duration of the tryout was a period of 12 weeks. Quasi experimental design was used for tryout purposes. The researcher has taken two intact groups of BSEd. Hons 4th semester randomly. Both groups were further divided into high, average, and low achievers on the basis of their previous semester results, and following criteria. The total number of prospective teachers in both groups was 70. Two teachers with equivalent qualifications and experiences were selected by the administration to teach the experimental group, and the control group. The control group was treated with traditional teaching methods, whereas, the experimental group was given intervention for whole semester which was about 12 weeks long. A pre-test was administered before the start of the treatment. A post-test was administered to the prospective teachers of both groups next

day at the end of treatment. All the tests were first checked by the teachers, and then rechecked by the researcher. Data were fed into the Statistical Package for Social Sciences (SPSS) version 26. An independent sample t-test was used at the confidence level of .05 level of significance to find out the significant difference between the mean score of the experiment group and the control group. Data were analyzed using independent sample t-tests, frequencies and percentages. To check the perception of the prospective teachers, prospective teachers of experiment group also filled out the perception questionnaire after the treatment.

5.2 Findings

The following were the findings of the research study: -

1. The researcher developed 12 instructional modules/self-contained materials using e-modular approach for the course of the educational leadership and management.
2. The mean score of the experimental group on the pre-test was 11.31 and the mean score of control group was 10.76. The value of p was 0.254, which was greater than .05 level of significance. Therefore, it was found that there was no significant difference in the mean score of the experiment group and the control group. It was found that both groups were same before the start of experiment. (Table 4.5).
3. There was a vast difference in the mean score of the experimental group and in the mean score of the control group on the post-test. The mean score of the experimental group was 21.40 and the mean score of the control group was 16.02. The value of p was .000, which was lower than .05 level of significance. Therefore, it was found that there was a significant difference in the mean score of both groups on post-test. Teaching with instructional modules have a great effect on students'

achievement. Students of experiment group who were taught through modular approach scored high than the students who were taught through conventional method of learning (Table 4.6).

4. The modular approach has also improved the scores of high achievers in the experimental group on post-test as compared to the score of high achievers of the control group. The mean score of the high achievers of the experiment group was 24.00, and the mean score of the high achievers of the control group was 19.00. The value of p was .000, which was less than .05 level of confidence. It was found that there was a significant difference in the mean score of high achievers of the experiment group and the high achievers of the control group. The modular approach has significantly improved the achievement of students in the experiment group (Table 4.7).
5. The modular approach has also improved the achievement of students of average achievers of the experiment group as compare to the achievement of the students of average achievers of the control group. The mean score for the students of the experiment group was 20.07, and the mean score for the students of control group was 15.73. The value of p was .000, which was less than .05 level of confidence. Therefore, it was found that there was a huge difference in the mean score of both groups. The average achiever students of the experiment group have performed better than the average achiever students of the control group. So, it was found that the students who were taught using instructional modules have performed better than the students who were taught using conventional method (Table 4.8).
6. The modular approach has also improved the scores of low achievers of the

experimental group on the post-test as compared to the score of low achievers of the control group. The mean score of the low achievers of the experiment group was 19.33 and the mean score of the low achievers of the control group was 13.90. The value of p was .000 which was less than .05 level of confidence. It was found that there was a significant difference in the mean score of low achievers of the experiment group and the low achievers of the control group. The modular approach has significantly improved the achievement of low achiever students of the experiment group (Table 4.9).

7. It was found through the analysis of perception questionnaire, that students' learning through a modular approach was positive. Students were satisfied with the content, activities of instructional modules. Students were motivated during lectures (Table 4.10).
8. Students found module 12 more interesting because it focused on leadership style and included a role-playing activity related to leadership style.
9. Students' learning was effective as students showed interest in classes and class activities, as a result of being motivated during group presentations in class.
10. It was found that students felt difficulty in the start but with the use of online resources, videos and discussion they comprehended the difficult topics.
11. Teacher found that students took more interest in watching videos as some concepts can be better understood by physically examine the places and by observing the relevant material.

5.3 Discussions

Teaching using e-modules is an emerging teaching strategy. Many developed countries are utilizing e-modules, modules or modular approach for teaching many subjects of natural sciences and social sciences. In Pakistan, there was no study available in teaching using e-modules in the subject of educational leadership and management and to find out the effect of modular teaching on the academic achievement of students. Teaching using instructional modules/e-modules is a teaching technique in which all the contents is divided into modules. Each module is further divided into further parts. Every module is designed in a way according to the learning objectives of content. Each module is enriched with animations, videos, pictures, graphics and relevant study material along with references to further study material. At the end of each module, there is an assessment which is designed according to specific learning objectives. After studying the module, the student has to assess his/her learning using assessment. These modules are self-learning material. They are designed in such a way that students can study using modules according to their own pace of learning. These modules are useful for different ability groups. They are useful for high, average and low achiever students of the class. Many countries are utilizing modular approach for different subjects at different level. Different countries are using this approach in training, teaching, and learning. Therefore, the research study was designed to find out the effect of using instructional modules on the academic achievement of prospective teachers of BSEd. Hons program. Data were statistically analyzed using Statistical Package of Social Sciences. Results of data analysis were presented in the form of tables, graphs and results were interpreted accordingly. Findings and conclusion were drawn on the basis of data analysis.

5.3.1 *Traditional Approach VS Modular Approach*

In this research study, after development of instructional modules, a try out was carried out for validation of instructional modules. For this, two intact groups of BSEd. Hons were taken. Prospective teachers of BSEd. Hons were the sample of the study. In pre-test, there was no significant difference in the achievement of both groups. It means that both groups were same in the start of the experiment. Meanwhile, students were divided into high, average and low achiever prospective teachers on the basis of their marks in previous semester. A pre-test was taken from students before the start of the treatment.

The duration of try out was 12 weeks. At the end of this, post-test was administered to the prospective teachers of both groups. There was a significant difference in the mean score of prospective teachers of both groups. The students of experiment group were taught using instructional modules. Their achievement was high as compare to the students of control group who were taught using traditional method. Hence, the prospective teachers of an experiment group' achievement were high as these students were taught using e-modules. So, it was also seen that the modular approach has affected the achievement of high, average and low achiever students.

These modules were self-directed learning modules. Students can excel at their own pace. They could access or revise the modules according to their need. There was an assessment at the end of each module, students could access the module anywhere any time according to their own ease. Moreover, further references for study along with helping material were also included in the module. On the other hand, the students of control group were taught using traditional method of learning.

Lodhi (2007) conducted a study on the restructuring, enrichment, and modular technique of content reorganization in the master's level International Relations curriculum. It was shown that master class students who received training through modular methods outperformed those who received instruction through traditional methods in terms of sensitivity, national interests, culture, and core values. When it came to choosing a political profession, the experimental group showed 20% more attention than the control group. Findings of the study of Lodhi are similar to the findings of the current study.

Results of the study confirmed the findings of the study of Khalid (2011). Khalid (2011) developed modules for his study of "A study of developing tolerance among teachers through classroom activities". One-year long experiment was conducted on the students of B.Ed. program in university of Sargodha. Khalid used many activities like role play, discussion method. He found in his study that the tolerance could be developed and its level could be improved in the students, subject to the conditions that the efforts should be consistent and continuous for that.

Malik (2012) examined the differences in the effects of traditional and modular teaching methods on secondary students' overall comprehension. Ninth-grade students from one male and one female secondary school were selected at random to serve as a sample for the experiment. To gather information, a general comprehension scale created by teachers was used. The independent sample t-test was employed for data analysis. When comparing the general text comprehension of children using conventional versus modular techniques, significant disparities were observed. In a teacher-made scale, students who learnt using the modular approach had a higher mean score than those who learned using the traditional strategy. There was a noticeable gender difference in the scores, with male

students outperforming female students on the general comprehension measure. There was a noticeable gender gap, with male students performing better. Findings of the present study confirmed the findings of study of Malik as in present study the students who were taught using modular approach performed better than students who were taught using traditional method of teaching.

The study also confirmed the findings of the study of Shaheen (2013). Shaheen carried out an experimental study at the secondary school level to determine the effect of a modular strategy incorporated with ICT on students' achievement and retention in biology. Differences in ability and gender were also investigated. Biology book modules for grade IX were created and connected with ICT by adding images, animations, and movie clips. The study used a control group pre-test post-test design. Using the stratified random technique of selecting, 172 pupils from two schools in Islamabad were chosen as a sample for the 2012–2013 academic year. ANOVA and the independent sample t-test were used for data analysis at the 0.05 level. In terms of post-test, accomplishment, and retention, the experimental group performed better. For the experimental group's low, moderate, and high achievers, the modular approach proved to be equally helpful. Underachievers developed in a unique way. The modular approach has been shown to be generally quite effective in raising biology students' academic performance and retention.

Researchers Sadiq and Zamir (2014) investigated the efficacy of the modular approach to look at students' performance, learning, and achievement as well as to determine whether approach modular teaching or traditional methods is more beneficial. For testing, an equivalent group design was used. Thirty university students pursuing a "Master in Educational Planning and Management" made up the sample. Mean, Standard

Deviation, and t-test were used for data analysis and interpretation from both the experimental and control groups. The outcomes endorsed the application of the modular strategy. Compared to traditional teaching approaches, modular instruction has been demonstrated to be considerably more helpful in the teaching and learning process. Because pupils in modular instruction progress at their own pace. It is an unrestricted method of self-learning where practice is immediately given feedback and reinforcement, picking the learners' interest and inspiring them. Modular training helps to raise the likelihood that students will attend class and finish specific assignments right away. The student feels liberated to study how they like as a result. Present study verify the findings as modular approach was beneficial as compared to the traditional method of teaching.

Kausar (2018) has developed social site for educational purpose keeping in focus the 5Cs of online education. The researcher has developed social site in the subject of "Instructional Technology Basics" has recommended in her studies that social sites mediated course were helpful in the learning of students. The sample of the study were the mix ability graduate and post graduate students of university. The researcher had used pre-test and post-test in order to know the learning of the students. The researcher suggested that all sort of long theoretical and short course or vocational courses can be taught to the students using social sites mediated course. The research study also coinciding with the findings of Kausar (2018).

Findings of the study verify the findings of study conducted by Azhar (2019). The researcher developed adaptive learning modules using attributes of power point for grade 6th students. The sample of the study were the students of grade 6th of district Lahore. The researcher used Quasi experimental design. The researcher found in the study that these

adaptive learning modules have significant difference on students' learning and achievement. Students were engaged and showed interest in learning using power point modules. The researcher suggested that using adaptive learning modules is a simple way and it is also a best way in individualized learning.

Rashid et al. (2020) conducted a study on the "Teaching of Human Rights through Modular Approach at Higher Education Level". The researcher developed modules using UNESCO-APNIEVE guidelines on the Human Rights. The Researcher conducted an experiment of nine weeks on university students. After the treatment, the researcher found the significant difference in the attitude of students towards Human Rights. In this study, the researcher tried to know about the students' attitude about human rights. As students were taught using modules and showed interest in learning using modules. The present study also confirmed the findings of the study of Rashid et al. (2020) in a way that in present study modular approach was also used and students take interest in learning using modules.

Arnold (2014) in his study described that modular approach is useful for the subject of "civil technology". To achieve goals related to instructional technology, this method was more effective in imparting instruction, skills and knowledge to the students. Modular approach consisted of content and activities related to the topic in order to achieve the specific objectives is useful and effective for the teaching and learning of the students. The present study confirms the findings of Arnold (2014).

In order to determine the efficacy and validity of created modules in the 2009–10 university-level subjects of "Social Orientation" or "Personality Development and Public Relations" (PDPR), Laroza (2015) carried out a study. Fifteen PDPR professors and thirty

second-year students participated in the study as respondents. The research approach used was descriptive-experimental. The instruments used to collect the data were the test results and the questionnaire-checklist. The PDPR professors validated the modules based on the following standards: goals, content, structure and presentation, language and style, and module efficacy. Pre and posttest design was used to determine whether the control and experimental groups had succeeded. For data analysis, the mean, standard deviation, and rank distribution were used. The post-test results indicated a substantial disparity in the mean score between the experimental and control groups, which was measured using the t-test. Modules were determined to be effective teaching tools. Both the experimental group's performance and the pre- and post-test findings were excellent. Both teachers and students thought that the modules were quite effective. Present study confirmed the findings of the study of Laroza.

The findings of the current study are in line with the findings Melad (2016). Melad (2016) looked on the efficacy of math teaching modules, specifically focusing on quadratic functions. A total of 40 students were enrolled in the study, 20 of them were assigned to the experimental group and another 20 to the control group. The control group was taught using the traditional chalk-talk method, while the experimental group received a module. Six math teachers were surveyed regarding their opinions of the module prior to the implementation of remedial instruction. Both groups took the post-test after finishing the remedial instruction. After the remedial instruction was finished, there was a statistically significant difference in the experimental group's achievement level compared to the control group. Compared to the control group, the experimental group achieved higher levels of success. One important function of the self-instruction package is to teach

mathematics. Furthermore, the self-taught program helps both poor achievers who need remedial education and the group of quick learners. The use of modular approach practices, such as the Quadratic Function as a remedial teaching material, greatly raised the achievement level of the students, especially in the experimental group.

Viswanathan and Viswanathan (2017) conducted study a study on the students of MBBS 9th batch at “Sree Gokulam Medical College and Research Foundation”. E-modules were used in teaching of MBBS students in addition to the lectures in the classroom for the experiment group. A substantial difference was found in the academic performance of the students. There was a difference in the mean score of the students of experiment group and the students of control group. Students of experiment group which were taught using e-modules performed better. Findings of the present study are in line with the findings of the study of Viswanathan and Viswanathan.

The present study confirmed the findings of Haryanto and Rustana (2021). They developed module in the subject of Physics for xi students. The researchers developed modules using ADDIE instructional design model. After the implementation of modules on small and large group, it was found that the developed modules were effective in enhancing students' critical thinking skills. So this study is similar to the study of Haryanto and Rustana that the study also used ADDIE instructional design model in the development of modules and these modules have increased students' achievement.

The present study also confirmed the findings of the study of Arosyad et al., (2021). E-modules were developed for the subject of English and used for the teaching of class five students. E-modules developed which were equipped with audio, video resources, graphics resources, electronic dictionary were also added, which contributed effectively in the

comprehension of students in the subject of English grammar and literature. The results showed that these e-modules have positive effect on the learning outcome of the students.

Results of the current study supports the findings of Utami et al., (2020). The researchers developed Interactive E-modules using instructional design model using ICT skills. These modules were based on Hybrid Guided Inquiry. It was found that interactive e-modules were useful in the improvement of learning of the students and these modules have made ease the learning process of the students.

Anggraini and Putri (2020) developed modules using mind maps for the material of Excretion and Coordination System for 11th grade students. The researchers worked on the problem of students' difficulties in understanding new content and their difficulty in making connection of that content with the previous content. Mind maps were used as a treatment or solution for this problem. Mind maps modules played a positive role in achievement and retention of material for students. Findings of the current study are in line with the research of Anggraini and Putri (2020).

Findings of the current research are in agreement with the findings of earlier studies that provided the evidence of effectiveness of modular approach. (Ali, 2005; Ahmed, 2007; Lodhi, 2007; Behlol & khan, 2016; Ainscow & Sandill, 2010; Ganiron, 2015; Laroza, 2015; Germain-Rutherford & Kerr, 2016; Melad, 2016; Astalini et al., 2019; Prabakaran & Saravanakumar, 2020). Moreover, the results of the present study are in line with the findings of prior study which provided evidence that modular approach is better than traditional method of teaching (Khatoon, 2004; Lodhi, 2007; Ali et al., 2010; Malik, 2012; Sadiq & Zamir, 2014; javed, 2016; Rashid et al., 2020).

