EFFECTIVENESS OF DEVELOPED LEARNING MANAGEMENT SYSTEM (LMS) ON PSYCHOLOGICAL PERSPECTIVES OF LEARNING FOR B.ED. TRAINEES IN TERMS OF ACHIEVEMENT, ACHIEVEMENT MOTIVATION AND REACTION

A Summary Submitted to Devi Ahilya Vishwavidhyalaya

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SUMMARY

1.0.0 INTRODUCTION

National Education Policy 2020 quotes that "The thrust of technological interventions will be for the purpose of improving teaching, learning and evaluation process, supporting teacher preparation and professional development, enhancing educational access, and streamlining educational planning, management, and administration including processes related to admissions, attendance, assessments, etc." Education technology can be used systematically to plan, to realize and evaluate effective teaching learning process in formal, informal and non-formal situations. Educational Technology is the efficient organization of any learning system adapting or adopting methods, processes, and products to serve identified educational goals. The challenge is to design appropriate systems that will provide for and enable appropriate teaching-learning systems that could realize the identified goals. The key to meeting this challenge is an appreciation of the role of Education Technology as an agent of change in the classroom, which includes not only the teacher and the teaching-learning process but also systemic issues like scope, equity, and quality.

Dependency of learners on internet has shifted their interest from regular classroom and computer labs to online based applications. Online learning can replace lecture time with individual work and engage a learner actively to improve the learning outcomes. A number of online activities are available for learners including discussions, continuous assessment, immediate feedback through which a learner can get personalized support for the work they have done from the online learning. Now a days with the use of technology and the Internet, education is undergoing significant changes, providing new ways of teaching and learning. One of the methods of teaching widely used to promote knowledge consists in the use and creation of virtual environments available in various formats which are available online. The integration of internet services in the teaching practices can provide thematic, social and digital enrichment for the agents involved. This can be achieved by Learning Management Systems (LMS). Continuous learning is essential due to frequent technology change. Now a days student are demanding a change in the classroom because of their ability to gather information faster than any other

generation. The hardest job is to integrate all available resources into a defined tool. Learning Management System is such a tool to address real life challenges of students, faculties and management. To accomplish the goals of online learning with the inculcations of all these activities to make a learner active throughout the learning process, a learning management system can be adopted. Many educational institutes have tried to bring in Learning Management System (LMS) to facilitate face-to-face learning process.

1.1.0 LEARNING MANAGEMENT SYSTEM

Learning Management System is an online software application used to arrange, execute, and assess a specific learning process. The LMS includes several tools that provide academic and training institutions efficient and effective means to support distance education and supplement their traditional way of teaching. Learning Management System (LMS) is an enhanced form of classroom teaching. The main goal of Learning Management System is to provide pedagogical and technical support to all teachers and students. Learning Management System are becoming an interface for handling course registration, managing course contents, assessing students through assignments, conducting quizzes and exams, administration, evaluation and report generation for smooth functioning of institute. In general, Learning Management System serves as a means for acquiring the knowledge using the help of technologies e.g. Internet and Interactive based over the traditional ways; thereby enables learning over a wide spectrum with higher efficiency.

The Learning Management System (LMS) is a software application that is used to plan, deliver, publish and place self-paced online courses. Learning Management System (LMS) works as central repositories to address all type of educational needs.

The major areas addressed by LMS deployment are Course Planning, Instant Evaluation, Learner Engagement and Content Management (Kulshreshtha and Kant, 2013)

1. **Course Planning:** The word course planning means what content of study to teach and within a specified course what topic to teach in a particular duration of time period. Generally, it can be done by making a course plan and lecture

schedule before starting the treatment. Course plan is detailed structure of content clearly stating chapter description and reading resource (page number, website, handouts etc.) and lecture schedule states total number of lecture hours required for completion of course for the treatment and amount of course to be covered per day.

2. **Instant Evaluation:** All LMS supports instant evaluation for multiple choice questions asked during test/exam. As soon as student click submit button, all multiple choice questions are evaluated simultaneously and grading is displayed on screen. This tool is helpful in removing students result anxiety, and the motivation level can be raised. As result is shown without time delay, student gets more time for their improvement.
3. **Content Management:** Course content management is a thought probing issue for teacher trainees. There is need for teaching resource management. For this LMS provides unique login ID to create, manage and store contents for future use. Notes can be available for revision also.
4. **Learner engagement:** Learner engagement means engaging today's students for academic success. Students learn more in a group as they imitate behavior of other students from different cultural backgrounds. This also helps in building strong student relationship like getting to know each other, building strong teams, effective communication, and so on. LMS support several tools for collaborative learning like chats, messages, forum, wiki, etc. where students learn easily topics which they found difficult in offline mode of learning.

1.1.1 Characteristics of Learning Management System

An effective learning management system should possess the following characteristics:

1. **Scalability**: The perfect Learning Management System should be flexible enough to accommodate classes of all sizes. One should be able to upgrade the system to fit growing numbers of users if more students will sign up for more Learning courses.

2. **Security**: All good LMS must have strict security measures in place to protect sensitive information such as student records, course information, and payment details. In the open environment provided by such online facilities, it is important a LMS allows access only to the relevant people.

3. **Adaptability**: One must make sure that the LMS will be adaptable enough to provide the best and most varied learning experience possible for his/her students. When choosing an LMS, one should check to see if it has the capability to upload and deliver courses from other e-Learning providers.

4. **Administrative support**: Learning Management Systems must also serve as an administrative hub for the institution, helping keep tabs on the students and courses it facilitates. It should be able to store, manage, and relay information on student profiles, assessment results and other key details.

5. **Cost effectiveness**: One should approach any major investment in its LMS. Considering all the costs involved in implementing it and running it, e.g. set up, administration, and training fees, one should make sure that the LMS, going to select is right for the size of the treatment and budget.

