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A Study on Mobile Learning and its Effects on Academic Achievement of Students

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Abstract - Because of advances in science and technology, as well as the fact that the world is continually growing, it appears that avoiding the presence of technology is becoming increasingly impossible these days. Every element of life has been impacted by rapid development and enormous improvements in information and telecommunication technologies. All of these technologies have been tried in a classroom environment. The mobility and accessibility of mobile devices has encouraged many academics to employ them in educational settings in this digital era. People's lives are altering in a number of ways as a result of this technology. In terms of social media, there has been a lot of advancement in digital technology, but few people believe m-learning to be a necessary aspect of higher education. The findings demonstrate that using smart phones to study and repeat English vocabulary and phrases is effective in enhancing university students' foreign language proficiency. When creating such a curriculum, teachers must consider the requirements of the students, and teachers must give continual assistance. Only then will it be able to have a positive influence on student learning.

Keywords - Mobile Learning, Academic Achievement, Students, and social media.

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INTRODUCTION

The classroom is no longer the only place where students can learn. Aside from classrooms, it's becoming a common sight at bus stops and train stations; on school field trips; even in markets. In a nutshell, learning may take place 'anytime' and 'anywhere.' Advanced mobile technology, such as smart phones, tablets, iPods, e-book readers, and portable notebooks, have enabled this 'anytime, anywhere' learning paradigm.[1] These pocket-sized computers with greater processing capabilities may be taken with you wherever you go. As a result, there is now universal access to information and communication. Because of the technological possibilities of these gadgets, there has been a lot of interest in using them for educational purposes. The use of mobile technology for educational purposes has progressed from pilot research to full-fledged deployment in educational institutions. Mobile technologies provide for seamless communication with peers and experts, allowing for more meaningful connection and knowledge exchange with the rest of the world. Internet connection is available at all times, allowing students to access a variety of instructional materials. Mobile learning refers to the unfettered access to knowledge made available by mobile devices such as smart phones. [2]

Mobile Learning

Mobile learning, which is still in its infancy, is a sort of learning that takes place on mobile devices and can enable "nomadic learners." Mobile learning is considerably more than merely mobile devices, despite being defined as "an emerging paradigm in a state of intensive growth." It is the result of appropriately utilizing these technologies in a learning situation. Mobile learning has been dubbed "e-learning lite" by some cynics, who see it as merely a means for transmitting a condensed version of the total task. Mobile learning, which was formerly considered a subset of e-learning, is carving out its own niche through fostering self-identity, which is enabled by cutting-edge technology and rapid growth in the mobile technology area. The ever-evolving realm of mobile learning may accurately be described as a collaborative Endeavour between educators, academics, hardware and software developers, and the m-learning sector. Their constant efforts have resulted in advancements and the introduction of new mobile technologies that serve humanity with personal, social, and educational resources.[3]

Innovation in Teaching

The pedagogical aspects illustrate that using ICT to convey knowledge and information is a simple and effective method of delivery, and that using ICT to create new knowledge is possible. In a nutshell, ICT will support the notion of Technology Enhanced

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Learning in its entirety (TEL). It is clear that many parts of education have changed dramatically as a result of the widespread use of ICT and the internet. Using multimedia, rich visuals, animation, simulation, and virtual worlds, emerging technologies allow students to see and engage with learning information. Learning has evolved from rote memorization and repetition of knowledge to participatory methods of learning. Furthermore, the emergence of near-universal access to mobile devices has opened up more opportunities than ever before for increasing the quality of teaching, learning, and education management. Looking at the disadvantages, students and teachers are limited in their capacity to study and exchange information while travelling or in places with poor Internet access.

Naismith and Corlett (2006) points out the following tips for designing mobilelearning.

- Create interactions that are fast and easy to use.
- Create products that may be adapted to suit the learning style of each individual student.
- Consider the various devices and standards when designing device access and interaction
- Make use of the unique features and limitations of mobile devices to enhance the learning experience.
- Rather than merely disseminating educational materials, mobile devices should be used to help students learn.
- Use a learner-centered approach while creating resources for students.