Although modules have positive influence on students' achievement and learning.

In following study, there are some reservations of teachers regarding modules. Yanikoglu et al. (2017) used modules for the students of first grade education. The researchers had developed e-module application in hand written technology. Students were excited in using these modules. E-modules were developed in handwriting and mathematics. However, there were some concerns of teachers regarding preparing extra question, assessment to be used in modules in addition to their class work in tight schedule. Children preferred to use tablet over paper pen while teachers were some concerns in using this technology based hand written modules over pen paper method. The researchers had explained the point of view of the teachers too.

Putri et al., (2024) conducted study on augmented reality to increase students' interest in learning. The purpose of this study was to evaluate how well interactive media may be used to produce E-LAPEN-based augmented reality and raise students' interest in learning. Research and Development was used in the study utilizing the development model ADDIE. Pre and posttests, together with interest-in-learning questionnaires, were the instruments employed in this study. With scores of 90% for media and 95% for material, the validation conducted by specialists in the respective fields demonstrates that the criteria are highly practicable. A pre- and post-test on the participants' interest in learning was administered following the media's implementation. The study's findings demonstrate an improvement both before and after using the E-module. In comparison, 57% of all inquiries in the prior period shown high to extremely high curiosity enthusiasm in learning, but following the module's use, this proportion rose to 98% and was bolstered by higher test results. Pre- and post-test percentages equaling 20.98%. current research

study also used ADDIE instructional design model for development of modules. Both studies findings are similar in achievement of students too.

Ramadhani and Andriani (2024) conducted research on e-modules and its' effectiveness in enhancing students learning. Interactive e-modules were developed aiming to enhance students' cognitive learning. Interactive e-modules were very helpful in increasing students' learning outcome as there was difference in the pre-test and post-test scores of students. Findings of the research revealed that interactive e-modules were very feasible and helpful in increasing learning outcome of the fourth grade students. Findings of the study are in line with the findings of Ramadhani and Andriani (2024).

Meilinda et al. (2024) developed module using ADDIE module in teaching of Islamic Scouting Education. Findings of the study revealed that a very informative and comprehensive pocket books were prepared by adding useful learning resources and related educational material. Students also showed their satisfaction in using these scouting teaching modules. Students showed their interest in new developed material as compared to the previous available material which created boredom among the students. The findings of study support the findings of Meilinda et al. (2024)

Li and Abidin (2024) developed modules for pre-service music teachers. Due to advancement in technology and teaching methods, the researchers felt need to improve existing material. So by utilizing the five phases of ADDIE instructional design model, the researcher developed modules for pre-service music teachers. The findings showed that these modules were very helpful in improving the teaching skills of the students. Findings of the current research are in agreement with the findings of Li and Abidin (2024).

5.3.2 Modular Effect on Ability Group Students

One of the objectives of the present study after the development of modules was to find out the effect of instructional modules on the achievement of high, average and low achievers prospective teachers. So, the current study has found out the effect of modules on the achievement of high, average and low achiever students. Instructional modules have positive effect on the achievement of prospective teachers of experiment group. The mean score of the students of high, average and low achiever students were high as compare to the high, average and low achiever prospective teachers of control group.

The findings of the study are in line with the study of Ahmed (2007). He used modules to find the effect of these modules on the achievement of different ability groups. He also found that achievement of low achiever students of experiment group was high as compare to the low achiever students of control group.

Ganiron (2015) conducted the study “Development and Validation of Module Presentation of selected topics in Physics for Architecture students”. The researcher found in his study that module was effective in teaching physics. Module was effective for both high and low achiever students. It was found that students showed their interest in learning through modular approach. The findings of the present study confirmed the findings of this study.

The findings of the current study corroborate the research findings of the study of Javed (2016). The researcher developed and used computer supported modules for the students of Bed using the approach of 5E for the development of modules. The researcher used experimental design and used pre-test and post-test to evaluate the achievement of students. After data analysis, the researcher found that constructive computer supported

instruction were helpful for high, average and low achiever students. The computer supported modules have a significant impact on the academic achievement of students.

The findings of the study are in line with the study of Alam et al. (2019). Alam et al. (2019) conducted research to investigate the impact of the modular approach on teachers' English-speaking proficiency. A module on English speaking abilities was created and verified. The study's sample consisted of fifty aspiring teachers enrolled in Bachelor of Education programs. An experimental design of pre-test-post-test was employed. To analyze the data, an independent sample t-test was employed. It was discovered that the program was beneficial for enhancing English-speaking abilities. Both low and high ability pupils reported the same level of effectiveness.

After discussing the researches on modules development, it is crystal clear that modules had been used for different subjects like English, Biology, Science, Physics and instructional technology etc. the modules were developed by using different instruction design model like 5 Cs, Gagne nine events of instructions, 7 Cs, ADDIE model, and using different guidelines in literature review. Modules were also used for different level from small children to university students. Modules were used for increasing critical thinking, developing attitude for some subjects like peace and human rights. These modules were accessed by students using power point, Facebook and by CD's also. This approach was used by all over the world. Researches above showed that modules had positive effect on students' achievement. Modules were also helpful in increasing students' interest towards particular subjects. Although in some researches, some teachers or organizers were worried that it took time in developing modules and the teachers had less time in school or in an institution to spend time on the development of modules.

5.4 Conclusions

On the basis of the findings of the study, it was concluded that:

1. The researcher developed 12 instructional modules using an e-modular approach for the course of the educational leadership and management
2. There was no significant difference in the mean score of experimental group and in the mean score of control group in the pre-test. The achievement of the students of both groups were similar in the start without any significant difference.
3. There was significant difference in the mean score of the students of experiment group and in the score of the students of control group. The students of experiment group who were taught using instructional modules' achievement were high as compare to the students of control group on post-test. So, it was concluded that teaching using instructional modules has effected students' achievement positively and students' achievement were high as compare to the achievement of the students of control group.
4. Achievement of high achiever students of experiment group were high in post-test as compare to the high achiever students of control group. The mean score for the students of experiment group were significantly different as compare to the mean score of the students of control group. It was concluded that the high achiever students who were taught using instructional modules or self-learning material gained better score than the high achiever students of control group on post-test.
5. Achievement of average achiever students of experiment group were high in post-test as compare to the average achiever students of control group. The mean score for the students of experiment group were significantly different as compare to the

mean score of the students of control group. It was concluded that the average achiever students who were taught using instructional modules or self-learning material gained better score than the average achiever students of control group on post-test.

6. Achievement of low achiever students of experiment group were high in post-test as compare to the low achiever students of control group. The mean score for the students of experiment group were significantly different as compared to the mean score of the students of control group. It was concluded that the low achiever students who were taught using instructional modules or self-learning material gained better score than the low achiever students of control group on post-test.
7. There was a significant difference in the mean scores of the students of experiment group and in the mean score of the students of control group. The students of experiment group were taught using modules and the students of control group were taught using traditional method. So, there was a significant difference in the mean score of both groups on post-test. Students of experiment group have performed better and teaching using instructional modules had improved the students' achievement. Therefore, it was concluded that teaching using self-contained learning material has positive effect on the achievement of students of experiment group and students' achievement were high as compare to the students of control group.
8. It was concluded through analysis of perception questionnaire, that students' learning through modular approach was positive. Students were satisfied with the content, activities of instructional modules. Students were motivated during

lectures.

9. It was concluded through analysis of teacher's perception questionnaire that students found module 12 more interesting because it focused on leadership style.
10. Students' learning was effective as students showed interest in classes and class activities, as a result of being motivated during group presentation in class
11. Students felt difficulty in the start but with the use of online resources, videos and discussion they comprehended the difficult topics.
12. It was concluded that students took more interest in watching videos as some concepts can be better understood by physically examine the places and by observing the relevant material.

5.5 Recommendations

The findings of the study have been thoroughly analyzed. After conclusion and discussion, the following recommendations are formulated:

1. Findings of the study have shown that instructional modules have improved the academic achievement of the students. It is therefore recommended that the instructional modules may be developed and used for the teaching to accelerate the achievement of students.
2. Findings revealed that instructional modules have improved the academic achievement of the students in the subject of Educational Leadership and Management. So, it is recommended that the instructional modules may be used for the teaching of other subjects to accelerate the teaching of students.

3. It was reflected in the results that instructional modules have also improved the achievement of the high, average, and low achiever students of the experiment group. So, it is recommended that these modules may be used for all students having different abilities.
4. The academic achievement of the students of the experiment group was high as compared to the students' achievement of the control group. It is recommended that e-modules may be used in teaching to improve the achievement of students.
5. It is recommended that for the implementation of the developed modules, the teacher training institute may conduct workshops for the training of teachers in order to use these modules effectively.
6. It is recommended that for the implementation of these modules in the class, there should be internet availability in the college along with multimedia for better understanding of the class students.
7. It is recommended that for the implementation of these modules, teachers may be given training about how to use these modules in the class.
8. E-modules can also be very useful in the training of teachers. Teacher training programs can utilize the modules in trainings.
9. This study found no exact resources that were needed in the development of modules. Educational academics, working teachers, and technology practitioners should collaborate to create digital materials that will result in effective learning modules. Actually, interdisciplinary initiatives might be started in order to develop modules covering many topics.
10. Moreover, teachers may be given guidance in the form of a seminar or training regarding how to develop modules and what steps should be followed as an instructional designer.

11. Teachers may be provided incentives for the use and development of e-modules/instructional modules in the classroom.
12. During the experiment, students felt difficulty in understanding some concepts, but proper utilization of videos and online resources helped students comprehend the topics. So, it is recommended on the basis of findings and conclusions that relevant videos may be used in modules for better understanding of the concepts.

5.6 Recommendations for Education Authorities

Education authorities like the Ministry of Federal Education and Professional Training, HEC, and teacher training institutes/universities can incorporate these modules for research purposes. These modules can be incorporated into the curriculum of Educational Leadership and Management as it contains the full course, objectives, content, and assessment along with references. HEC may provide guidance to teachers in the form of a seminar or training regarding how to develop modules and what steps should be followed as an instructional designer. Once modules are developed, they can be shared by different institutions. Teacher training institutes can use these modules in the training of teachers.

5.7 Future Studies

1. The research study was delimited to the development and validation of instructional modules in the subject of Educational Leadership and Management at BSEd. Hons level. There is a need to develop other instructional modules, e-modules in other subjects for different levels also.
2. Effect of instructional modules on the achievement was investigated in this study. Other dependent variables like social skills, attitude, and motivation may be

investigated.

3. The researcher has used questionnaire for taking the perceptions of the students.

Other tools like interview and class observations may be used for this in future research studies.

4. The researcher has used quasi-experimental design for this study, true experimental design may be used for modular approach in other studies.

5. The research study is conducted in the college of Islamabad. Other studies may be conducted in other cities of the country.

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Appendices

Appendix-A

Need Analysis Questionnaire

APPLICATION OF ANALYSIS, DESIGN, DEVELOPMENT, IMPLEMENTATION AND EVALUATION (ADDIE) MODEL FOR DEVELOPING INSTRUCTIONAL MODULES IN EDUCATIONAL LEADERSHIP AND MANAGEMENT

The following goals will be the main focus of the study:

1. to carry out the target group's need analysis as specified by the ADDIE model
2. Designing and developing instructional modules
3. To deliver instruction by implementation of e-modules for the subject of Educational Leadership and Management.
4. To evaluate the value and efficacy of instructional modules in terms of students' achievement.

Step 1: Need Analysis

First step of the ADDIE model is the need analysis. It is important to know about the learner and about their knowledge and skills.

Dear Student

AoA

I hope you will be doing great job. I am working on my research so for this, I have required some information from your side. I hope, you will provide me that required information.

Thank you,

Section A: Student Profile

Name _____ Gender _____ Roll No (college) ----- Roll No
(university) _____

Class _____ GPA in previous semester _____

Instructions: This section is about to know about learner and learner knowledge and skills

about using computer, using internet, Gmail, Google classroom, MS Office, technology usage in education and interest in taking this course etc. It is important to know about learner and their skills as it is the basic point of ADDIE model.

Sr. No	Statements	Yes	No
1	Do you have facility of computer at home?		
2	Do you have facility of computer at college?		
3	Do you know how to operate computer/laptop?		
4	Do you have facility of internet at home?		
5	Do you have facility of internet at college?		
6	Do you search article on internet?		
7	Do you have Gmail id?		
8	Can you use Google classroom?		
9	Can you use MS word?		
10	Can you use MS power point?		
11	Can you play video clips/audio clip on internet?		
12	Do you have basic knowledge about computer?		
13	Do you search required information on internet?		
14	Do you think technology help in learning?		
15	Do you want to learn educational leadership and management using modular approach with the help of technology?		

Thank you for your time and cooperation.

Appendix-B

Pre-Test & Post-test

Name: _____ (Optional)

Roll No. _____

Class: _____

Gender _____

Time: 40 minutes

Marks: 28

Dear Students this test is about to gauge into your previous knowledge. For every statement, there are four options. You have to find the correct option. Please tick the most appropriate number which best describe your opinion. I assure you that this research is purely an academic activity.

Sr. No	Statements	a	B	c	d
1	Which leadership style is characterized by a leader who makes all decisions and closely supervises employees?	Autocratic	Democratic	Laissez-faire	Transformational
2	Which leadership style is characterized by a leader who involves employees in decision-making and values their input?	Autocratic	Democratic	Laissez-faire	Transformational
3	Which leadership style is characterized by a leader who gives employees complete freedom to make decisions and complete their work?	Autocratic	Democratic	Laissez-faire	Transformational
4	Which leadership style is characterized by a leader who inspires and motivates employees to achieve organizational goals?	Autocratic	Democratic	Laissez-faire	Transformational
5	Which leadership theory suggests that a leader's effectiveness is determined by their personality traits?	Situational leadership theory	Path-goal theory	Trait theory	Behavioral theory
6	Which leadership style is used to maintain strong control in the department?	Laissez-faire	Collegial	Democratic	Autocratic

7	What makes you think is the most effective leadership style that can be used during emergency situations?	Democratic	Autocratic	Laissez-faire	supportive
8	It is a managerial function that indicates leading the staff in the most applicable method.	planning	organizing	directing	controlling
9	The management theorist who developed the 14 principles of management is:	Frederick Taylor	Mary Follet	Max Weber	Henri Fayol
10	Which function of management involves determining what needs to be done and how to achieve it?	organizing	planning	directing	controlling
11	Which function of the management involves assigning tasks and allocating resources?	organizing	directing	Planning	controlling
12	Staffing is-----	Setting goals for the organization	Translation of plans into action	Putting right people in right job	Filling and keeping filled positions in the organizational structure
13	----aims at making people work together for the common good of the organization.	communication	conversation	combination	connection
14	The meaning of acronym HRM is	Human Resource Management	Human Relations Management	Humanistic Resource Management	Human Resourceful Management
15	What type of books should be kept by a library	Only Academic	Only non-academic	Both academic and non-academic	Only newspapers

16	In hostel, students can learn the value of	discipline	Co-operation	Both a and b	none
17	The financial management function has become __ and complex	Less demanding	More demanding	Less important	outdated
18	What are the objectives of ICT in the education system?	Expanding access to all levels of education	Improving the quality of education	Enhancing lifelong learning	All of the above
19	In which book/register of school important events are recorded?	Admission register	Log Book	Teacher attendance register	Student attendance register
20	Contingency theories of leadership based upon	There is no single style of leadership appropriate to all situations	There is a single style of leadership appropriate to all managers	There is a single style of leadership appropriate to all situations	None of the above
21	If a trait theory of leadership were true, then all leaders would possess—	Charisma	The same traits	Different traits	Seven traits
22	Behavioral theories of leadership focused on --	Who effective leaders	What characteristics effective leaders had	Ho to identify effective leaders	What effective leaders did

23	___ are the approaches to the study of leadership which emphasize the personality of leader	Contingency theories	Group theories	Trait theories	Inspirational theories
24	A ----- is an important initial record in which details are entered of all financial transactions of the school	Stock register	cash book	Leave register	Log book
25	----- is granted to employees for study of scientific, technical or special courses.	Earned leave	Study leave	Causal leave	Recreational leave
26	Leadership theories can be classified into	Trait theory	Style theory	Contingency theories	All of the above
27	Which of the following is not one of the functions of management?	Planning	Organizing	Directing	Delegating
28	Which function of management involves monitoring performance and making necessary adjustment?	planning	Organizing	Directing	Controlling

Thank you for your time and cooperation.