Keeping in mind these features and characteristics of Learning Management System and depending upon the educational objectives, the researcher has selected LMS which fulfills the needs of the learner. The factors which were considered most important for the development of LMS are (Qureshi and Iqbal, 2011):

1. Organizational Goals
2. Technical Goals
3. LMS Design Goals
4. Pedagogical Goals

They are presented by the researcher in figure 1

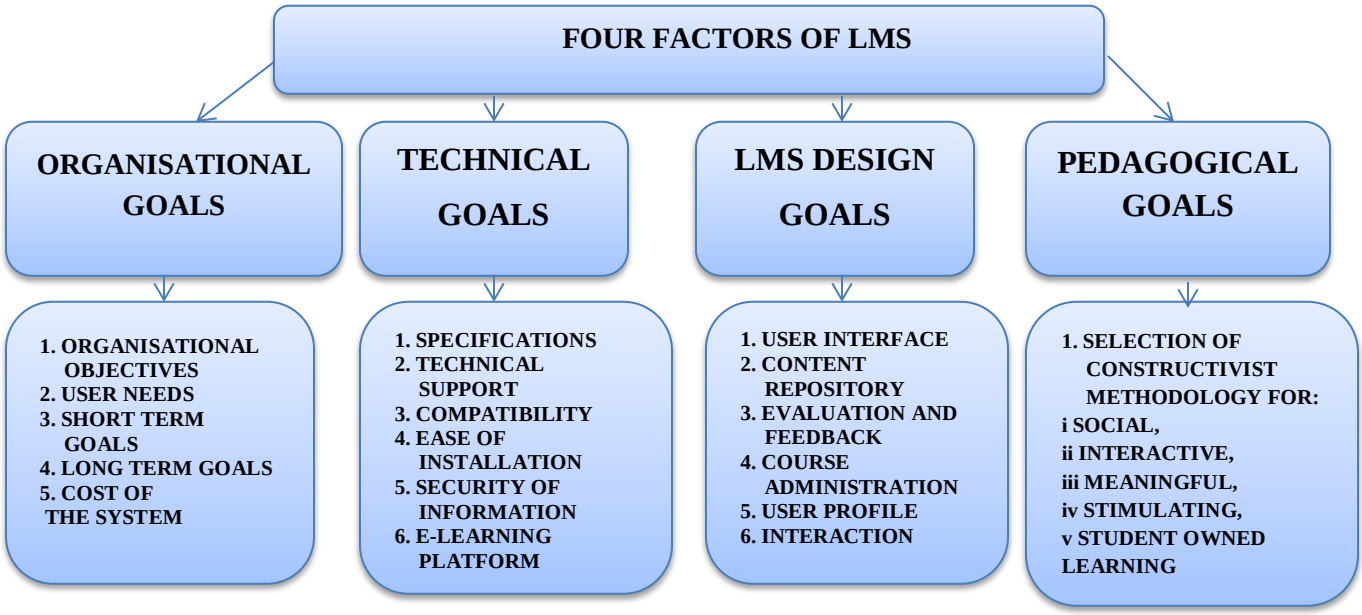

Fig. 1 Four Factors of LMS

Organisational Goals and Objectives: Clarity in goals and objectives should be clear before developing LMS. Main aim for the development of LMS should not only short term, but also long term goals. If an LMS has been developed according to the objectives framed, it would be the best mode of teaching as well as learning. Along with this, LMS should be cost-effective.

Technical Specifications and Support: Without technical support, LMS has no base. The LMS should be easy to install and operate even with the persons having weak technical hands. It should be compatible with the systems available. The information shared by the tutor and the student should have security and surety for not being shared by any other resources. If a particular LMS is mobile phone operated, it should have compatibility with the software of those mobile phones. LMS should accept international e-learning standards besides technical support.

Design Specification of an LMS: The design of LMS plays an important role in teaching- learning process. It should be according to the specifications of LMS selected which includes pedagogical style and functionality to increase the acceptance rate of developed LMS. Following are the important aspects which a developer should keep in mind before designing LMS:

- User-friendly Graphical Interface
- Well Designed Course Repository

- Course Administration Capability
- Capability of Interaction among the Users of LMS
- Instant Evaluation and Feedback
- Secure Student's Profile.

LMS Pedagogy: it would be an injustice if we compare features of LMS merely on above given points. Thus, development of LMS should also consider different pedagogical styles. A dialogue between student and teacher, clearing doubts, evaluation and immediate feedback are must in a LMS to make student engaged in a course (Jonassen et. Al, 1999) . Keeping in mind these points, constructivist methodology is best suited for developing an online course using LMS. Haefner (2002) believes that "deeper learning" or "engaging learning" leads to better understanding of concepts. This deeper learning has five aspects:

1. **Social**: facilitates interaction between teacher and student, student and student, teacher and parents and students and parents.
2. **Interactive**: emphasis is given to those tasks which involve real world tasks and need practice.
3. **Meaningful**: innovative ideas are being generated by the teacher to increase the knowledge of the students.
4. **Stimulating**: enhancement of divergent thinking by creating highly challenging and low threatened environments.
5. **Student- owned**: promoting self-learning through self-pace and at student's own place which make student independent and self-responsible.

There are a number of Learning Management Systems available online like Canvas, Edmodo, Blackbnord, WebCT, the researcher has chosen MOODLE as Learning Management System for presenting the course to the B.Ed. Trainees of the Experimental group.

LMS has the main aim of making a learner "Active Learner" by engaging a student in various activities which helps in exploring the horizons for himself/herself. LMS provides an insight for performing various activities such as writing and reading blogs, viewing and downloading course contents, chat, forums, uploading assignments,

notifications, announcements, self-assessment through online quiz and many more. Virtual Learning Environments (VLE) are widely used to create Learning Management Systems which can be either open or close in terms of availability of courses. MOODLE (Modular Object Oriented Dynamic Learning Environment) is an open source software application which is available online for the development of various courses.

1.1.2 MOODLE - Modular Object Oriented Dynamic Learning Environment

MOODLE is a software application developed by Martin Dougiamas in 2002, which can be understood as an extension of a class room through web to make it flexible in terms of location as well as time. It is a free online Course Management System (CMS) which contains many user friendly tools for the creation and operation of a number of courses. MOODLE allows a learner to explore bulk of resources that a student cannot usually learn in a regular face-to-face class room due to time-constraint. MOODLE is an asynchronous online platform which makes learning a flexible event. A learner can log on to the course, download the content and discuss the doubts by sending messages to the tutor, anytime from anywhere.

Researcher has designed the course using Moodle by keeping in mind the following applications of Moodle:

1. Materials provided for the learner can be arranged according to their requirements.
2. Quick and easy assessment of the learner.
3. User- friendly interface which can be developed for every subject in any language.
4. Most widely used LMS.
5. Most successful open source online software.
6. Large number of teaching and learning tools.
7. It is free to download and support.

The Moodle Mobile app provides learning on the go directly from a mobile device. Learning on a mobile phone or tablet allows for increased collaboration, and acts as an extra channel for communication in a course. The Moodle Mobile app is a HTML5

application that works for Android and Apple devices. With the app, learners have more multimedia capabilities, including

- Being able to upload smartphone pictures, and
- Record audio and videos into Moodle.

Learners can also use the mobile platform as an added channel of communication with peers and instructors.