Using mobile technology in higher education may also benefit students in terms of social and emotional presence, as well as pedagogical shift that allow students to learn at any time and from any location through m-learning. Learning is more engaging, flexible, and participatory with m-learning since students aren't constrained by the limitations of desktop computer technology or typical classroom settings.

Mobile Apps in Learning

To achieve pedagogical success, mobile applications are safe social learning platforms that operate on computers, smartphones, tablets, and other mobile devices that have Internet connectivity. Students' creativity, autonomy, and responsibility for their own learning are all enhanced by apps, which allow for direct access to internet resources, as well as a greater emphasis on students' personal accountability for their own learning.[4]

Individuals only retain 10% of the information they read, 80% of the information they hear, 30% of what they see, and 80% of the information that combines visuals, audio, and text, according to Marshal (2002).

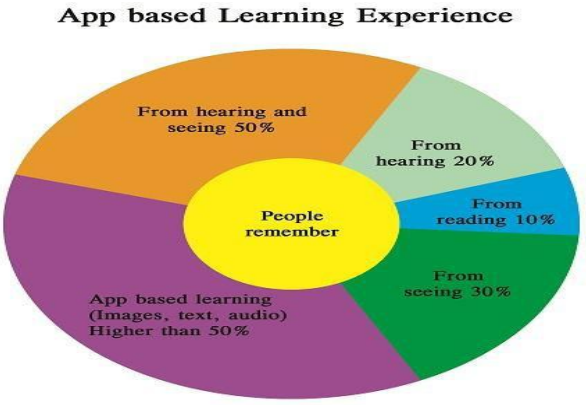

Figure 1: App based learning experience

Google products such as Google Docs, Google Earth, and Google Classroom were utilized more frequently. Twitter, Facebook, Pinterest, photo/video/movie apps, real-time communication tools, and quiz apps are just a few examples of social media applications. The vast majority of these were utilized in the creation of work that was to be shared or evaluated. Hopscotch (for coding), Game root (for game development), Mathletics, Explain everything (for PowerPoint presentations), and Chatterpix (for reading and writing) were among the many specialized mobile applications.

Perspectives of m-learning

Devices like smartphones, PDAs, MP3 players, digital camera and voice recorders may all be utilized to deliver education via m-learning. "The use of ubiquitous portable technologies in connection with wireless and mobile phone networks to allow, support, enhance, and extend the reach of teaching and learning," m-learning is defined as. M-learning may also be regarded from the perspective of mobile education. Keagen (2005) says that m-learning should be confined to learning on mobile devices that are small and portable. In the eyes of some, M-learning is a paradigm shift. Mobile learning occurs when the student is not in a preset place or when mobile technology provides learning possibilities, as stated by a learner-centered approach. When it comes to the definition of m-learning, it is described as any activity that helps individuals to be more productive while using a tiny digital portable device that the user routinely uses, has dependable connectivity, and fits in a pocket or handbag.

Mobile Learning System

There is more to a mobile learning system than just the technology involved; there are also people involved and pedagogy in place to fulfill the needs of both teachers and students. Teachers, students, university administrators, and IT personnel are all stakeholders in mobile learning. Technical

infrastructure and mobile devices make up the technology domain. A student's learning style and the substance of a course are all part of the pedagogical domain. Students' and teachers' perspectives are shaped by the interaction between these many components. As a part of the wider educational system, mobile learning should correspond with the educational objectives of the system. On top of all of that, a research by Zurita and Nussbaum contrasted computer-based learning versus paper-based learning. They came to the conclusion that students who used mobile devices to supplement their learning performed much better than their peers who relied on paper-based activities.