Appendix-C

Questionnaire to know about the Perception of the Students

Dear Participants/ Future Teachers

I hope you have a great experience with us and you have learned many new things. Instructional modules using modular approach is a new emerging trend. It provides lot of benefits over traditional method of learning. We want to make it more interactive, interesting and purposeful learning experiences. Here are some questions regarding instructional modules. These questions are about content, delivery, learning material and references etc.

Your feedback is very important and valuable for us.

Section A: General Information

Name: _____ (Optional) Roll No _____

Class _____

Group: _____ Gender: Male/Female

Section B: Perception of Students regarding Modules and teaching using Instructional Modules

Please rate below by putting a mark √ in the appropriate box:

(SD- Strongly Disagree, D=Disagree, N= Neutral, A=Agree, SA= Strongly Agree)

SN	Statements	SD	D	N	A	SA
1	I was clearly informed about the objectives of course, class assignments and evaluation criteria.					
2	The teacher pointed out the connection between the course content with real life examples.					
3	The videos used in the modules help me to understand the content.					
4	The activities of the modules were very useful.					
5	The activities of the modules were related to the content.					
6	During module presentations, students were encouraged to participate (discussion, asking/answering questions).					
7	The teacher encouraged group work and communication among the students.					
8	Learning through e-modular approach was useful and meaningful.					
9	Concepts in the modules are clear to me.					
10	I can access modules material anywhere, anytime according to my ease.					
11	Graphics used in the modules were relevant and useful.					
12	The teacher was motivated during lectures.					

13	Lectures and other forms of teaching were well-balanced (exercise, seminar paper presentations, practical work, etc.)					
14	Study materials were available to the students (teaching material, readers, and course books)					
15	I am generally satisfied with the teacher.					
16	I am generally satisfied with the content of instructional modules.					
17	Learning using instructional modules were very interesting					
18	References share in the modules were also helpful and relevant.					
19	Students can also use the modules again and again.					
20	Internet resources were also incorporated in instructional modules.					
21	Students have actively participated in individual and group presentations					
22	Instructional modules are helpful for all the students of the class.					
23	I have improved my marks by learning through instructional modules.					
24	Students were fully engaged in all the activities					

	of the modules					
25	The teacher has delivered the content in a clear and effective manner appropriate to my level of study.					
26	I want to study other subjects using e-modular approach in the future.					

What are your suggestions for further improvement of this course using e-modular approach?

Thank you for your time.

Appendix-D

Institutional Support

It is stated that **Asma Bibi** Reg # 175/FSS/PHDEDU/F20 is the student of Ph. D Education at this university. She is conducting a research project in partial fulfillment of the requirement for Ph. D Degree. The topic of the study is:

Development and Validation of Instructional Modules for Prospective Teachers Utilizing E-Modular Approach

It is verified that the data will be used for Academic Research purposes only and the confidentiality of the participant (institution and individuals) shall be a very strictly maintained.

Your facilitation and approval to collect the research data will be highly appreciated.

Yours Truly:



Dr. Shamsa Aziz
Associate Professor
Department of Teacher Education (F.C)

Appendix-E
Application for permission to conduct experiment in college

**The Director,
Federal College of Education,
H-9 Islamabad.**

Date: 16th June 2023

**Subject: Permission to Conduct Experiment at BSEd. Hons. 4th Semester for
Validation of Instructional Modules**

It is submitted that I, Asma Bibi am enrolled in Ph. D Education Program in the Faculty of Education in International Islamic University Islamabad. My registration number is 175/FSS/PHDEDU/F20. Currently, I am working on my Ph. D research thesis entitled" **Development and Validation of Instructional Modules for Prospective Teachers utilizing E-Modular Approach**". I want to conduct an experiment for the validation of modules at Federal College of Education H-9 Islamabad with the help of subject teacher of college who is teaching Educational Leadership and Management subject.

You are requested to grant permission to conduct experiment with the help of college subject teacher on both groups of BSEd. Hons. 4th semester(Math & Bio group). I take this opportunity to assure you that this research is purely an academic activity and the information provided by the students will be used for research purposes only.

Yours cooperation in this regard will be highly appreciated.

Yours Sincerely,



Asma Bibi
Ph. D Scholar
Department of Education
International Islamic University Islamabad

Appendix-F

Certificate of Experts

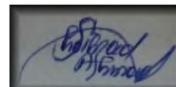
A committee of following three members has reviewed and validated the instruments and modules developed by Ms. Asma Bibi, Reg No. 175/FSS/PHDEDU/F20, Ph. D Scholar for the topic “Development and validation of instructional modules for prospective teachers utilizing e-modular approach. These instructional modules, pre-test & post-test, need analysis and perception questionnaire and are now valid for administration to the selected sample.

1. Dr. Khawar Khurshid



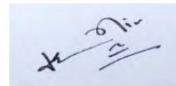
Assistant Professor
Govt Degree College Chunian

2. Dr. Shahzad Ahmed



Assistant Professor
Federal College of Education
H-9 Islamabad.

3. Dr. Kamran Mir



Senior Research Assistant
Technological University Dublin
Ireland

Appendix-G

Course Outline of Educational Leadership and Management Course Name: Educational Leadership and Management

Unit 01 Introduction to Management

1.1 Definitions of Management and Leadership.

1.2 Difference between leadership and management

1.3 Difference between general and educational management and Leadership.

Unit 02 Process of Management

2.1 Planning 2.2 Organizing

2.3 Staffing 2.4 Communicating

2.5 Controlling 2.6 Budgeting

Unit 03 Resource Management

3.1 Human resources

3.2 Physical resources

3.3 Financial resources

3.4 Information and learning resources (Library, AV Aids and instructional material)

Unit 04 Rules and Regulations

4.1 Rules regarding appointment, leaves, pay and allowances.

4.2 Efficiency & Discipline rules

4.3 Terms of reference of various personals in the school

4.4 Code of ethics

Unit 05 Records in Educational Institutions

5.1 Attendance register

5.2 Leave register

5.3 Stock register

5.4 Cash register (fee, different kind of funds)

5.5 Personal files of teachers and other staff

5.6 Other academic record (students result, staff meetings etc.)

Unit 06 Theories of Leadership

6.3 Trait Theories

6.4 Contingencies Theories

Unit 07: Leadership Style

7.1 Democratic

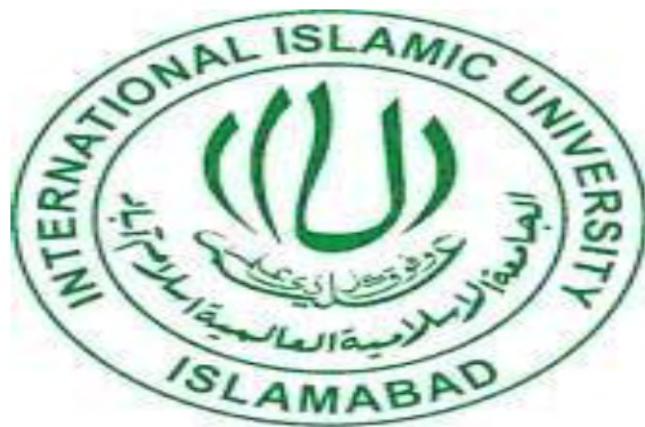
7.2 Autocratic

7.3 Laissaiz-faire

7.4 Leadership style and Headship

Appendix-H

USER'S MANUAL



Subject: EDUCATIONAL LEADRSHIP AND MANAGEMENT

International Islamic University Islamabad
Department of Teacher Education

Faculty of Education

GENERAL INFORMATION

Educational leadership and Management is one area of teacher education programs which is devoted to develop leadership skills among prospective teachers and make them aware about the role of administration in any institution. It also consists of necessary information and skills which is required by leadership. Due to its importance, the modules are developed in the subject of Educational Leadership and Management. These modules are developed for the prospective teachers of BSEd. Hons program. This course is offered to students in 4th semester. Federal college of education has an affiliation with the University of Punjab. So, this course is offered to the prospective teachers of BSEd. Hons. The purpose of the course is teacher training and to make the teaching learning in educational institutions effective and sound. Various aspects of effective administration are discussed to enable prospective teachers to use different leadership styles successfully in different situations. The modules were developed in seven units and each module is further divided in units, topics and sub topics. The learners will review material related to the topics, for further concept clarifications they will use the link of readings to have access to extra reading material. They can also access to the web resources if connected to the internet. After reading the material they will go to the activity link for practice and self-evaluation exercises.

ABOUT THIS MANUAL

This User's Guide contains features, functions, and step-by-step instructions on how to use these modules for self-paced instruction. This User's Guide will enable you to access:

- Web-Based Education Materials of useful websites to provided further reading and reference material.
- Users can access the module material by joining Google classrooms.
- Additional readings in MS word documents and pdf files about different concepts.
- E- Presentation to view present material in a form of lecture
- Online resources, activities, readings, videos link with sound narration and figures (graphs, pictures, diagrams, and cycles).

- Video Lectures to view any time
- Assessment Activities like Objective tests and quizzes

How to Use This Manual?

Users are advised to become familiar with the complete contents of this manual prior to use this. Users should also be advised that this manual have proper guidelines for teachers as well as students about each and every component of this so that users can use it more effectively and efficiently without any problems and errors.

Contact and Assistance

If at any time during the use of these modules you need assistance or technical support, you may contact to the following address:

Asma bibi

Federal College of Education, H-9 Islamabad.

asmamurtaza.fce@gmail.com, cell# 03326407735

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INTRODUCTION

Using interactive Google Classroom, in the field of education, is one of the newest and widely acknowledged techniques to reach learners. The use of Google classroom is very interactive and user friendly to appeal the viewer's senses. It provides easy-to-use navigation. The user can access the Google classroom material anywhere any time and on any place. It is a virtual classroom and it also consists of students. Students can also ask any query regarding content in class and can take views/opinions of class fellows too. Interactive exercises, training manuals, dynamic photos, and text, important application with animated graphics; audio and video are included to directly involve the learners with the lecture as they navigate through the whole learning material.

COMPUTER SYSTEM REQUIREMENTS

Technical Requirements	
Hardware	Software
Computers system/laptop/Mobile phone	Operating system, windows 2008, vista, XP
High color video resolution	Internet explorer, Mozilla Firefox,
Speakers or Headset	Flash player, window media player, real player
Internet	Adobe acrobat reader, MMB, Photoshop
	MS office 2007
Other requirements	
Paper , pencil, worksheets,	

Google Classroom Introduction

Google Classroom is a free blended learning platform developed by Google for educational institutions that aims to simplify creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students.

Google Classroom uses a variety of proprietary user applications with the goal of managing student and teacher communication. Students can be invited to join a class through a private code or be imported automatically from a school domain. Each class

creates a separate folder in the respective user's Google Drive, where the student can submit work to be graded by a teacher. Teachers can monitor each student's progress by reviewing the revision history of a document, and, after being graded, teachers can return work along with comments and grades (fig.1).

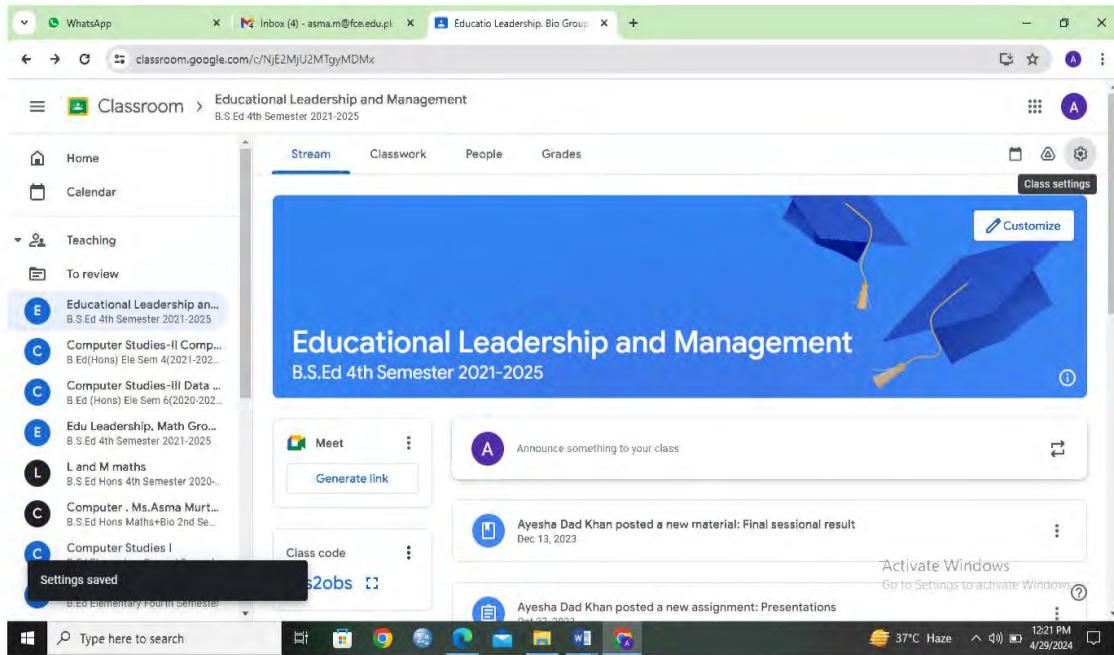


Fig.1

Navigation Tools

A simple navigation system was designed for users' feasible information access and delivery. The text based navigation links were designed in an organized manner so that users can find their desired link and relevant content easily. A multitier structure was created which allow users to directly access to their desired page without going through unrelated pages. A well-structured and well-organized navigation system was designed to be easily understood and prevent users from confusion.

Hyperlinks (Links)

Hyperlinks (or link) were created for users to access new slide, chapters, videos, activities, web pages, word document or a new section within the current document and pdf files. When user moves the cursor over a link, the arrow turns into a little hand but hyperlinks are clearly indicated in the Google Classroom.

Title page

When you will open the Google classroom after joining it, the title page of the

course will appear on the screen having title of the course and course code. There is a hyperlinked blue icon on bottom right of the title page.

Course contents

This course is divided into seven units and each unit is divided into further modules. All twelve modules are hyperlinked in course content page and can be accessed by just clicking on it.

Module title

Each module has its title page having module title, module number and hyperlinked icons to get direct access of home page, course objectives, content page etc. Next and back links are also made to proceed back and forth accordingly.