1.2.0 RATIONALE

The present system of instruction is highly group oriented in which teaching cannot be possible according to student's intelligence (gifted, average, below average), ability, motivation and interest. That's why learners are not ready to participate in teaching learning process due to which they lose their confidence and also they are not satisfied with their curriculum. Some of the students do not interact with others frankly due to hesitation. In order to make effective teaching and learning process, to break the monotony of class room and to overcome the hesitation of the students, Learning Management System plays an important role. Apart from that, a slow learner can undergo the learning through his/her own pace at their own place. The course content was saved for unlimited duration and thus, can be used by the learner an infinite number of times they want to. The great success of this platform indulges the researcher to develop programs that provide opportunities to make new contributions, with new applications in the field of Education. Learning Management System (LMS) works as lever for broader improvement of teaching and learning. Because psychology of student works as a major parameter for student's growth, the awareness of psychological perspectives of learning will help the teacher in editing teaching approach in learning process. LMS supports specific tools for understanding student's psychology easily so that, the effectiveness of learning increases and making a learner active throughout the process of learning.

Alavi (1994) in his comparative study on MBA student found Learning Management system to be effective than traditional Method of Teaching. These findings were in collaboration with the findings of Remes (2005) and Cavus (2007) who found

effectiveness of LMS because of the use of collaborative tools like chats and discussion in the developed LMS. Robin et al. (2009) found the effectiveness of LMS in terms of satisfaction and learner engagement in school environment. Arun (2013) on the other hand has conducted a survey on post graduate students and found developed LMS to be more effective as compared to traditional method.

Umek, et al. (2015) implemented MOODLE to the faculty of Administration of the University of Ljubjana and and students as well found the Moodle platform get benefited in terms of grades. The studies of Armatas, et al. (2016), Umek, et al. (2015) found that LMS was effective for the learners as well as teachers. The studies conducted by Mehmet (2016) Reigeluth, (1994) Mijatovic´ and Jednak (2011), Lee et al. (2009), independently explored that LMS is effective in terms of achievement where as Emelyanova and Voronina (2014) studied the effectiveness of LMS for university but found it to be ineffective in terms of students performance.

Islam (2017), Al-Washahy and Amaar (2015), Nadire Cavus et al. (2006), Remes (2005), Alavi (1994) studied individually the effect of collaborative learning through LMS and found it to be more effective.

Fallereo (2013), found LMS to be effective in significantly increasing the achievement, student engagement and motivation of higher secondary students.

Chourishi (2015) has explored the implementation of effective e-learning through Moodle and also presented how the various facilities of Moodle are used by tutors to provide interactive and stimulating learning experiences in providing higher education in various colleges of technology and found that the implementation of the information and communication technology in education with e-learning through MOODLE allows improving effectiveness of the education.

Goyal (2015) has developed LMS and CMS for integrating technology into teaching learning programs using MBA students. The results of the study found to be useful to the institutions trying to integrate technology in their teaching and learning processes.

Devi, Lakshmi and Aparna (2020) have studied about the effectiveness of MOODLE as a Learning Management System for 21st century learners in terms of learning skills, content development, self-efficacy, self- discipline and communication and found that Moodle can be used by higher educational institutes for teaching-learning process.

Panda (2020) has studied about the effectiveness of Moodle as Learning Management System at present scenario by comparing its features with other LMS like Blackboard and Canvas. The findings were that Moodle is significantly more effective in terms of teaching and learning in higher education.

Pandey and Varma (2020) have found LMS Moodle significantly effective in terms of achievement of B.Ed. trainees.

Shin and Kang(2015) and Han and Shin (2016) in their studies on the developed LMS using Moodle and operating as mobile applications found separately that, the students achievement gets affected both directly and indirectly. Also, use of mobile app present a better understanding to the students of higher education.

Researcher has found a number of studies in which the effectiveness of developed LMS on Moodle is in terms of Achievement. Like that of Reigeluth, (1994), Hoskins et al. (2005), Lee, et al. (2009), Arman, et al. (2009), Mijatovic´ and Jednak (2011), Baubangplu (2012), Mijatovic et al. (2012), Arulchelvan (2012), Kulshrestha & Kant (2013), Mtebe and Mwalumbwe (2013), Jo et al. (2015), Mehmet (2016) and Alkis and Temizel (2018). All these LMS were developed on Moodle and for either school students or College students.

The researcher has found only two studies in which the researcher has developed LMS using Moodle on Educational Psychology as course. Wood (2010) has developed LMS on Moodle as interface using Vygotsky as Learning theory and Pandey and Varma(2020) have developed LMS using Moodle platform on Psychological Perspective of Learner for B.Ed. Teacher Trainee and studied the effectiveness of LMS in terms of Achievement, which was found to be significant.

Further, the researcher has found that LMS was used in a variety of courses and disciplines and rated positively by students, yet these systems lacked supports for successful collaborated learning. Specifically, the researcher wanted to improve the assessment design of the developed LMS so that faculty can apply various collaboration-based assessment techniques.

Majority of these studies were conducted by foreign researchers, whereas, in Indian context some of the work has been done by Fallereo (2013), Arulchelvan (2012), Kumar and Bajpai (2012) Arun (2013), Kulshrestha & Kant (2013), Pandey and Varma (2020) which has to be brought forward to enhance the capabilities of the students in terms of achievement.

The researcher has found a single quantitative study of AL-adwan (2017) through his study in Jordan found a significant increase in the achievement motivation of the students of English language at school level, taught through LMS. In Indian context, a single Qualitative study was found. It was by Kumar and Bajpai (2015) who have studied the Impact of E-learning on Achievement Motivation and academic performance- A case study of college students in Sikkim, have revealed a positive impact of LMS on the academic achievement and achievement motivation of the students of higher education.

Pandey and Varma (2020) in their research on development of Moodle for teacher trainees have found that there is no effect of medium and stream and their interaction with the treatment on the achievement of the teacher trainees by taking pre-achievement as covariate.

The researcher has not found any research having an influence of residential background and Cast Category and there interaction on achievement of the learner getting treatment with developed LMS. Along with this, the researcher was unable to find the researchers in which the achievement motivation gets affected by the stream, medium, residential background and Cast Category there interaction on the treatment with developed LMS. This created a gap for performing a research by taking these variables in the present research by the researcher.

Researcher has not found any quantitative as well as qualitative (mixed research) work done on Learning Management system taking achievement motivation as a dependent variable in Indian context. This created a gap for the researcher to design the present LMS for its effectiveness using Achievement and Achievement Motivation of Teacher Trainees and used a mixed model of research in the present study. Further, the researcher has found a common thing in all these researches as most of the LMS were designed for higher secondary school students and for technical students and very few LMS for B.Ed. Trainees in India.

The mobile application of Moodle Learning Management System is much helpful for the learners. This draws attention of the researcher towards the present situation and decided to develop an LMS for Teacher Trainees having a mobile application which will be much helpful to the Teacher Trainees. An elaborated arrangement of all the researcher which have been used for creating pave for the present research has been tabulated as below:

Table 1 Researches using LMS by the researchers in Chronological order.

S.No.	Researcher (Year)	Sample	Variable	Findings	Nationality
1.	Alavi (1994)	MBA Student	Skills and collaborative learning	Effective	Foreign
2.	Reigeluth, (1994)	University students	Achievement	Effective	Foreign
3.	Remes (2005)	University Students	Decision making	Effective	Foreign
4.	Cavus (2007)	Technical students	Collaborative Learning	Effective	Foreign
5.	Robin et al. (2009)	School Students	Satisfaction and Learner Engagement	Effective	Foreign

6.	Arman, et al. (2009)	School Stuents	Achievement	Effective	Foreign
7.	Lee et al. (2009)	University students	Achievement	Effective	Foreign
8.	Jednak (2011)	Undergraduate students	Achievement	Effective	Foreign
9.	Mijatovic´ and Jednak (2011),	University students	Achievement	Effective	Foreign
10.	Baubangplu (2012)	Higher Education Students	Achievement and Satisfaction	Effective	Foreign
11.	Mijatovic et al. (2012)	School Students	Achievement, Perceived Usefulness, Students Acceptance.	Effective	Foreign
12.	Arulchelvan (2012)	School Students	Academic Performance	Effective	Indian
13.	Arun (2013)	Post graduate students	Study Patterns	Effective	Indian
14.	Fallereo (2013)	Higher Secondary Students	Achievement, Student Engagement and Motivation	Effective	Foreign
15.	Mtebe and Mwalumbwe (2013)	Technical Students	Students' Learning Performance.	Effective	Foreign
16.	Emelyanova and Voronina	University students	Participants' Purpose,	Ineffective	Foreign

	(2014)		Readiness, and Efficacies and Performance		
17.	Jo et al. (2015)	Undergraduate Students	Grades	Effective	Foreign
18.	Kumar and Bajpai (2015)	College Students	Achievement Motivation	Effective	Indian
19.	Shin and Kang (2015)	University students	Satisfaction and Achievement	Effective	Foreign
20.	Umek, et al. (2015)	University students and Faculty	Achievement	Effective	Foreign
21.	Armatas, et al. (2016)	University students	Study Skills	Effective	Foreign
22.	Mehmet (2016)	University students	Achievement	Effective	Foreign
23.	Mehmet (2016)	Undergraduate Students	Academic Achievement	Effective	Foreign
24.	An and Shin (2016)	University students	Age and Employment Status, Self-efficacy, Innovativeness, Perceived ease of use, and Perceived usefulness of mobile LMSs	Effective	Foreign
25.	Islam (2017)	Higher Secondary	Applicability	Effective	Foreign

		Students			
26.	AL-adwan (2017)	School Students	Achievement Motivation	Effective	Foreign
27.	Alkis and Temizel (2018)	Technical Students	Students' Motivation, Personality traits, Academic performance	Effective	Foreign
28.	Pandey and Varma (2020)	Teacher Trainees	Achievement, Study Habits, Attention, Gender, Medium of instructions, Stream and Reaction	Effective in terms of Achievement and Reaction	Indian

For the following reasons, the researcher has selected the particular area for performing her research work:

1. Developing LMS MOODLE using collaborative tools for increasing its effectiveness.
2. Choosing Psychological Perspectives of Learning as the course content.
3. Developing LMS on MOODLE for B.Ed. Trainees.
4. A bilingual LMS would make the developed LMS an unbiased platform.
5. MOODLE mobile app will make the learning self-paced and with no time constraint.
6. There are very few researchers which are involved in the development of LMS for Teacher Trainees.

7. Very less number of researcher have taken Achievement Motivation as dependent variable and using developed LMS as independent variable.

1.3.0 STATEMENT OF THE PROBLEM

The problem of the present research has been entitled as follows:

Effectiveness of Developed Learning Management System (LMS) on Psychological Perspectives of Learning for B.Ed. Trainees in terms of Achievement, Achievement Motivation and Reaction

1.4.0 OPERATIONAL DEFINITIONS

The operational definitions of the terms used in this study are as follows:

1. **Learning Management System (LMS):** LMS is a software application that provides an integrated platform for content delivery, management of learning, and quick assessment with instant feedback for B.Ed. Trainees through collaborative tools.

2. **Psychological Perspectives of Learning:** It is the course title under the Program area of Perspectives of Education under the syllabus of B.Ed. second semester course of Devi Ahilya Vishwa Vidhyalaya, Indore.

3. **Achievement:** It represents a measureable outcome in the form of scores obtained by the B.Ed. Trainees in Psychological Perspectives of Learning which is assessed through Achievement Test.

4. **Achievement Motivation**: It can be defined as the scores obtained by the B.Ed. Trainees through Achievement Motivation Scale which assess the internal psychological drive of a learner to be work oriented and compete for the mastery of needs without any fear of success.

5. **Reaction:** It represents the quantifiable views of the B.Ed. Trainees towards the various student centered, collaborative learning, motivation, self-paced learning and user friendly aspects of the scale for the developed LMS on Psychological Perspectives of Learning.

1.5.0 OBJECTIVES

The objectives of the present study will be as follows:

1. To study the effect of Treatment, Stream and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
2. To study the effect of Treatment, Medium and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
3. To study the effect of Treatment, Residential Background and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
4. To study the effect of Treatment, Cast Category and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
5. To study the effect of Treatment, Stream and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
6. To study the effect of Treatment, Medium and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
7. To study the effect of Treatment, Residential Background and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
8. To study the effect of Treatment, Cast Category and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
9. To study the reaction of experimental group B.Ed. Trainees towards developed Learning Management System on Psychological Perspectives of Learning.

1.6.0 HYPOTHESES

The following will be the hypotheses of the present study:

1. There is no significant effect of Treatment, Stream and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
2. There is no significant effect of Treatment, Medium and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
3. There is no significant effect of Treatment, Residential Background and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
4. There is no significant effect of Treatment, Cast Category and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.
5. There is no significant effect of Treatment, Stream and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
6. There is no significant effect of Treatment, Medium and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
7. There is no significant effect of Treatment, Residential Background and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.
8. There is no significant effect of Treatment, Cast Category and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

1.7.0 DELIMITATIONS

1. Due to practical reasons, the study was confined to Indore city only.
2. The present research has been conducted on second semester B.Ed. Trainees only.
3. The study is delimited to two units of Psychological Perspectives of Learning namely Learning and Approaches of Learning
4. The LMS has been developed on MOODLE.
5. The period of experimentation is of only eight weeks.