Icon guide

In this Google classroom various types of icons and symbols have been used to make it interesting, understandable and easy to work on it. The icon guide page has been designed after the very next to module title page so that the meaning and purpose of each and every symbol used in it can be clarified to the users at the very beginning to avoid any inconvenience. Audio and written instructions are also given. (fig.2)

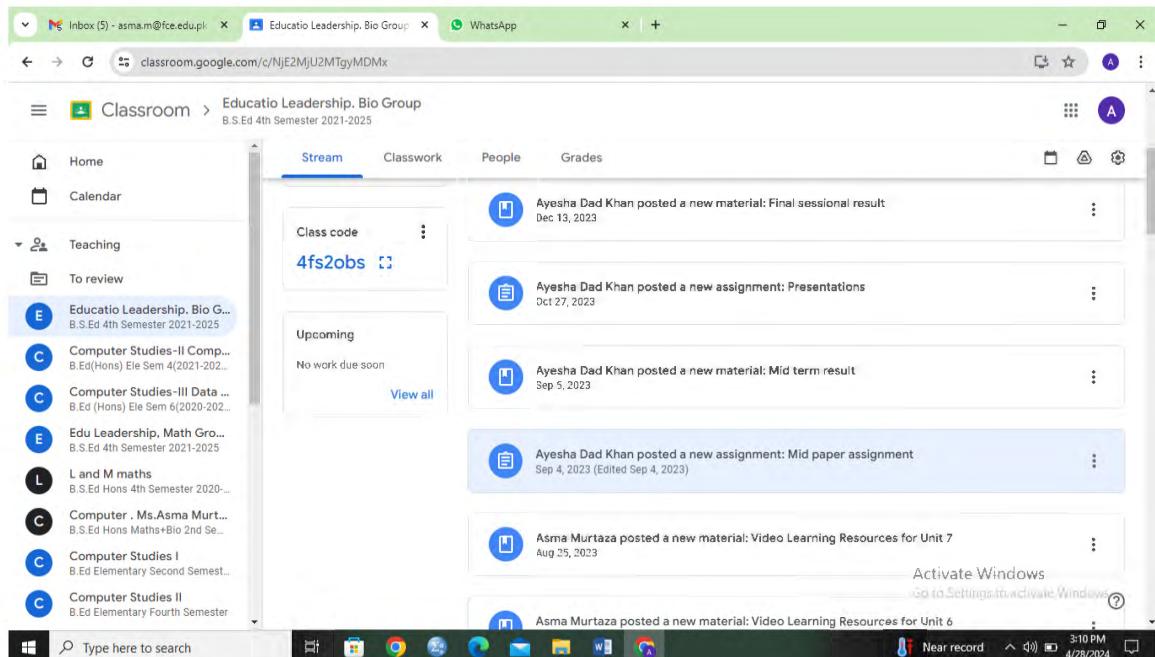


Fig.2

Module introduction

Each module starts with the introduction of the module and further reading about

the concept if required. The link of further reading is given after the introduction. In Google classroom modules can be accessed in classwork tab. (fig.3)

The screenshot shows a Google Classroom Stream. The left sidebar lists various modules: 'Educatio Leadership, Bio G...', 'Computer Studies-II Comp...', 'Computer Studies-III Data...', 'Edu Leadership, Math G...', 'L and M maths', 'Computer . Ms.Aasma Murt...', 'Computer Studies I', 'Computer Studies II', and 'Computer Studies III'. The main area shows a post from 'Asma Murtaza' dated 'Jul 18, 2023'. The post content is as follows:

Welcome to the Virtual Class of Educational Leadership and Management
Here, students, you will find subject material for your course on the subject of Educational Leadership and Management.

This course material is designed according to your needs of the subject and utilizing available technology. It is according to your outline of the subject of Educational Leadership and Management.

Please see the course material here and also watch videos and consult PPTs which are to make your understanding of the topic clear.

I hope you will get great results by using instructional modules for the subject of Educational Leadership and Management.

Best of Luck for your future endeavors.

Best Regards
Ms. Ayesha Dad Khan
and
Ms. Asma

Fig.3

Module objectives

After introduction, the objectives of each module have been displayed to familiarize students about the module outcomes. (fig.4)

The screenshot shows a Microsoft Word document with the title 'module 1 on leadership and management [Compatibility Mode] - Word (Product Activation Failed)'. The document content is as follows:

Module No. 1

Topics: Definition of Leadership and Management.
(Unit # 1) Difference between Leadership and Management.
Difference between General and Educational Leadership and Management.

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

- To explain the concept of Leadership and Management.
- Differentiate between Leadership and Management.
- Differentiate between General and Educational Management and Leadership.

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define Leadership
- Define Management
- Differentiate between Leadership and Management

Fig.4

Module Contents page

The module is further divided in topics and sub topics and in order to access units of the module, a module content page has been designed. Topics content is accessed by clicking on the relevant material. (fig.5)

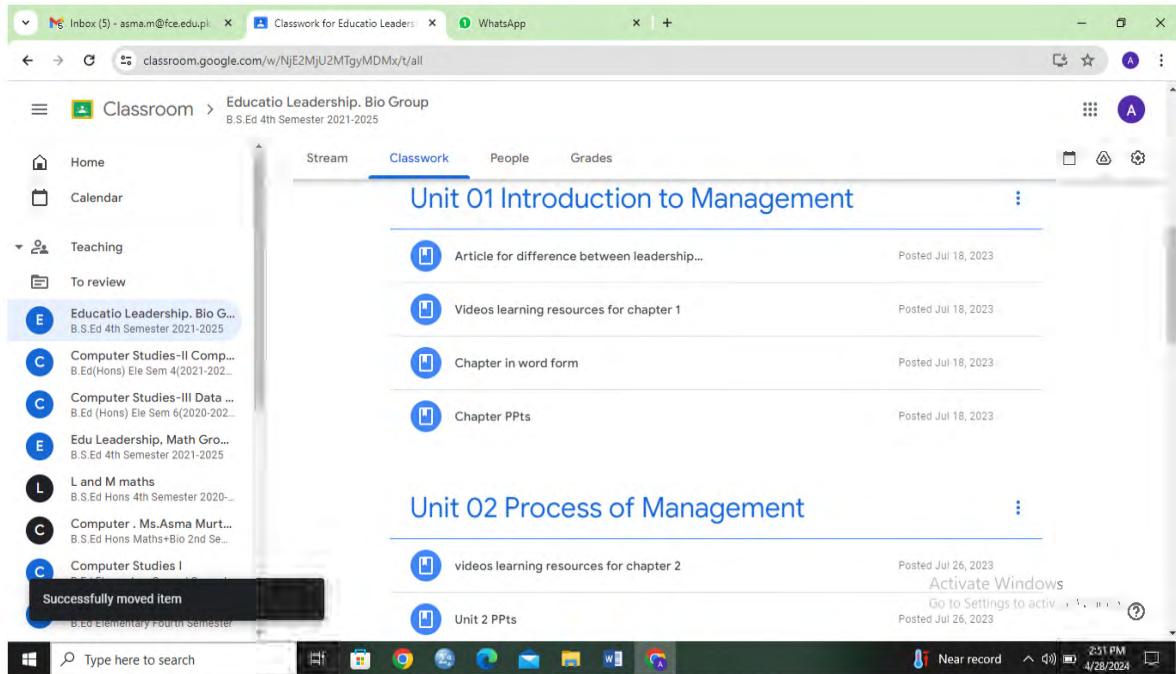


Fig.5

Module activities

Activities are also included in each module make the teaching learning experience interesting, practical and meaningful. Activities are divided in such a way that each module has beginning activities, middle activities and ending activities. (fig.6)

ADDIE Phases	Instructional Activities	Learner Activities	Resources /Annexures	Time in minutes
Analysis Design Develop Day 1 (Module 1)	Ice breaking activity: "Names and Adjectives" Introduction of students	Learners will think of an adjective to describe how they are. The adjective should be start with same letter as learner name. for example, <i>I am Hana and I am happy.</i>	PPT for introduction	10 minutes
Implement	<ul style="list-style-type: none"> Orientation of course to the students Course outline 	A brief orientation will be given to students about this course and its modules to students.	Video/PPT/Google Classroom	5 minutes
Presentation of the material	Bridge in: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.	Learners will answer the questions.	Paper slips, internet connection, PPTs(g. slide link)	5 minutes
	Teacher will play a movie	Students will observe the clip	Video and discussion	10 minutes

Fig.6

Introductory activity/Ice breaking activity

There is an introductory activity or and ice breaking activity is present after each unit introduction page to grasp students' attention and develop their interest in the topic. Various forms of activities have been selected and designed according to the nature of the topic.

Unit objectives

In order to familiarize the outcomes of each unit, the unit objectives has been designed and displayed according to the nature and requirement of the subject

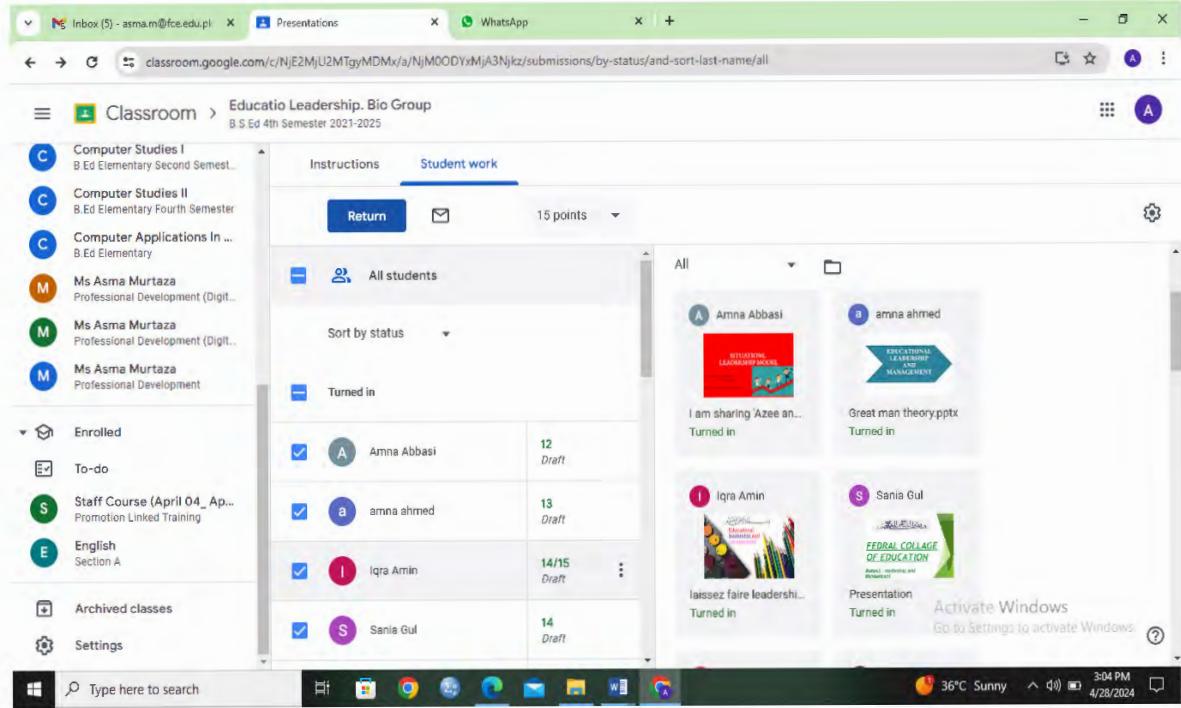
Previous Knowledge activity

After introducing the objectives of the unit, there is an activity to check the previous knowledge of the students. Students will go to the next level after completion of that activity

Content display The details on various topics and sub topics has been given with appropriate details in the courseware but there are other options as well through which Users can get additional information if required.

Assessment

In order to know about students' learning there are assessment in the module. These assessment are formative and summative assessment. At the end of every module, there is an assessment to check the learning of the students about module. (fig.7)



The screenshot shows the Google Classroom interface for the 'Educatio Leadership. Bio Group' class. The 'Student work' tab is selected. On the left, a sidebar shows enrolled students: Computer Studies I (B.Ed Elementary Second Semester), Computer Studies II (B.Ed Elementary Fourth Semester), Computer Applications I (B.Ed Elementary), Ms Asma Murtaza (Professional Development (Digital)), Ms Asma Murtaza (Professional Development (Digital)), and Ms Asma Murtaza (Professional Development). The 'To-do' section lists 'Staff Course (April 04_ Ap...' and 'English Section A'. The 'Archived classes' and 'Settings' options are also visible. The main area displays student submissions for a task. The table shows the following data:

Student	File	Score	Status
Amna Abbasi	EDUCATIONAL LEADERSHIP MODELS	12	Draft
amna ahmed	EDUCATIONAL LEADERSHIP MODELS	13	Draft
Iqra Amin	laissez faire leadership	14/15	Draft
Sania Gul	EDUCATIONAL LEADERSHIP MODELS	14	Draft

Each submission includes a thumbnail image and a brief description. The interface also shows a search bar, a taskbar with various icons, and a system tray at the bottom.

Fig.7

Readings

Additional reading material has also been given to provide maximum detail and conceptual clarity about concepts. Readings can be accessible in a variety of formats. i.e. web link, pdf. file, word file or ppt.

Middle Activities

Many activities have been given during the lesson to make learning more practical, and student centered. It will enhance conceptual clarity and maintain students' interest in the course. (fig.8)

Inbox (5) - asma.m@fce.edu.pl Classroom for Educatio Leaders... WhatsApp

classroom.google.com/w/NjE2MjU2MTgyMDMx/t/all

Classroom > Educatio Leadership. Bio Group
B.S.Ed 4th Semester 2021-2025

Home Calendar

Teaching

To review

- Educatio Leadership. Bio G... B.S.Ed 4th Semester 2021-2025
- Computer Studies-II Comp... B.Ed(Hons) Ele Sem 4/2021-202...
- Computer Studies-III Data ... B.Ed (Hons) Ele Sem 6/2020-202...
- Edu Leadership. Math Gro... B.S.Ed 4th Semester 2021-2025
- L and M maths B.S.Ed Hons 4th Semester 2020-...
- Computer . Ms.Aasma Murt... B.S.Ed Hons Maths+Bio 2nd Se...
- Computer Studies I B.Ed Elementary Second Semest...
- Computer Studies II B.Ed Elementary Fourth Semester

Stream Classwork People Grades

Unit 01 Introduction to Management

Article for difference between leadership... Posted Jul 18, 2023

Videos learning resources for chapter 1 Posted Jul 18, 2023

Leadership vs Management YouTube video • 4 minutes

Educational Management... YouTube video • 39 minutes

Leadership vs. Management YouTube video • 2 minutes

[View material](#)

Activate Windows Go to Settings to activate Windows

Type here to search

36°C Sunny 2:53 PM 4/28/2024

Fig.8

Unit Exercise

At the end of each unit, a unit exercise has been given as a unit test to check the students understanding and learning. (fig.9)

Inbox (5) - asma.m@fce.edu.pl Classroom for Educatio Leaders... WhatsApp

classroom.google.com/w/NjE2MjU2MTgyMDMx/t/all

Classroom > Educatio Leadership. Bio Group
B.S.Ed 4th Semester 2021-2025

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- Computer . Ms.Aasma Murt... B.S.Ed Hons Maths+Bio 2nd Se...
- Computer Studies I B.Ed Elementary Second Semest...
- Computer Studies II B.Ed Elementary Fourth Semester

Stream Classwork People Grades

+ Create

All topics

Final sessional result Posted Dec 13, 2023

Presentations Due Nov 1, 2023

Mid term result Posted Sep 5, 2023

Mid paper assignment Due Sep 4, 2023, 6:05 PM

Short Assessment regarding unit 1 Due Aug 9, 2023

educational leadership Draft

Activate Windows Go to Settings to activate Windows

Type here to search

36°C Sunny 3:08 PM 4/28/2024

Fig.9

Summary and transition

In order to conclude the lecture, a section of summary and transition has been given. The important points of the lecture have also been highlighted to provide students an opportunity to revise and preview the concepts that has already been presented.

Joining Google Classroom

Students can join Google class room by using class code. Students can also join Google Class room by email address.