1.8.0 DEVELOPMENT OF LMS

The prime objective of the present study was to develop Learning Management System on Psychological Perspectives of Learning as a focus for Teacher Trainees. The researcher has selected B.Ed. Trainees to make them learn Theories of Learning to prepare them to be good teachers and they may flourish in their carrier. There are numerous ways in which B.Ed. Trainees can learn theories of learning, but researcher has chosen online mode by keeping in mind the value of each and every minute of a teacher. Through this developed LMS using MOODLE, Mobile application can also be installed and B.Ed. Trainees can take advantage of this LMS at their own place.

The researcher has followed the following steps to get started with the learners using MOODLE:

1. The researcher has installed MOODLE 3.7 from the site https://download.moodle.org/
2. A **bilingual** (Hindi and English) MOODLE site naming https://psychological-perspective-of-learning.moodlecloud.com has been generated by the researcher.
3. Basic information related to the present research was discussed by the researcher in an Orientation session for making rapport with the Teacher Trainees.
4. Mobile numbers and email Ids of all the 81 B.Ed. Trainees of Experimental Groups have been collected.
5. A group on What's app, naming LMS Group has been created by the researcher.
6. B.Ed. Trainees of Experimental Group were added to the LMS Group using their mobile numbers.

7. MOODLE mobile app was installed by each Teacher Trainee in their android mobile phones and in case of any doubt, the researcher has personally assisted to them.
8. A personal Id for each Teacher trainee has been generated by the researcher with a unique password. In case two or more B.Ed. Trainees have same name, prefix of 1, 2 or 3 was added to the four initials of the teacher trainee's first name.
9. Notifications related to upload of new course, assignment submission, quiz and chats were auto-notified in the mobile application of MOODLE.

Researcher use to share these information in What's app group also, so that the Teacher Trainee become an active learner.

For developing Learning Management System, the first priority was the selection of area. Before the selection of the area, the researcher has thoroughly reviewed the related literature and scrutinized the materials developed by other researchers related to the topic. From the review of related literature, it is very clear that various courses have been developed in MOODLE, but few researchers have developed Learning Management System on all the Theories of Learning using MOODLE. So, the researcher has developed Learning Management System on Psychological Perspectives of Learning using MOODLE.

The course was aligned, arranged and presented by keeping in mind the four quadrants of online learning as shown in figure 2.

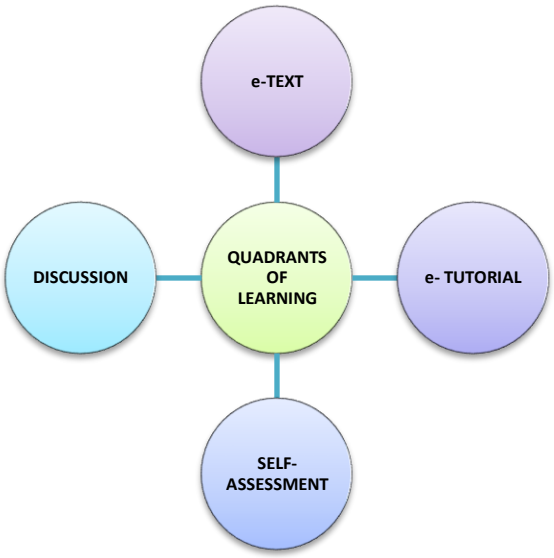

Fig. 2 Four Quadrants of Online Learning

1. **e-Text** (pdf, , wiki, open content, text): The researcher has added course material in the form of text based upon the first two units of the course of Psychological Perspectives of Learning, from the syllabus of B.Ed. second semester of DAVV, Indore. The course has been displayed on the dashboard, and after logging in a learner can easily see the list of courses offered in the developed LMS.
2. **e-Tutorial** (Video with transcription): Along with e-text, the researcher has developed some power points slides on various topics included in the experiment and converted them to audio video using Presentation tube, freemake, and moyeamedia. These videos were an integration of visuals and audio of the researcher which were prepared to make the process of learning an effective one.
3. **Self- Assessment** (MCQ, quiz, assignments): After the completion of every topic, there was an assessment of the teacher trainees, either by multiple objective type questions, quizzes, or assignment sessions. This feature is helpful in assessing the extent of learning by the Teacher Trainees.
4. **Discussion** (collaboration): Chat feature provided by MOODLE is used for clearing the doubts faced by the B.Ed. Trainees by discussing with the tutor or the admin and the notification makes new course content, badges, timely available for them. These were treated as reinforcement in the process of learning.

1.9.0 SAMPLE

The present study was Sequential Explanatory in nature and it was conducted in three phases namely, Phase I: Tool Construction, Phase II: Quantitative Study, and Phase III: Qualitative Study. The population for the study comprised of B.Ed. Trainees of Teacher Training colleges of Indore city(affiliated to Devi Ahilya Vishwavidhyalaya, Indore).

Phase I: Tool Construction: In the phase of tool construction, Achievement Motivation Scale was developed for the B.Ed. Trainees to assess their Achievement Motivation. Sample for the construction and standardization of the tool was selected at two stages. 1. Preliminary try out (for Item Analysis) and 2. Establishment of Reliability and Norms.

1. **Preliminary Try Out**: For this stage the sample was selected from three Teacher Training College of Indore city. The sample comprised of 261 B.Ed. Trainees of Second Year (4^{th} Semester) of Annie Besant College, Arihant College, and Comp. Feeders Takniki Prakshishan Sanstha which are given in details in the following table no. 2

Table 2: College wise distribution of B.Ed. Trainees for Preliminary try out

S.No.	Name of the college	No. of B.Ed. Trainees
1.	Annie Besant College	84
2.	Arihant College	90
3.	Comp. Feeders Takniki Prakshishan Sanstha	87
Total		**261**

2. **Establishment of Reliability and Norms:** In this stage the sample comprised of 251 B.Ed. Trainees of First Year (1^{st} Semester) of Teacher Training College of Indore city, namely Comp. Feeders Takniki Prakshishan Sanstha, Arihant College and Aspire Institute which are given in details in the following table no. 3

Table 3: College wise distribution of B.Ed. Trainees for Establishment of Reliability and Norms

S.No.	Name of the college	No. of B.Ed. Trainees
1.	Comp. Feeders Takniki Prakshishan Sanstha	91
2.	Arihant College	92
3.	Aspire Institute	68
Total		**251**

Phase II: **Quantitative Data (Experimental Stage):** For the experiment, Random Sampling Technique was used. Two Teacher Training Colleges of Indore city were selected purposively namely, Shri Vaishnav College of Teacher's Training and Annie Besant College of Education. One college selected randomly was assigned as Experimental Group (LMS Group) and another college was assigned as Control Group (Non-LMS Group). The age group of the B.Ed. Trainees is between 20-30 years. The distribution of the sample on the basis of Stream, Medium, Residential Background and Cast Category is given in table no. 4

Table 4 Distribution of sample (Treatment-wise)