Appendix-I

MODULE GUIDE



EDUCATIONAL LEADERSHIP AND MANAGEMENT

International Islamic University Islamabad

Department of Teacher Education

Faculty of Education

Preface

Education is the right of every citizen in the country. It is their basic right to acquire quality education. Teacher can teach the students well and according to the need of time if teacher himself/herself is equipped with knowledge, skill and relevant technology. It is the need of time to equip teacher with relevant skills and knowledge so that teacher can transfer that particular knowledge and skills to the new generations. If the teachers are not fully equipped with updated knowledge and skills than how can we expect from the teacher to impart knowledge according to the need of the time. It is the need of the time to train our teacher with current knowledge and new technology. As new technologies are changing education or effecting the process of education, it is necessary that our teacher should also make familiar to the technologies of 21st century.

It is also important to discuss, that traditional method of teaching have their limitations. It is passive method of learning. Learners are not involved in it. So, how could we expect that these traditional method of learning will be useful in training of the future teachers or prospective teachers? Our future teachers should be trained in such a way that they should be familiar to the state of the art technology. The teacher should come to know that how they can become an efficient teacher. They should not be reluctant in using new technologies for the benefit of the students.

The course of educational leadership and management is also a subject which consist of theories of leadership, process of management, resource management, rules and regulations, school records and styles of leadership etc. This subject when teaching with traditional method of teaching become just material for root memorization. So, students are not involved, they cannot comprehend it. So, the researcher has developed modules for this subject for teaching of prospective teachers of BSEd. Hons. The researcher has developed modules using ADDIE instructional design model. The researcher has included necessary, images, audio, videos, graphics, articles, tables, charts as and when necessary to make the subject more interactive and meaningful for students.

GENERAL INFORMATION

Educational leadership and Management is one area of teacher education programs which is devoted to develop leadership skills among prospective teachers and make them aware about the role of administration in any institution. It also consists of necessary

information and skills which is required by leadership. Due to its importance, the modules are developed in the subject of Educational Leadership and Management. These modules are developed for the prospective teachers of BSEd. Hons program. This course is offered to students in 4th semester. Federal college of education has an affiliation with the University of Punjab. So, this course is offered to the prospective teachers of BSEd. Hons. The purpose of the course is teacher training and to make the teaching learning in educational institutions effective and sound. Various aspects of effective administration are discussed to enable prospective teachers to use different leadership styles successfully in different situations. The courseware was designed in eight segments/modules and each module is further divided in units, topics and sub topics. The learners will review material related to the topics, for further concept clarifications they will use the link of readings to have access to extra reading material. They can also access to the web resources if connected to the internet. After reading the material they will go to the activity link for practice and self-evaluation exercises.

ABOUT THIS MANUAL

This module Guide contains features, functions, and step-by-step instructions on how to use these modules for self-paced instruction. This User's Guide will enable you to access:

- Web-Based Education Materials of useful websites to provided further reading and reference material.
- Additional readings in MS word documents and pdf files about different concepts.
- E- Presentation to view present material in a form of lecture
- Online resources, activities, readings, videos link with sound narration and figures (graphs, pictures, diagrams, and cycles).
- Video Lectures to view any time, Assessment Activities like Objective tests and quizzes

HOW TO USE THIS MANUAL?

Users are advised to become familiar with the complete contents of this manual prior to use this. Users should also be advised that this manual have proper guidelines for teachers as well as students about each and every component of this so that users can use it more effectively and efficiently without any problems and errors.

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Asma Bibi

Federal College of Education, H-9 Islamabad.

asmamurtaza.fce@gmail.com, cell# 03326407735

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- Audience Description
- Course Objectives
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- Module according to the course outline of the University of the Punjab
- Learning Assessment
- Instructional Strategies
- Instructional Media Requirement
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- Course Structure description
- Schedule for teaching modules
- Number of modules with duration
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- Course Contents
- Module Title
- Icon Guide
- Module Introduction
- Module Objectives
- Module Content Page
- Module Activities
- Introductory Activity/ Ice Breaking Activity
- Unit Objectives
- Previous Knowledge Activity

Assessment

Readings

Middle Activities

Unit Exercises

Summary

Joining Google Classroom

COURSE INTRODUCTION

According to the University of Punjab, the course "Educational Leadership and Management" is part of the BSEd. (Hons) program. This course consists of seven modules in total. Students enrolled in the fourth semester of BSEd. Hons are taught this subject. One component of teacher education programs that focuses on helping aspiring teachers develop their leadership abilities and understanding the function of administration in any institution is educational leadership and management. It also includes the knowledge and abilities that leadership demands. The modules are created in the field of Educational Leadership and Management because of their significance. These modules were created with the BSEd. Hons. Program's prospective teachers in mind. Students enrolled in the fourth semester can take this course. Federal College of Education is affiliated with the University of the Punjab. Thus, BSEd. Hons. Prospective instructors are provided this course. The course's objectives are to prepare teachers and improve the quality and effectiveness of instruction in educational institutions. The purpose of this discussion is to equip aspiring educators with the knowledge and skills necessary to effectively employ various leadership philosophies in a range of contexts.

Introduction to the Developed Modules

The modules were developed in the subject of Educational Leadership and Management. This course was taught to the students of BSEd. Hons. 4th semester. This module is for all units of the Educational Leadership and Management course according to the University of the Punjab. The modules are developed using ADDIE instructional design model. These modules and all material are available in Google Classroom. Students can directly access the material from Google Classroom. Students can access the material anywhere, anyplace and any time. The modules are implemented using Google Classroom. Students after joining particular Google classroom have access to the module material. Students' records have been maintained in the Google Classroom. Google Classroom is a tool/LMS which is now successfully used for educational purposes.

The teacher has delivered the modules to specific group at specific time. The modules activities are arranged in such a way that students should involve in class. They should participate in class activities. The modules were equally benefit for whole class. These modules were useful for high achievers, average achieves. These modules were also

useful for low achievers too. In traditional type of teaching, if a student misses the class that student can't get the lecture again but in this type of modular approach students can get the module anywhere any time. At the same time, students can repeat the module or particular topic again and again till the required mastery of that particular topic.

Audience Description

The target audience consists of prospective teachers of BS education 4th semester having a background of teaching learning process and other fields related to teacher education however it is not a pre-requisite to the course. The experience level may be heterogeneous from the standpoint of backgrounds, education, age, specific skills, learning style, and prior experience but all are assumed to have the desire to increase their knowledge and/or skills in the area of Educational leadership and management. The course is developed to identify the desired behaviors that learners would be able to perform and to create learning experiences accordingly. This course contains everything that is necessary to fulfill the instructional needs of the student and the teacher. The course clearly describes the overall purpose and implementation of this course. This course contains features, functions, and step-by-step instructions.

Course objectives

After studying this course, the student will be able to:

1. Explain the concept of school organization, management and discipline and factors affecting school discipline
2. Organized school activities (curricular and co-curricular) affectively and manage available resources (material, human and time) efficiently.
3. Differentiate between the concept of leadership and management utilizing the major indicator of effective leadership and management.
4. Maintain school record and activities according to the school mandate.
5. Explain the functions of basic rules of leave pay and allowances E & D, codes of ethics.

Introduction to the Course Outline

Course outline of the module is attached as Appendix G.

Modules according to the Course Outline of University of the Punjab

Here are the details of topics of each module

Name and Number of unit	Number of Modules	Topics for Modules
Unit 1	Module 1	1.1 Definitions of Management and Leadership.
Introduction to Management		1.2 Difference between leadership and management
		1.3 Difference between general and educational management and Leadership.
Unit 02	Module 2	2.1 Planning 2.2 Organizing 2.3 Staffing
Process of Management	Module 3	2.4 Communicating 2.5 Controlling
		2.6 Budgeting
Unit 03	Module 4	3.1 Human resources
Resource Management		3.2 Physical resources
	Module 5	3.3 Financial resources
		3.4 Information and learning resources (Library, AV Aids and instructional material)
Unit 04	Module 6	4.1 Rules regarding appointment, leaves, pay and allowances.
Rules and Regulations		4.2 Efficiency & Discipline rules
	Module 7	4.3 Terms of reference of various personals in the school
		4.4 Code of ethics
Unit 05	Module 8	5.1 Attendance register
		5.2 Leave register

Records in	5.3 Stock register	
Educational Institutions	Module 9	5.4 Cash register (fee, different kind of funds)
	5.5 Personal files of teachers and other staff	
	5.6 Other academic record (students result, staff meetings etc.)	
Unit 06	Module 10	6.1 Trait Theories
Theories of Leadership	Module 11	6.2 Contingencies Theories
Unit 07	Module 12	7.1 Democratic 7.2 Autocratic
Leadership Style		7.3 Laissaiz-faire 7.4 Leadership style and Headship

Learning assessment

Formative assessments: pre-test, need assessments, exercises, activities, quizzes, projects.

Summative assessment: post-test and perception questionnaire

Instructional strategies

The course will be an instructor-led course with a blended approach along with interactive modules in a form of courseware. The following methods will be employed at various places in the course

- Demonstration
- Discussion
- Question and answer exercises
- Games and activities
- Case studies
- Project work
- Role plays
- Simulations

Instructional Media requirement

Following media will be utilized in this course:

- Course guides
- Modules
- Multimedia
- Computers/laptops
- Slide presentation with graphics
- Readings
- Paper and pencil

Time

This is a 3 credit hour course and each session will design according to 60 minute per session thrice a week

Course structure description

The subject **Educational Leadership and Management**” is a course for the program of BSEd. (Hons) according to the University of Punjab. Total number of units in this course are seven. This Subject is taught to the students of BSEd. Hons. 4th semester. The learners will review material related to the topics, for further concept clarifications they can use web resources to have access to extra reading material. After reading the material, they will go to the activity for practice and self-evaluation exercises. Other features of the course are:

- Table of contents
- Unit wise objective
- Reading material
- References
- Visuals/Graphics
- Videos
- Exercises
- User manual
- Module guide

Schedule for teaching modules

Here is the schedule for teaching of modules to the students of BSEd. Hons. The duration of tryout was twelve weeks. Each module has to be completed in 3 hours. There were three periods of one hour of subject in a week. In this way, this try out was completed in a period of twelve weeks.

No of modules with duration (July/August 2023 to October 2023)

Unit	No of	Total Time (hours)	Weeks	Activities
Modules				
1	1	3 (classes, hours)	Week 1	Pre-test
2	2	6 (classes, hours)	Week 2, 3	
3	2	6 (classes, hours)	Week 4,5	
4	2	6 (classes, hours)	Week 6, 7	
5	2	6 (classes, hours)	Week 8,9	
6	1	3(classes, hours)	Week 10	
7	2	6 (classes, hours)	Week 11, 12	Post-test
total	12	(36 hours, 36	Last week	
	modules	Classes)		assessment
		(12*3=36)		

Title page

When you will open the Google classroom after joining it, the title page of the course will appear on the screen having title of the course and course code. (fig.1). There is a hyperlinked blue icon on bottom right of the title page.

Educatio Leadership. Bio Group
B.S.Ed 4th Semester 2021-2025

A Ayesha Dad Khan posted a new material: Final sessional result
Dec 13, 2023

A Ayesha Dad Khan posted a new assignment: Presentations
Oct 27, 2023

A Ayesha Dad Khan posted a new material: Mid term result
Sep 5, 2023

A Announce something to your class

4fs2obs

Upcoming
No work due soon

Course contents

This course is divided into seven units and each unit is divided into further modules. All twelve modules are hyperlinked in course content page and can be accessed by just clicking on it.

Asma Murtaza
Jul 18, 2023

Welcome to the Virtual Class of Educational Leadership and Management
Here, students, you will find subject material for your course on the subject of Educational Leadership and Management.

This course material is designed according to your needs of the subject and utilizing available technology, it is according to your outline of the subject of Educational Leadership and Management.

Please see the course material here and also watch videos and consult PPTs which are to make your understanding of the topic clear.

I hope you will get great results by using instructional modules for the subject of Educational Leadership and Management.

Best of Luck for your future endeavors,

Best Regards
Ms. Ayesha Dad Khan
and
Ms. Asma

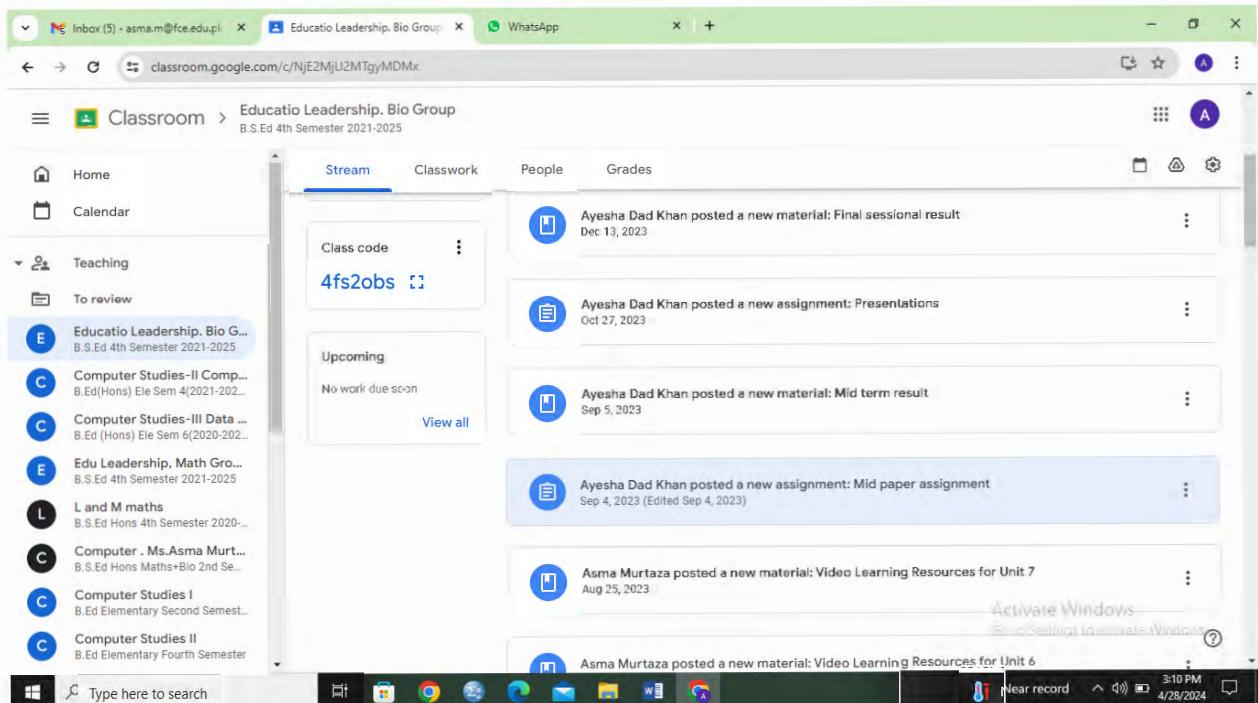
Module title

Each module has its title page having module title, module number and hyperlinked icons to get direct access of home page, course objectives, content page etc. Next and back

links are also made to proceed back and forth accordingly.

Icon guide

In this courseware various types of icons and symbols has been used to make it interesting, understandable and easy to work on it. The icon guide page has been designed after the very next to module title page so that the meaning and purpose of each and every symbol used in this courseware can be clarified to the users at the very beginning to avoid any inconvenience. Audio and written instructions are also given

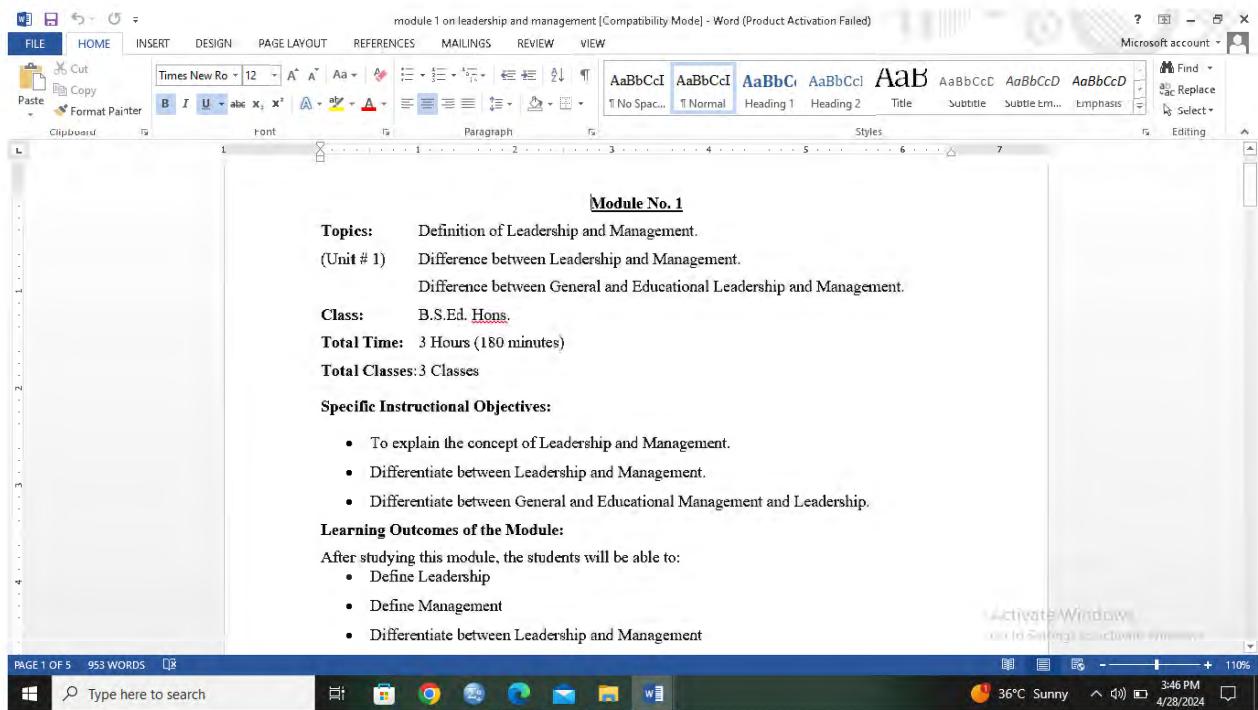


Module introduction

Each module starts with the introduction of the module and further reading about the concept if required. The link of further reading is given after the introduction.

Module objectives

After introduction, the objectives of each module have been displayed to familiarize students about the module outcomes.



Module Contents page

The module is further divided in topics and sub topics and in order to access units of the module, a module content page has been designed. Topics content is accessed by clicking on the relevant material.

Unit 01 Introduction to Management

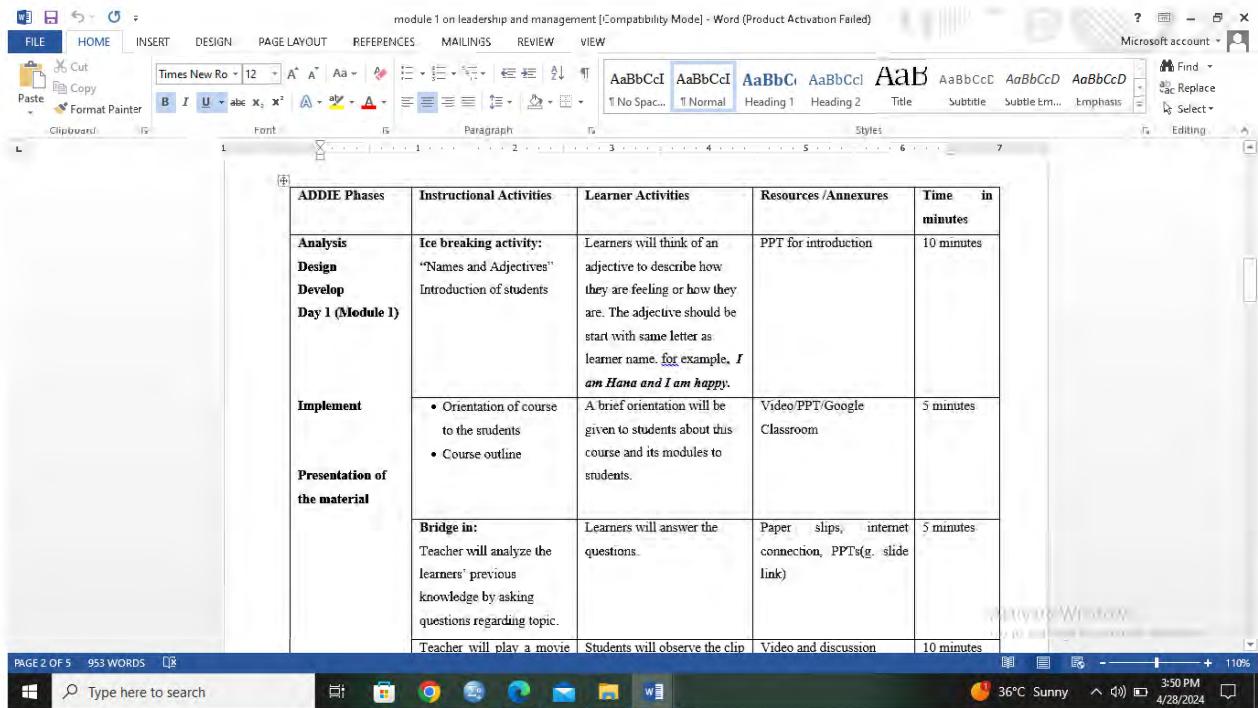
- Article for difference between leadership... Posted Jul 18, 2023
- Videos learning resources for chapter 1 Posted Jul 18, 2023
- Chapter in word form Posted Jul 18, 2023
- Chapter PPTs Posted Jul 18, 2023

Unit 02 Process of Management

- videos learning resources for chapter 2 Posted Jul 26, 2023
- Unit 2 PPTs Posted Jul 26, 2023

Module activities

Activities are also included in each module make the teaching learning experience interesting, practical and meaningful. Activities are divided in such a way that each module has beginning activities, middle activities and ending activities.



The screenshot shows a Microsoft Word document titled "module 1 on leadership and management [Compatibility Mode] - Word (Product Activation Failed)". The document contains a table with the following data:

ADDIE Phases	Instructional Activities	Learner Activities	Resources /Annexures	Time in minutes
Analysis Design Develop Day 1 (Module 1)	Ice breaking activity: "Names and Adjectives" Introduction of students	Learners will think of an adjective to describe how they are feeling or how they are. The adjective should be start with same letter as learner name. <i>for example, I am Happy and I am happy.</i>	PPT for introduction	10 minutes
Implement	<ul style="list-style-type: none">Orientation of course to the studentsCourse outline	A brief orientation will be given to students about this course and its modules to students.	Video/PPT/Google Classroom	5 minutes
Presentation of the material	Bridge in: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.	Learners will answer the questions.	Paper slips, internet connection, PPTs(g. slide link)	5 minutes
	Teacher will play a movie	Students will observe the clip	Video and discussion	10 minutes

Introductory activity/Ice breaking activity

There is an introductory activity or and ice breaking activity is present after each unit introduction page to grasp students' attention and develop their interest in the topic. Various forms of activities have been selected and designed according to the nature of the topic.

Unit objectives

In order to familiarize the outcomes of each unit, the unit objectives has been designed and displayed according to the nature and requirement of the subject

Previous Knowledge activity

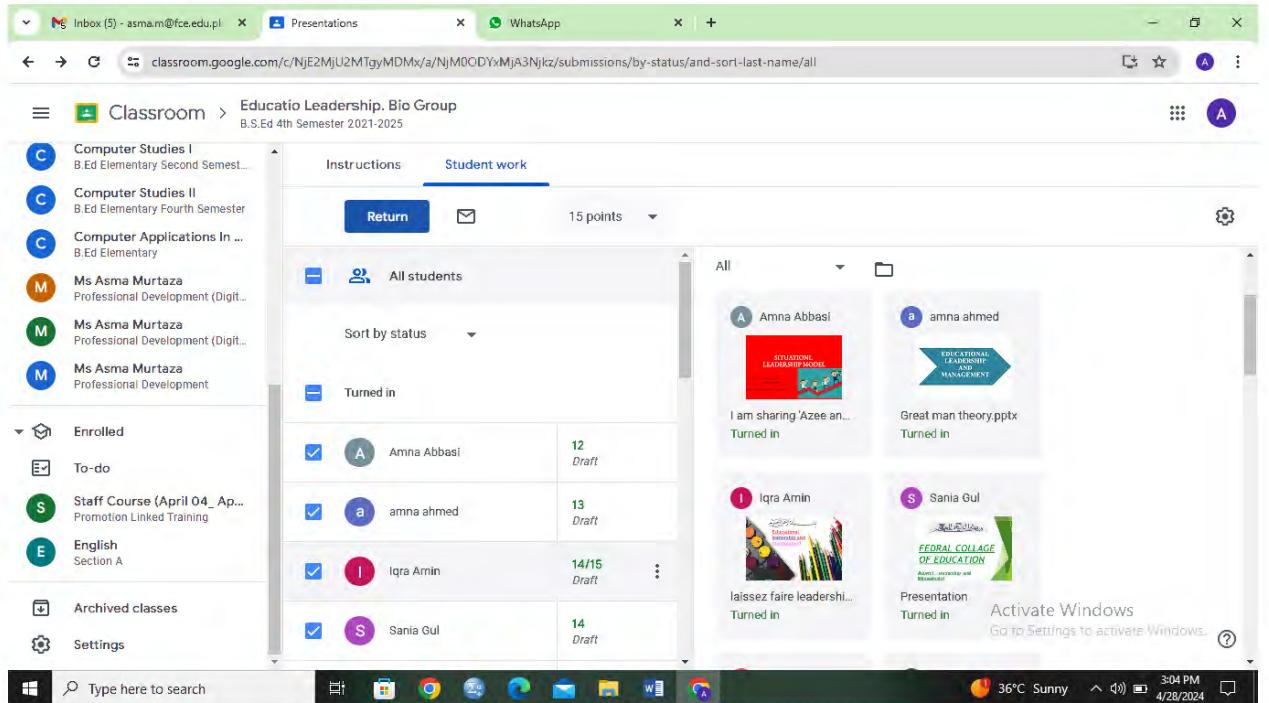
After introducing the objectives of the unit, there is an activity to check the previous knowledge of the students. Students will go to the next level after completion of that activity

Content display The details on various topics and sub topics has been given with

appropriate details in the courseware but there are other options as well through which Users can get additional information if required.

Assessment

In order to know about students' learning there are assessment in the module. These assessments are formative and summative assessment. At the end of every module, there is an assessment to check the learning of the students about module.



Google Classroom interface showing student work for the module 'Eduardo Leadership, Bio Group' (B.S.Ed 4th Semester 2021-2025). The student work tab is selected. The list of students and their work is as follows:

Student	Status	Score
Amna Abbasi	Turned in	12
amna ahmed	Turned in	13
Iqra Arain	Turned in	14/15
Sania Gul	Turned in	14

Readings

Additional reading material has also been given to provide maximum detail and conceptual clarity about concepts. Readings can be accessible in a variety of formats. i.e. web link, pdf. file, word file or ppt.

Middle Activities

Many activities have been given during the lesson to make learning more practical, and student centered. It will enhance conceptual clarity and maintain students' interest in the course.

The screenshot shows a Google Classroom interface. The left sidebar lists various subjects and assignments. The main content area is titled "Unit 01 Introduction to Management". It contains a "To review" section with several items, including a document titled "Article for difference between leadership..." and a video titled "Videos learning resources for chapter 1". The video section shows three video thumbnails: "Leadership vs Management", "Leadership vs Management", and "Educational Management". A "View material" button is located below the video thumbnails. The bottom of the screen shows a taskbar with various application icons and a system tray indicating "36°C Sunny" and the date "4/28/2024".

Unit Exercise

At the end of each unit, a unit exercise has been given as a unit test to check the students understanding and learning.

The screenshot shows a Google Classroom interface. The left sidebar lists various subjects and assignments. The main content area is titled "All topics" and lists several unit exercises: "Final sessional result", "Presentations", "Mid term result", "Mid paper assignment", "Short Assessment regarding unit 1", and "educational leadership". Each item has a "Posted" or "Due" date next to it. A "Draft" watermark is visible in the bottom right corner. The bottom of the screen shows a taskbar with various application icons and a system tray indicating "36°C Sunny" and the date "4/28/2024".

Summary and transition

In order to conclude the lecture, a section of summary and transition has been given. The important points of the lecture have also been highlighted to provide students an opportunity to revise and preview the concepts that has already been presented.

Joining Google Classroom

Modules can be accessed by joining Google classroom. The classroom can be joined by using code, email and by link provided by the teacher.

Appendix-J

Modules for Teaching of Educational Leadership and Management at B.S.Ed. Hons level

Contents

S #	Topic
	Preface
1	Introduction to the Developed Modules
2	Objectives of the Course
3	Introduction to the Course Outline
4	Modules according to the Course Outline of University of the Punjab
5	Instructions for Teachers
6	Schedule for teaching modules
7	Details of the Modules

Preface

Education is the right of every citizen in the country. It is their basic right to acquire quality education. Teacher can teach the students well and according to the need of time if teacher himself/herself is equipped with knowledge, skill and relevant technology. It is the need of time to equip teacher with relevant skills and knowledge so that teacher can transfer that particular knowledge and skills to the new generations. If the teachers are not fully equipped with updated knowledge and skills that how it we expect from the teacher to impart knowledge according to the need of the time. It is the need of the time to train our teacher with current knowledge and new technology. As new technologies are changing education or effecting the process of education, it is necessary that our teacher should also make familiar to the technologies of 21st century.

It is also important to discuss, that traditional method of teaching have their limitations. It is passive method of learning. Learners are not involved in it. So, how could we expect that these traditional method of learning will be useful in training of the future teachers or prospective teachers? Our future teachers should be trained in such a way that they should be familiar to the state of the art technology. The teacher should come to know that how they can become an efficient teacher. They should not be reluctant in using new technologies for the benefit of the students.

The course of educational leadership and management is also a subject which consist of theories of leadership, process of management, resource management, rules and regulations, school records and styles of leadership etc. This subject when teaching with traditional method of teaching become just material for root memorization. So, students are not involved, they cannot comprehend it. So, the researcher has developed modules for

this subject for teaching of prospective teachers of BSEd. Hons. The researcher has developed modules using ADDIE instructional design model. The researcher has included necessary, images, audio, videos, graphics, articles, tables, charts as and when necessary to make the subject more interactive and meaningful for students.

The subject **Educational Leadership and Management**” is a course for the program of BSEd. (Hons) according to the University of Punjab. Total number of units in this course are 7. This Subject is taught to the students of BSEd. Hons. 4th semester.

1. Introduction to the Developed Modules

The modules were developed in the subject of Educational Leadership and Management. This course was taught to the students of BSEd. Hons. 4th semester. This module is for all units of the Educational Leadership and Management course according to the University of the Punjab. The modules are developed using ADDIE instructional design model. These modules and it's all material were available in Google Classroom. students can directly access the material form Google Classroom. Students can access the material anywhere, anyplace and any time. The modules are implemented using Google Classroom. Students after joining particular Google classroom have access to the module material. Students' records have been maintained in the Google Classroom. Google Classroom is a tool/LMS which is now successfully used for educational purposes.