EXPERIMENTAL GROUP: Shri Vaishnav College of Teacher's Training							
Stream		Medium		Residential Background		Cast Category	
Science	Humanities	English	Hindi	Urban	Rural	Reserved	Unreserved
31	50	43	38	47	34	41	40
CONTROL GROUP: Annie Besant College of Education							
Stream		Medium		Residential Background		Cast Category	
Science	Humanities	English	Hindi	Urban	Rural	Reserved	Unreserved
48	41	46	43	43	46	48	41
Total							
79	**91**	**89**	**81**	**90**	**80**	**89**	**81**

From the table it is evident that the sample for the Experimental Phase comprised of 170 B.Ed. Trainees of two colleges, out of which the Experimental Group (Shri Vaishnav College of Teacher's Training) comprised of 81 B.Ed. Trainees and Control Group (Annie Besant College of Education) comprised of 89 B.Ed. Trainees. The sample comprised of various streams, mediums, residential backgrounds and cast category by the M.P. Govt. rule. It can be seen from the table, out of 81 B.Ed. Trainees of Shri Vaishnav College of Teacher's Training, 31 are of Science Stream and 50 are of Humanities, 43 are of English Medium and 38 are of Hindi Medium, 47 have Urban Residential Background and 34 have Rural Residential Background, 41 are Reserved Category (SC, ST and OBC) and 40 are Unreserved (General). Similarly, out of 89 B.Ed. Trainees of Annie Besant College of Education, 48 are of Science Stream and 41 are of Humanities, 46 are of English Medium and 43 are of Hindi Medium, 43 have Urban Residential Background and 46 have Rural Residential Background, 48 are Reserved Category (SC, ST and OBC) and 41 are Unreserved (General).

Phase III: **Qualitative Data**: The qualitative data was selected from 16 randomly selected B.Ed. Trainees of the experimental group from Shri Vaishnav College of Teacher's Training, Indore**.** The main purpose of qualitative research is to strengthen the results obtained by the quantitative analysis of the data regarding effectiveness of developed LMS on Psychological Perspectives of Learning.

1.10.0 RESEARCH DESIGN

In the present study, Mixed method of research has been used. Among different mixed method design the researcher has used Sequential Explanatory Design, in which the researcher has made tools for both quantitative as well as qualitative research and the data were also analysed differently using different techniques. The main purpose of quantitative research is to find the effectiveness of developed LMS in terms of Achievement and Achievement Motivation of B.Ed. Trainees. To support these results, qualitative analysis was done using semi-structured interview schedule to find the views of the B.Ed. Trainees regarding developed LMS. The aim of the researcher to use Mixed research Method, is to increase the reliability and validity of the research findings. The layout of the research design has been given in figure 3

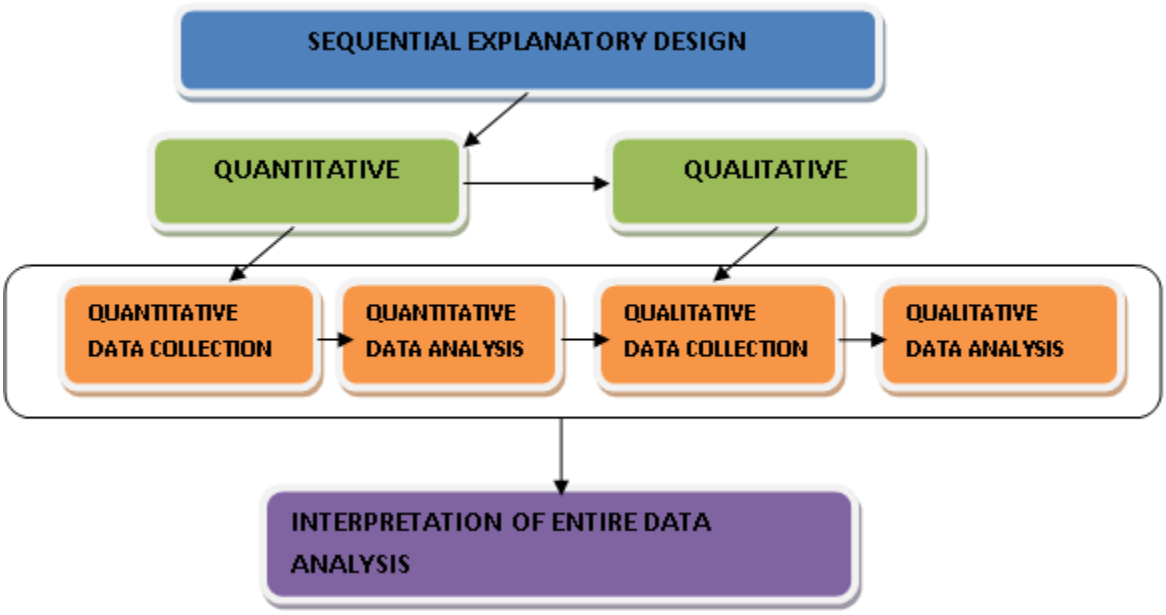

Fig. 3 Layout of the Sequential Explanatory Method

Quantitative Study: Experimental Design

For the Quantitative data collection, experimental study was designed on the basis of non-equivalent control group design. According to Campbell and Stanley (1963) the layout for the research design is as follows:

O X O
……..
O . O

Where,

O = Pre-test & Post observations

X = treatment with Developed LMS

. = treatment with traditional method of teaching

…… = Non-equivalent groups.

Quantitative Study: Miles-Huberman Case Study

To check the strength of the findings of quantitative data which are related to effectiveness of developed LMS, a Qualitative study was also conducted by the researcher. For that 16 B.Ed. Trainees were selected randomly from the experimental group and employed semi- structured interview schedule. The researcher has adopted Miles Huberman, (1984) case study method. Most noticeable answers by the Teacher Trainees were listed in the findings and rest of the data were reduced.

The Steps followed in the qualitative research are:

1. **Collection of Data**: Data were collected from 16 randomly selected B.Ed. Trainees through a tool having five semi- structured open ended questions.
2. **Condensation /Reduction of Data**: Only those data were selected which were showing significant relation with the quantitative data results.
3. **Display of Data**: The organized information which was accessible for the data analysis has been used for drawing relevant conclusions.
4. **Verification / Drawing of Conclusion:** Conclusions were verified from the data to be tested for their validity by comparing the conclusions from the quantitative data.

The Quantitative and Quantitative Studies are involved in the whole experimentation process which has been presented in a schematic way in the form of a table given below under the caption of table no. 5:

Table 5 Schematic Presentation of Experimentation

Activity	**Groups**		**Duration**
	Control	**Experimental**	
Pre-Tests 1.Pre-achievement Test 2.Pre-achievement Motivation Scale	1. Administration of Pre-achievement Test. 2.Administration of Pre-Achievement Motivation Scale	1. Administration of Pre-achievement Test. 2.Administration of Pre-Achievement Motivation Scale	**4 Days**
Treatment	Continue through regular mode of traditional lecture method	1.Orientation about LMS using What's app group	**1 Day**
		2.Ids and Password Creation	**1Day**
		3.Mobile app installation	**1Day**

		4.Introduction • Factors affecting Learning 5. Theories of Learning • Associative learning • Classical Conditioning by Pavlov • Operant Conditioning by Skinner • Trial and Error by Thorndike • Piaget's Theory of Cognitive Development • Experiential Learning by Carl Rogers • Vygotsky's Social Development • Ausubel Meaningful Learning • Jerome Bruner's Constructivist Theory	**45 Days**
Post- tests 1.Post-achievement Test 2.Post-achievement Motivation Scale 3.Reaction Scale	1. Administration of Post-achievement Test. 2.Administration of Post-Achievement Motivation Scale	1.Administration of Post-achievement Test 2.Administration of Post-Achievement Motivation Scale 3.Administered Reaction Scale	**2 Days** **2 Days** **1 Day**
Interview Schedule	---------	Interview Schedule conducted	**4 Days**

1.11.0 TOOLS

In the present study, four tools were used by the researcher namely, Achievement Test, Achievement Motivation Scale and Reaction Scale were used for Quantitative Data Collection and Interview Schedule was used for Qualitative Data Collection.

1. **Achievement Test**: The first tool naming "Achievement Test" was developed by the researcher to assess Achievement in Psychological Perspectives of Learning of B.Ed. Trainees. The test was comprised of 35 objective type items having multiple choice questions, one word answer type questions; reasoning assertions type questions and match the columns type question. The multiple choice questions were prepared and have four options and out of four, one was the key which was the correct answer and the other three were similar to the correct answer and are distracters. For one correct answer one mark was given and no

mark was deducted for any wrong answer. The test was of 60 minutes duration. The maximum score provided for the achievement test was 35.

2. **Achievement Motivation Scale**: The second tool "Achievement Motivation Scale" was developed and standardized by the researcher. The scale consisted of 45 items which are related to four aspects namely, Mastery of needs, Work orientation, Competition and Personal unconcern. Each item consisted of a statement followed by five options which are, Always, Frequently, Sometimes, Rarely and Never. The duration of the scale is 60 minutes. The marking for both positive and negative statements is given in table 6 as follows:

Table 6 The marking scheme for Achievement Motivation Scale

Options	For positive statements	For negative statements
Always	5	1
Frequently	4	2
Sometimes	3	3
Rarely	2	4
Never	1	5

Accordingly, the scores of Achievement Motivation of B.Ed. teacher trainees were calculated. The maximum score attainable on the scale was 225 and the minimum score for the scale was 45.

3. **Reaction scale**: The third tool named "Reaction Scale" towards Developed LMS on Psychological Perspectives of Learning was developed by the researcher. A reaction scale was used to know the reaction of B.Ed. Trainees towards the developed LMS on Psychological Perspectives of Learning. Out of 30 statements, some were positive and some were negative statements in the reaction scale. B.Ed. Trainees have marked their views in five point scale. In that scale, against each statement, a five point scale was given. The points were, Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD). Students were given instructions to read the content carefully and put [ ] mark on the desired answer out of the given five alternatives. The time duration of the test

was 60 minutes. The marking for both positive and negative statements is given in table 7 as follows:

Table 7 The marking scheme for Reaction Scale

Options	For positive statements	For negative statements
Strongly Agree (SA)	5	1
Agree (A)	4	2
Undecided (U)	3	3
Disagree (D)	2	4
Strongly Disagree (SD)	1	5

The maximum score attainable on the scale was 150 and the minimum score for the scale was 30.

4. **Interview Schedule**: For Qualitative Data Collection, five semi- structured questions for the Interview Schedule were designed by the researcher under the guidance of the supervisor to have the views of B.Ed. Trainees on developed LMS. The B.Ed. Trainees have to share their views on each interview schedule.

A summarized version of all the tools used by the researcher along with the aspects which were used to develop those tools is given in table 8 as below:

Table 8 Summary of Tools used by the Researcher

S.No.	Name of the Tool	Aspects of Tool	No. of Items	Name of the Author
1.	Achievement Test	1. Remembering 2. Understanding 3. Applying 4. Analysing	35	Researcher made
2.	Achievement Motivation Scale	1. Mastery of needs 2. Work orientation 3. Competition 4. Personal unconcern	45	Researcher made
3.	Reaction Scale	1. Student Centered 2.Collaborative Learning	30	Researcher made

		3.Motivation 4.Self-Paced Learning 5.User Friendly		
4.	Interview Schedule	1.Effectiveness of developed LMS 2.Views towards the developed LMS	5	Researcher made

1.12.0 PROCEDURE OF DATA COLLECTION

For the data collection firstly the researcher had a meeting with the Principals of selected Teacher Training Colleges and explained them the objectives of the present study and convinced them to give permission to conduct the study in their colleges. After getting permission, the rapport with the B.Ed. Trainees was established. Then the researcher explained them the research objectives. The researcher has administered Pre-achievement Test and Pre-achievement Motivation Scale on B.Ed. Trainees of Experimental as well as Control group. After the orientation program for B.Ed. Trainees of Experimental Group the researcher has explained the procedure of learning with developed LMS (Moodle). Then, the Experimental Group started learning through the developed LMS. Simultaneously, the B.Ed. Trainees of Control Group started their regular classes. The duration of the treatment was 45 days for both the groups. After the completion of the treatment the researcher has conducted Post-achievement Test and Post- achievement Motivation Scale on Experimental Group as well as Control Group. The Reaction Scale was provided only to the Experimental Group for receiving reaction of B.Ed. Trainees towards developed LMS on Psychological Perspectives of Learning.

For qualitative research, the researcher has asked open ender semi structured interview schedule from 16 randomly selected B.Ed. Trainees of the Experimental Group (81). The schematic presentation of the experiment was given in table no. 4. Scoring of the tools was done as per scoring procedure.

1.13.0 DATA ANALYSIS TECHNIQUES

Data were analysed using IBM SPSS software. The following data analysis techniques have been used by the researcher:

1. To analyze the effect of Treatment, Stream and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate two-ways ANCOVA was used.
2. To analyze the effect of Treatment, Medium and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate two-ways ANCOVA was used.
3. To analyze the effect of Treatment, Residential Background and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate two-ways ANCOVA was used.
4. To analyze the effect of Treatment, Cast Category and their interaction on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate two-ways ANCOVA was used.
5. To analyze the effect of Treatment, Stream and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate Quade Rank ANCOVA was used.
6. To analyze the effect of Treatment, Medium and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate two-ways ANCOVA was used.
7. To analyze the effect of Treatment, Residential Background and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate two-ways ANCOVA was used.