The teacher has delivered the module to specific group at specific time. The modules activities are arranged in such a way that students should involve in class. They should participate in class activities. The modules were equally benefit for whole class. These modules were useful for high achievers, average achieves. These modules were also useful for low achievers too. In traditional type of teaching, if a student misses the class

that student can't get the lecture again but in this type of modular approach students can get the module anywhere any time. At the same time, students can repeat the module or particular topic again and again till the required mastery of that particular topic.

2. Objectives of the Course

After studying the course, the students will be able to:

1. Explain the concept of school organization, management and discipline and factors affecting school discipline
2. Organized school activities (curricular and co-curricular) affectively and manage available resources (material, human and time) efficiently.
3. Differentiate between the concept of leadership and management utilizing the major indicator of effective leadership management.
4. Maintain school record and activities according to the school mandate.
5. Explain the functions of basic rules of leave pay and allowances E & D, codes of ethics

3. Introduction to the Course Outline

Course outline of the module is attached as Appendix G

4. Modules according to the Course Outline of University of the Punjab

Here are the details of topics of each module

Name and Number of unit	Number of Modules	Topics for Modules
Unit 1 Introduction to Management	Module 1	1.1 Definitions of Management and Leadership. 1.2 Difference between leadership and management 1.3 Difference between general and educational management and Leadership.
Unit 02 Process of Management	Module 2	2.1 Planning 2.2 Organizing 2.3 Staffing
	Module 3	2.4 Communicating 2.5 Controlling 2.6 Budgeting
Unit 03 Resource Management	Module 4	3.1 Human resources 3.2 Physical resources
	Module 5	3.3 Financial resources 3.4 Information and learning resources (Library, AV Aids and instructional material)
Unit 04 Rules and Regulations	Module 6	4.1 Rules regarding appointment, leaves, pay and allowances. 4.2 Efficiency & Discipline rules
	Module 7	4.3 Terms of reference of various personals in the school 4.4 Code of ethics
Unit 05 Records in Educational Institutions	Module 8	5.1 Attendance register 5.2 Leave register 5.3 Stock register
	Module 9	5.4 Cash register (fee, different kind of funds)

		5.5 Personal files of teachers and other staff 5.6 Other academic record (students result, staff meetings etc.)
Unit 06 Theories of Leadership	Module 10	6.1 Trait Theories
	Module 11	6.2 Contingencies Theories
Unit 07 Leadership Style	Module 12	7.1 Democratic 7.2 Autocratic 7.3 Laissaiz-faire 7.4 Leadership style and Headship

5. Instructions for Teachers

The modules are developed in the subject of Educational Leadership and Management. This course has been taught to the students of BSEd. Hons. 4th semester. These modules cover all units of the Educational Leadership and Management course according to the University of the Punjab. The modules have been developed using ADDIE instructional design model. The implementation of the modules has been done by using Google Classroom. Students after joining particular Google classroom can access to the material of the modules and students' records have been maintained in the Google Classroom. Google Classroom is a tool/LMS which is now successfully used for educational purposes.

E-modules are developed using ADDIE instructional design model. ADDIE model has five phases of Analyze, Design, Develop, Implement and Evaluate. Analyze phase is crucial to analyze the learners and their previous knowledge about the topic. In analysis phase, learning environment and learners are analyzed. Students join Google class too. Students' information has obtained by a Google form which consists of multiple choice

questions regarding topic basics; some questions about learners are also included. In Design phase, important decisions are made regarding content, delivery, strategies are included. These decisions are made according to objectives which are set in first phase. The third phase is the development phase. Course content is prepared according to the guidelines set in the first two phases. Guidelines are also prepared. Implementation is the fourth stage where actual learning takes place in actual environment. Last stage is the evaluation phase. In evaluation phase of ADDIE model, learners are evaluated. Two type of evaluation has been used. One is the ongoing evaluation which is used here during classes. It is also present in every module to check the learners' understanding about basic concepts of that particular topic of the module. A summative evaluation is also in the module. Students are also evaluated at the end of all modules.

6. Schedule for teaching modules

Here is the schedule for teaching of modules to the students of BSEd hons. The duration of tryout was 12 weeks. Each module has to be completed in 3 hours. There were three periods of one hour of subject in a week. In this way, this try out was completed in a period of 12 weeks.

No of modules with duration (July/August 2023 to October)

Unit	No of	Total Time (hours)	Weeks	Activities
Modules				
1	1	3 (classes, hours)	Week 1	Pre-test
2	2	6 (classes, hours)	Week 2, 3	
3	2	6 (classes, hours)	Week 4,5	
4	2	6 (classes, hours)	Week 6, 7	

5	2	6 (classes, hours)	Week 8,9
6	1	3(classes, hours)	Week 10
7	2	6 (classes, hours)	Week 11, 12 Post-test
total	12	(36 hours, 36	Last week
modules		Classes)	assessment
		(12*3=36)	

7. Details of Modules

Details of teaching modules is explained below:

Module No. 1

Topics: Definition of Leadership and Management.
(Unit # 1) Difference between Leadership and Management.
Difference between General and Educational Leadership and Management.

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

- To explain the concept of Leadership and Management.
- Differentiate between Leadership and Management.
- Differentiate between General and Educational Management and Leadership.

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define Leadership
- Define Management
- Differentiate between Leadership and Management
- Explain Educational Leadership
- Explain Educational Management
- Compare General and Educational Leadership and Management.

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases	Instructional Activities	Learner Activities	Resources /Annexures	Time in minutes
Analysis Design Develop Day 1 (Module 1)	Ice breaking activity: “Names and Adjectives” Introduction of students	Learners will think of an adjective to describe how they are feeling or how they are. The adjective should be start with same letter as learner name. For example, I am Hana and I am happy.	PPT for introduction	10 minutes
Implement	<ul style="list-style-type: none"> Orientation of course to the students Course outline 	A brief orientation will be given to students about this course and its modules to students.	Video/PPT/Google Classroom	5 minutes
Presentation of the material	Bridge in: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.	Learners will answer the questions.	Paper slips, internet connection, PPTs(g. slide link)	5 minutes
	Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics. Teacher will tell the objectives of the lesson to the students.	Students will observe the clip and will respond to teachers. Students will listen and respond to teachers regarding objectives.	Video and discussion https://www.youtube.com/watch?v=mhkLc0HEtR0 Interactive handout in case of no internet	10 minutes
Content	Teacher will play multimedia PPT for explaining the concept and definition of leadership and management	Students will observe and can ask questions during presentation. Note: in case of no internet video will be available in Google class room.	PPT (g. slide link)	30 minutes

Guidance	Teacher will guide the students regarding topic			
Assessment	Teacher will ask question regarding content. Explain leadership and management in your own words	Students will respond.	White board Chart Paper	
Feedback	At the end of lecture, students can ask questions. Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic.		
Day 2 (Module 1)				5 minutes
Implement	Brainstorming: Teacher will ask question of difference between leadership and management.	In brainstorming activity, Learners will answer the question with unique ideas.	Paper slips, internet connection, PPTs(g. slide link)	
Presentation of the material				
Content	Teacher will play video and then multimedia PPT of difference between leadership and management.	Students will observe and can ask questions during and after presentation. Note: in case of no internet connection both will be available on Google classroom.	https://www.youtube.com/watch?v=teWjyCStRk PPT (g. slide link) Interactive handout in case of no internet	45 minutes
Guidance	Teacher will guide the students regarding topic			
Assessment	Teacher will ask question regarding content Any three difference between leadership and management	Students will respond.	Students can write their answers on board.	
Feedback	Teacher will provide necessary feedback to students. Student provide their	Students will provide their reflection and write 2 take away on paper and tell to instructor in the class.	Chart paper Paper slips	10 minutes

	reflection			
Content	Bridge in: Teacher will analyze the learners' previous knowledge by asking questions regarding previous topic	Learners will answer the questions.	Paper slips internet connection PPTs(g. slide link)	10 minutes
	Teacher will play multimedia PPT of difference between general and educational leadership and management .	Students will observe and can ask questions during presentation. Note: in case of no internet connection both will be available on Google classroom	PPT (g. slide link) Interactive handout in case of no internet	35 minutes
Guidance	Teacher will guide the students regarding topic			
Assessment	Teacher will ask question regarding content	Students will respond		
feedback	Teacher will provide necessary feedback to students. Reflection of students	Learners will improve concepts in the light of feedback. Student will write reflection on paper slips.		
Evaluate	Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom.	Google form link Hard copy in case of no internet	15 minutes

Annexures:

- Video clip (introduction of leadership 3 minutes)
<https://www.youtube.com/watch?v=mhkLc0HEtR0>
- PPT 1 for concept 1 (Definitions of Management and Leadership)
- PPT 2 for concept 2 (Difference between leadership and management)
<https://www.youtube.com/watch?v=tewWjyCStRk>
<https://www.youtube.com/watch?v=mhkLc0HEtR0>
- PPT 3 for concept 3 (Difference between general and educational management and leadership)
- MCQs for evaluation (Google form)

•

Reference material:

<https://www.youtube.com/watch?v=BFm0LRGwluU> (educational leadership and management)

Recommended Books

Afridi, A. (1998). *School organization*: Ijaz Publishers.

Bovee, C.L. et al. (1995). *Management*. International Edition. New York: McGraw Hill, Inc.

Burden, R.P. (1995). *Classroom management and discipline: Methods to facilitate cooperation in instruction*. New York: Longman.

Bush, T.B. et al. (1999). *Educational management: Re-defining theory, policy and practice*. London: Longman.

Bush, T., & Bush, T. (2003). *Theories of educational leadership and management*. London: Sage Publications.

Module No. 2

Topics: **Process of Management (Unit # 2):**

Planning, Organizing, Staffing

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of module.

- To explain the concept of process of management.
- To describe the elements of process of management.
- To know about planning, organizing and staffing.

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define the element of planning
- Define the element of organizing
- Define the element of staffing
- Students will be able to know about the elements of planning, organizing and staffing.

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases	Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop	Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.	Learners will answer the questions.	Paper slips, internet connection, PPTs(g. slide link)	(10 minutes)
	Teacher will play a movie clip (5 minutes) regarding explaining the concepts of topics. Teacher will tell the objectives of the lesson to the students.	Students will observe the clip and will respond to teachers. Students will listen and respond to teachers regarding objectives.	Video and discussion https://www.youtube.com/watch?v=q6LMjurECZM	(10 minutes)
Implement Presentation of the material	Teacher will present the material to students.			
Stage-1 Content	Teacher will play multimedia PPT for explaining concept of Planning	Students will observe and can ask questions during presentation.	PPT (g. slide link)	(40 minutes)
Guidance assessment feedback	Teacher will guide the students regarding topic			
	Teacher will ask question regarding content	Students will respond		
	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2 Content	Teacher will play multimedia PPT for explaining concept	Students will observe and can ask questions during	PPT (g. slide link) https://www.youtube.com/watch?v=q6LMjurECZM	(50 minutes)

Guidance Assessment feedback	Organizing	presentation.	e.com/watch?v=Nz-ymcn8Fv0	
	Teacher will guide the students regarding topic			
	Teacher will ask question regarding content	Students will respond		
	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3 Content Guidance Assessment feedback	Teacher will play multimedia PPT for explaining concept of Staffing	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=Nz-ymcn8Fv0	(50 minutes)
	Teacher will guide the students regarding topic	Students will respond		
	Teacher will ask question regarding content			
	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate	Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip (elements of process of management 5 minutes)
- <https://www.youtube.com/watch?v=q6LMjurECZM>
- PPT 1 for concept 1 (Planning)
- PPT 2 for concept 2 (Organizing)
- <https://www.youtube.com/watch?v=Nz-ymcn8Fv0>

- PPT 3 for concept 3 (Staffing)
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

Introduction to management: management strategies in educational institutions

<https://www.youtube.com/watch?v=XclvGXLqxHo>

Module No. 3

Topics: **Process of Management:**
Communicating, Controlling, Budgeting

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of module.

- To explain the concept of communicating element of process of management.
- To explain the concept of controlling element of process of management.
- To explain the concept of Budgeting element of process of management.

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define the element of communicating
- Define the element of controlling
- Define the element of budgeting
- Students will be able to know about the elements of communicating, controlling and budgeting.

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining communicating	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=q6u0AVn-NUM&t=7s	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for	Students will observe and can ask questions during	PPT (g. slide link) https://www.youtube.com/watch?v=q6u0AVn-NUM&t=7s	(50 minutes)

		explaining controlling	presentation.	ube.com/watch?v=JRVXfaFrMEM	
	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining budgeting	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=SIqwd13iIrk	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip (how the communication process works 7 mintues)
- <https://www.youtube.com/watch?v=q6u0AVn-NUM&t=7s>
- PPT 1 for concept 1 (Process of Management: Communicating)
- PPT 2 for concept 2 (Process of Management: Controlling)
- <https://www.youtube.com/watch?v=JRVXfaFrMEM>

- PPT 3 for concept 3 (Process of Management: Budgeting)
- <https://www.youtube.com/watch?v=SIqwd13iIrk>
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

Module No. 4

Topics: **Resource Management:**
Human Resources, Physical Resources

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain the concept of resources
- To know about the type of resources
- To know about human resources
- To explain physical resources

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define resource
- Explain human resource, types and importance of human resources.
- Explain physical resource, types, need, and importance of physical resources.