8. To analyze the effect of Treatment, Cast Category and their interaction on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate two-ways ANCOVA was used.

10. To analyze the reaction of experimental group B.Ed. Trainees towards developed Learning Management System on Psychological Perspectives of Learning percentage of frequency and median are used.

1.14.0 FINDINGS

Based on the attained result, the findings of the present study are given objective wise as follows:

1.1 The developed LMS on Psychological Perspectives of Learning was found to be effective in terms of Achievement of B.Ed. Trainees.

1.2 There is no significant effect of stream on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

1.3 There is no significant effect of interaction of stream with treatment on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

1.1 The English medium B.Ed. Trainees achieve significantly higher in Psychological Perspectives of Learning than Hindi medium B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

1.2 There is no significant effect of interaction between medium with treatment on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

3.1 There is no significant effect of residential background on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

3.2 There is no significant effect of interaction of residential background with treatment on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

4.1 There is no significant effect of Cast Category on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

4.2 There is no significant effect of interaction of Cast Category with treatment on Achievement in Psychological Perspectives of Learning of B.Ed. Trainees by taking Pre-achievement in Psychological Perspectives of Learning as covariate.

5.1 The developed LMS on Psychological Perspectives of Learning was found to be effective in terms of Achievement Motivation of B.Ed. Trainees.

5.2 There is no significant effect of Stream on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

5.3 There is no significant effect of interaction of stream with Treatment on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

6.1 There is no significant effect of Medium on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

6.2 There is no significant effect of interaction of Medium with Treatment on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

7.1 There is no significant effect of Residential Background on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

7.2 There is no significant effect of interaction of Residential Background with treatment on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

8.1 There is no significant effect of Cast Category on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

8.2 There is no significant effect of interaction of Cast Category with Treatment on Achievement Motivation of B.Ed. Trainees by taking Pre-achievement Motivation as covariate.

9.1 The reaction of the B.Ed. Trainees is favorable towards the developed LMS on Psychological Perspectives of Learning.

1.15.0 CONCLUSION

The present research entitled "Effectiveness of Developed Learning Management System (LMS) on Psychological Perspectives of Learning for B.Ed. Trainees in terms of Achievement, Achievement Motivation and Reaction" is based upon the innovative practices used in the field of Education and the involvement of Technology in teaching-learning process. The researcher has found the developed LMS effective in terms of Achievement, Achievement Motivation and Reaction. There is no significant effect of Stream, Residential Background and Cast Category on the Achievement in Psychological Perspectives of Learning and Achievement Motivation of the B.Ed. Trainees. The researcher has not found any interactional effect of stream, residential background and Cast Category with treatment on the scores of Achievement in Psychological Perspectives of Learning and Achievement Motivation of the B.Ed. Trainees.

However the medium of instruction has a significant effect on the scores of Achievement in Psychological Perspectives of Learning of the B.Ed. Trainees but the scores of Achievement Motivation found to be significantly independent on the medium of instruction. There is no interactional effect of Medium with treatment on Achievement in Psychological Perspectives of Learning and Achievement Motivation of the B.Ed. Trainees.

1.16.0 EDUCATIONAL IMPLICATIONS

On the basis of present research findings, following implications can be withdrawn:

For Students

It is found that Developed LMS increases Achievement and Achievement Motivation of the B.Ed. Trainees. They got an unbiased tutor in the form of MOODLE. Thus they can involve actively in learning process offered through the developed LMS. It enhances active learning by engaging a student in real- world activities by providing hands-on learning experiences. The reaction is also positive towards the developed LMS and hence they actively participate in new ways of learning.

For Tutors

On the basis of findings, the developed LMS on MOODLE was found to be effective in terms of Achievement, Achievement Motivation and Reaction of the B.Ed. Trainees and can be used by the tutors for an effective teaching-learning process. As, stream, residential background and Cast Category has no significant effect on the achievement of the B.Ed. Trainees hence it provides a common collaborative space for content sharing, feedback and personal interactions through chat. The efficiency of a teacher can be increased by using developed LMS as a part of teaching–learning in a blended learning system, in which some of the part of the content can be taught by traditional method and other part by using LMS.

For Teacher Educators

Medium of Instructions has no interactional effect with the treatment, thus proper training must be provided to the teacher educators for developing and managing content on Learning Management System in any language using various interfaces available. Thus, teacher educators will train the future teacher in pedagogy and methodology of developing LMS as an innovation in educational field.

For LMS developers

As, stream, residential background and Cast Category has no significant effect on the achievement of the B.Ed. Trainees thus, using a mobile MOODLE app the versatility of the developed LMS has been assessed. Thus, new innovations must be implied by the future LMS developers to further make the teaching-learning process more effective, efficient and organized for arranging individualized course contents.

For Educational Institutions

Educational Institutes have to provide adequate infrastructure to adopt teaching-learning through LMS. A single LMS is sufficient for a number of students from different residential background, different categories, different streams, to deliver the content in different languages.. With the emergence of MOODLE mobile application, provision of Computer labs, IT enabled classrooms becomes non-mandatory. Students can easily

access the developed course content from remote areas as well using LMS, as residential background do not affect the achievement and achievement motivation of the learners. Pre- service and In-service Teacher Training Programs should be encouraged by the educational institution for making teachers competent in developing LMS.

For Curriculum Planner

Curriculum should be framed in such a manner that it would allow the utilization of innovative practices like teaching-learning through developed LMS using MOODLE to its maximum for making the whole process an effective one.

For Programmers

As, the effectiveness of MOODLE developed LMS is found in the present study in the form of Achievement and Achievement Motivation scores, thus, the programmers must contact with the Educational Institutes and design the Learning Management System according to the needs of the Educational Institutes. It can engage students actively in the process of learning and making teachers more competent with the technology.

1.17.0 SUGGESTIONS FOR FURTHER RESEARCH

The use of LMS facilitates in communicating with the students and managing the course content, assignments, and for notifications and announcements with an ease. Researcher has developed LMS using MOODLE and MOODLE mobile app by taking only two units of the course of Psychological Perspectives of Learning and Achievement and Achievement Motivation as dependent variables. For further researches:

1. A future researcher can develop LMS on other units of Psychological Perspectives of Learning.
2. Other subjects of education can also be used for developing LMS.
3. LMS MOODLE can be developed for courses other that education.
4. Dependent variables like, Study Habits, Social Adjustment, other than Achievement and Achievement Motivation can be used.
5. LMS MOODLE can be developed in any other language.

6. Demographic variables like age and gender can also be taken by the researchers.
7. LMS can be used along with any other method of teaching in the form of Blended Learning Process.