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining human resources	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=uiOjcETtFHQ	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining physical resources	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=gLDBgz4dwEM	(50 minutes)

	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
	Content	Teacher will play multimedia PPT for explaining physical resource	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=gLDBgz4dwEM	(50 minutes)
Stage 3	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
	Evaluate	Teacher will evaluate students. Evaluation will be consisting of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip (Resource Management)
- <https://www.youtube.com/watch?v=uiOjcETtFHQ>
- PPT 1 for Human Resources
- PPT 2 for Physical Resources
- <https://www.youtube.com/watch?v=gLDBgz4dwEM>
- PPT 3 for Physical Resources
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading

Module No. 5

Topics: **Resource Management:**
Human Resources, Physical Resources

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain the concept of resources
- To know about the type of resources
- To know about financial resources
- To explain Information and learning resources

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define resource
- Explain financial resource
- Explain Information and learning resources

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining financial Resources	Students will observe and can ask questions during presentation.	<p>PPT (g. slide link)</p> <p>https://www.youtube.com/watch?v=uiOjcETtFHQ</p> <p>https://www.youtube.com/watch?v=gLDBgz4dwEM</p>	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining Information and learning resource	Students will observe and can ask questions during presentation.	<p>PPT (g. slide link)</p> <p>https://www.youtube.com/watch?v=h4Mnuw0SEns</p>	(50 minutes)
	Guidance	Teacher will guide the students			

		regarding topic information and learning resources			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining Information and learning resource.	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=uiOjcETtFHQ	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip (financial resources: <https://www.youtube.com/watch?v=uiOjcETtFHQ>)
- <https://www.youtube.com/watch?v=gLDBgz4dwEM>
- <https://www.youtube.com/watch?v=h4Mnuw0SEns>
- PPT 1 for financial resources
- PPT 2 for information and learning resources
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading

Module No. 6

Topics: **Rules and Regulations:**
Rules regarding appointment, leaves, pay and allowances
Efficiency and Discipline Rules

Class: B.S.Ed. Hons. **Total Time:** 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To define rules
- To know about rules of appointment
- To know about leaves and types of leaves
- To explain pay and allowances
- To know about efficiency and discipline rules

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define rules
- Explain rules of appointment
- Describe leaves and types of leaves
- Describe pay and allowances
- Explain efficiency and discipline rules

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to

evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes minimum) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining rules regarding appointment, leaves, pay and allowances	Students will observe and can ask questions during presentation.	<p>PPT (g. slide link)</p> <p>https://www.youtube.com/watch?v=LYoQ1kiaLS8</p> <p>https://www.youtube.com/watch?v=Opqcs-rE25s</p>	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further		

			questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining Efficiency and Discipline rules	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=oobb_vM1HYo https://www.youtube.com/watch?v=xPfVtjNSoMI	(50 minutes)
	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining Efficiency and Discipline Rules	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=Qh0DOuyoEq	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consisting of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip
- <https://www.youtube.com/watch?v=LYoQlkiaLS8>
- <https://www.youtube.com/watch?v=Opqcs-rE25s>

- https://www.youtube.com/watch?v=oobb_vM1HYo
- <https://www.youtube.com/watch?v=xPfVtjNSoMI>
- <https://www.youtube.com/watch?v=Qh0DOuyoEqs>
- PPT 1 for rules regarding appointment, leaves, pay and allowances
- PPT 2 for Efficiency and Discipline rules
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

<https://www.youtube.com/watch?v=awpLTUXBqq0>

Module No. 7

Topics: **Rules and Regulations:**
Terms of reference of various personals in the school
Code of Ethics

Class: B.S.Ed. Hons. **Total Time:** 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain terms of reference of various personals in the school
- To know about code of ethics

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define terms of reference
- To explain terms of reference of various personals
- Explain code of ethics

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p>	Learners will answer the questions.	Paper slips, internet connection, PPTs(g. slide link)	(10 minutes)
		<p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	Students will observe the clip and will respond to teachers. Students will listen and respond to teachers regarding objectives.	Video and discussion https://www.youtube.com/watch?v=e6uw8qzAj80	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining terms of reference of various personals in the school	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=50J9CqoD4H4	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining code of	Students will observe and can ask questions	PPT (g. slide link) https://www.youtube.com	(50 minutes)

		ethics	during presentation.	/watch?v=Kc_NljT338w https://www.youtube.com/watch?v=Kc_NljT338w https://www.youtube.com/watch?v=JV9CuELujF8	
	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining code of ethics	Students will observe and can ask questions during presentation.	PPT (g. slide link)	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip (introduction: <https://www.youtube.com/watch?v=e6uw8qzAj80>)
- <https://www.youtube.com/watch?v=50J9CqoD4H4>
- https://www.youtube.com/watch?v=Kc_NljT338w
- <https://www.youtube.com/watch?v=JV9CuELujF8>
- <https://www.youtube.com/watch?v=9lukcJ4P3fE&list=PL-3aFGRoHoUhUJ0Wh1fEhecC79stAUGxi>
- PPT 1 for terms of reference of various personals in the school

- PPT 2 for code of ethics
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

Module No. 8

Topics: **Record in Educational Institutions:**
Attendance Register, Leave Register, Stock Register

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain the record in educational institutions
- To know about the types of registers in educational institution for record keeping
- To know about attendance register
- To explain leave register
- To know about stock register

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define register
- Explain attendance register
- Explain leave register
- Explain stock register

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining Record in educational institution: Attendance Register	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=1B6obwJnId8 https://www.youtube.com/watch?v=1-Em0y5C_0E https://www.youtube.com/watch?v=POijZIALS2M	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining Record in	Students will observe and can ask questions during	PPT (g. slide link)	(50 minutes)

		educational institution: Leave Register	presentation.		
	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining Record in educational institution: Stock Register	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=1B6obwJnId8 https://www.youtube.com/watch?v=LUJkkIHFyy0	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consisting of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

Video clip (<https://www.youtube.com/watch?v=VyfCJRy8gcc>)

- <https://www.youtube.com/watch?v=1B6obwJnId8>
- PPT 1 for concept 1 ()
- PPT 2 for concept 2 ()
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

https://www.youtube.com/watch?v=J_vwuJOqGXg

https://www.youtube.com/watch?v=1-Em0y5C_0E

<https://www.youtube.com/watch?v=POijZlALS2M>

<https://www.youtube.com/watch?v=LUJkk1FHyy0>

Module No. 9

Topics: **Record in Educational Institutions:**
Cash Register, Personal files of teachers and other staff, Other Academic Records (students result, staff meetings etc.)

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain the record in educational institutions
- To know about the types of registers in educational institution for record keeping
- To know about cash register
- To explain personal files of teachers
- To know about other Academic records (students result, staff meetings etc)

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define register
- Explain cash register
- Explain personal files of teachers
- Explain other academic records like students' result, staff meetings

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining Record in educational institution: Cash Register	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=_0n5Hkod2Nw	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia	Students will observe and	PPT (g. slide link)	(50

		PPT for explaining Record in educational institution: Cash Register	can ask questions during presentation.	https://www.youtube.com/watch?v=J_vwu_JOqGXg https://www.youtube.com/watch?v=_0n5Hkod2Nw	minutes)
	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining personal files and other Academic Record	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=J_vwu_JOqGXg https://www.youtube.com/watch?v=_0n5Hkod2Nw	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

	of MCQs.			
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Annexures:

Video clip (<https://www.youtube.com/watch?v=VyfCJRy8gcc>)

- https://www.youtube.com/watch?v=_0n5Hkod2Nw
- PPT 1 for concept 1 ()
- PPT 2 for concept 2 ()
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

https://www.youtube.com/watch?v=J_vwuJOqGXg

https://www.youtube.com/watch?v=1-Em0y5C_0E

<https://www.youtube.com/watch?v=POijZlALS2M>

<https://www.youtube.com/watch?v=LUJkk1FHyy0>

<https://infohubhrmssissed.com/different-types-of-registers-used-in-schools/>

Module No. 10

Topics: **Theories of Leadership:**

Trait Theories

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain theory
- To know about the type of theories
- To know about trait theories

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define theory
- Explain type of theories
- Explain trait theories

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement		Teacher will present the material to students.			
Presentation of the material					
Stage-1	Content	Teacher will play multimedia PPT for explaining behavioral theories and types	Students will observe and can ask questions during presentation.	<p>PPT (g. slide link)</p> <p>https://www.youtube.com/watch?v=UnOdfTLL7hQ</p> <p>https://www.youtube.com/watch?v=utcIWBGmpjM</p>	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining trait theories	Students will observe and can ask questions during presentation.	<p>PPT (g. slide link)</p> <p>https://www.youtube.com/watch?v=eVbMQFjd</p>	(50 minutes)

			DfQ	
Guidance	Teacher will guide the students regarding topic			
Assessment	Teacher will ask question regarding content	Students will respond		
feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining trait theories	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=utcIWBGmpjM (50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond	
	Assessment	Teacher will ask question regarding content		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic	
Evaluate		Teacher will evaluate students. Evaluation will be consist of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link (20 minutes)

Annexures:

- Video clip (<https://www.youtube.com/watch?v=WOtBp0D85LI>)
- <https://www.youtube.com/watch?v=UnOdfTLL7hQ>
- <https://www.youtube.com/watch?v=utcIWBGmpjM>
- PPT 1 for concept 1 ()
- PPT 2 for concept 2 ()
- PPT 3 for concept 3 ()

- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

<https://www.youtube.com/watch?v=NADalfH1dqw&t=280s>

Module No. 11

Topics: **Theories of Leadership:**

Contingency Theories

Class: B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain theory
- To know about the type of theories
- To know about Contingency theories
- To know about types of contingency theories

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define theory
- Explain type of theories
- Explain contingency theories
- Explain types of contingency theories

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p>	Learners will answer the questions.	Paper slips, internet connection, PPTs(g. slide link)	(10 minutes)
		<p>Teacher will play a movie clip (3 minutes minimum) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	Video and discussion https://www.youtube.com/watch?v=Z5jir4IYx7o	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining contingency theories: Fiedler's contingency theory	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=6jkcOjpaPSo	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining path goal	Students will observe and can ask questions during	PPT (g. slide link) https://www.youtube.com	(50 minutes)

		theory and cognitive resource theory	presentation.	https://www.youtube.com/watch?v=6jkcOjpaPSo https://www.youtube.com/watch?v=UTRTs2VvfXk	
Guidance	Teacher will guide the students regarding topic				
Assessment	Teacher will ask question regarding content	Students will respond			
feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic			
Stage 3	Content	Teacher will play multimedia PPT for explaining strategic contingency theory and situational theory	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=LnDVH856xaw https://www.youtube.com/watch?v=eJAqhynUL8k	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content			
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consisting of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

Video clip <https://www.youtube.com/watch?v=Z5jir4IYx7o>

- <https://www.youtube.com/watch?v=WOtBp0D85LI>
- <https://www.youtube.com/watch?v=6jkcOjpaPSo>
- <https://www.youtube.com/watch?v=UTRTs2VvfXk>
- <https://www.youtube.com/watch?v=LnDVH856xaw>
- <https://www.youtube.com/watch?v=eJAqhyhUL8k>
- PPT 1 for concept 1 ()
- PPT 2 for concept 2 ()
- PPT 3 for concept 3 ()
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

<https://www.youtube.com/watch?v=RpiOUD79hVE>

<https://www.youtube.com/watch?v=NADalfH1dqw&t=280s>

<https://www.youtube.com/watch?v=RpiOUD79hVE>

Module No. 12

Topics:

Leadership Style:

Democratic Leadership Style, Autocratic leadership Style

Laissez-faire, Leadership Style and headship

Class:

B.S.Ed. Hons.

Total Time: 3 Hours (180 minutes)

Total Classes: 3 Classes

Specific Instructional Objectives:

Following will be the specific instructional objectives of the module.

- To explain the concept of leadership style
- To know about types of leadership style
- To know the importance of leadership style for a administrator

Learning Outcomes of the Module:

After studying this module, the students will be able to:

- Define leadership style
- Explain types of leadership style
- Explain Democratic, Autocratic, Laissez faire leadership style
- To describe leadership style and headship

Generic Resources: Multimedia, Internet, White board, marker, Computer/laptop/mobile phone, Charts, Computer Paper

ADDIE Model

ADDIE Instructional design model is used in developing the e-modules. ADDIE stands for Analysis, Design, Develop, Implement and Evaluate. Students' data has gathered through analysis phase. On the basis of analysis of data, appropriate method and resources are identified in the design phase. Development phase is the actual development of instructional design e-modules. The purpose of implement is the implement of content in environment. Evaluate is the fifth stage in ADDIE model. The purpose of this phase is to evaluate the product or learning resources according to the objectives.

ADDIE Phases		Instructional Activities	Learner Activities	Resources /Annexures	Time
Analysis, Design, Develop		<p>Ice breaking activity: Teacher will analyze the learners' previous knowledge by asking questions regarding topic.</p> <p>Teacher will play a movie clip (3 minutes) regarding explaining the concepts of topics.</p> <p>Teacher will tell the objectives of the lesson to the students.</p>	<p>Learners will answer the questions.</p> <p>Students will observe the clip and will respond to teachers.</p> <p>Students will listen and respond to teachers regarding objectives.</p>	<p>Paper slips, internet connection, PPTs(g. slide link)</p>	(10 minutes)
Implement Presentation of the material		Teacher will present the material to students.			
Stage-1	Content	Teacher will play multimedia PPT for explaining leadership style: Democratic and Autocratic Leadership Style	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=lje3bd61SNs	(40 minutes)
	Guidance	Teacher will guide the students regarding topic			
	assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 2	Content	Teacher will play multimedia PPT for explaining Laissez-faire leadership style	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=lje3bd61SNs	(50 minutes)

	Guidance	Teacher will guide the students regarding topic			
	Assessment	Teacher will ask question regarding content	Students will respond		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Stage 3	Content	Teacher will play multimedia PPT for explaining leadership style and headship	Students will observe and can ask questions during presentation.	PPT (g. slide link) https://www.youtube.com/watch?v=sh5dWRMCu6A https://www.youtube.com/watch?v=7r6gH1y8wj0	(50 minutes)
	Guidance	Teacher will guide the students regarding topic	Students will respond		
	Assessment	Teacher will ask question regarding content	Teacher will divide class into groups and each group has to perform on role play regarding leadership style.		
	feedback	Teacher will provide necessary feedback to students.	Learners will improve concepts in the light of feedback. And can ask further questions regarding topic		
Evaluate		Teacher will evaluate students. Evaluation will be consisting of MCQs. Teacher will share the link of Google form consisting of MCQs.	Students will answer the question and sent it in Google Classroom	Google form link	(20 minutes)

Annexures:

- Video clip (<https://www.youtube.com/watch?v=0fx7yy9-L7E>)
- <https://www.youtube.com/watch?v=lje3bd61SNs>
- <https://www.youtube.com/watch?v=sh5dWRMCu6A>
- <https://www.youtube.com/watch?v=7r6gH1y8wj0>

- PPT 1 for concept 1 ()
- PPT 2 for concept 2 ()
- PPT 3 for concept 3 ()
- MCQs for evaluation (Google form)

Reference material:

Study material for further reading.

https://www.youtube.com/watch?v=e-n_xvNsGnQ

<https://www.youtube.com/watch?v=KNbrtvglBjE>

Appendix K

Questionnaire to know about the Perception of the teacher

Dear Teacher

I hope you have a great experience with instructional modules and you have learned many new things. Instructional modules using modular approach is a new emerging trend. It provides lot of benefits over traditional method of learning. We want to make it more interactive, interesting and purposeful learning experiences. Here are some questions regarding instructional modules. These questions are about the improvement of Instructional modules etc.

Your feedback is very important and valuable for us.

Section A: General Information

Name: _____ (Optional) Subject _____

Experience in years _____ Grade level taught: _____

Section B: Perception of teacher regarding Instructional Modules

Which one modules do you think students find more effective?

Where you think students feel motivated?

Do you think students learning was effective using modules?

Do you feel any difficulty in using modules?

Which thing students find more interesting in modules and want to do again and again?

What are your suggestions for further improvement of this course using e-modular approach?

Thank you for your time.

Appendix L

Module Teaching Schedule
Semester started in 20th June 2023
Midterm 15-8-2023= Final 16-10-2023
June- September =12 weeks

Instructional Activities	Learner Activities	Resources /Annexures	Time in minutes
Students Information Performa	Students will fill Performa. Note (If necessary trainer will conduct training of required software)	Google form/ hard copy	20
Pre-test	Students will take pre-test	Google form / hard copy	35
Post-test	Students will take post-test	Google form / hard copy	35
Perception questionnaire	Students will fill Performa.	Google form / hard copy	20

Week #	Day #	Date	hour	Activity/task/assessment
	opening	20-6-2023		Pre-test task both groups
1	1		1	Module 1
	2		1	Module 1
	3		1	Module 1
2	1		1	Module 2
	2		1	Module 2
	3		1	Module 2
3	1		1	Module 3
	2		1	Module 3
	3		1	Module 3
4	1		1	Module 4
	2		1	Module 4
	3		1	Module 4
5	1		1	Module 5
	2		1	Module 5
	3		1	Module 5
6	1		1	Module 6
	2		1	Module 6
	3		1	Module 6

7	1		1	Module 7
	2		1	Module 7
	3		1	Module 7
8	1		1	Module 8
	2		1	Module 8
	3		1	Module 8
9	1		1	Module 9
	2		1	Module 9
	3		1	Module 9
10	1		1	Module 10
	2		1	Module 10
	3		1	Module 10
11	1		1	Module 11
	2		1	Module 11
	3		1	Module 11
12	1		1	Module 12
	2		1	Module 12
	3		1	Module 12
	Semester end	06-10-23		Post-test both groups, perception questionnaire
12 weeks			36 hours	