Mobile Devices in Learning

Students can learn at any time and from any location thanks to mobile devices. Using synchronous or asynchronous mobile communication modes including instant messaging, mobile social networks, and net-based learning, higher education institutions are enhancing online interactions and using mobile devices, students may rapidly share information with one other. The majority of students at universities profit from texting rather than using m-learning gadgets because of the widespread acceptance and support for mobile devices among students. In comparison to other forms of technology, mobile devices allow students to move around the classroom more freely and actively. The rise of studies on the use of mobile phones in education has been attributed to this technology. Smartphone's have progressed over the years to become as powerful as computers, making learning on the go easier and more comfortable.

Mobile Learning as a Subject of Research

Currently, the field of mobile learning is seeing a rapid expansion. It is obvious that it has become a specialized discipline, with its subject-domain developing steadily and new discoveries in the field being reported on a regular basis among researchers and academics. Mobile learning is becoming an increasingly popular topic for international conferences, seminars, and workshops, which serves as another crucial indicator of its expanding popularity. To cite just one example, the "National Learning Infrastructure Initiative" known as "EDUCAUSE" has made it a central topic. M-Learn, the first conference on mobile learning, began in the United States in 2002. Additionally, "International Conference on Interactive Mobile and Computer Aided Learning; Mobile and Wireless Technologies in Education; International Association for Development of the Information Society (IADIS); The Social Science for Mobile Learning; International Conference on Mobile Learning: New Frontiers and Challenges (ICML);" These conferences take place all over the world each year. Insights on mobile learning have been gained through papers presented at this conferences.[5]

LITERATURE REVIEW

Kesici (2017)[6] analyzed how high school students' sociability levels changed as a function of how often they used social media and how they used social media, Uses quantitative and qualitative methodologies in a mixed-methods study design The "Extraversion" sub-dimension of the Big Five Inventory was used to assess the social skills of 352 Siirt pupils in 2018. Students' sociability points varied dramatically depending on how often they used YouTube, Instagram, and WhatsApp but not how often they used Facebook, as a result of this finding. In addition, semi-structured interviews were conducted with 27 students who were social and frequently utilized social media to study the students' social media use. The participants were found to utilize YouTube for entertainment and learning, Instagram for communication and entertainment, and WhatsApp for communication.

Zayed, (2017)[7] Apps for mobile devices are safe social learning platforms that can run on any device that has Internet connectivity, allowing teachers and students to collaborate at any time and from anywhere in order to achieve educational goals.

Kaliisa & Picard, (2017)[8] Other advantages of employing mobile technology in higher education include the ability to connect with students in a social and emotional way, as well as a pedagogical shift that allows students to learn at their own pace and in any location. Learning is more engaging, flexible and interactive when students aren't constrained by the limitations of desktop computers or typical classroom settings.

Baradaran and Kharaziyan (2016)[9] Mobile technology's impact on Iranian EFL learners' writing ability was evaluated. Furthermore, the study aimed to discover what kind of clues mobile technology could provide to help pupils improve their writing. A total of 20 female students were selected for each of the two classes. An initial Nelson test showed that both groups had similar levels of skill in the English language. The study was quasi-experimental in design. A standard writing lesson was given to both experimental and control groups, but students in the experimental group were required to submit their work using mobile applications. When it came to the writing skill materials they used mobile devices as well.

Barhoumi (2015)[10] Mobile technology was examined in a blended learning course titled Scientific Research Methods in Information Science. Students' knowledge management is the primary subject of this study, which is informed by activity theory and centered on WhatsApp mobile

learning activities. Experimental methods were employed by the researcher to compare a test group (34 students) to a control group during the 2014-2015 academic years (34 students). Each week, the experimental group participated in two hours of in-class instruction and an additional hour of online learning activities mediated by instant messaging. There was no app mediation in the control group's experience. Using the post-achievement test and a survey, the researcher gathered data for the study Blended course (70 percent face-to-face coursework + 30 percentages of conversations) had a significant favourable impact on students' test scores and attitudes following trial.

Bouhnik and Deshen (2014)[11] between teachers and students using mobile instant messaging Teachers who utilize the app to communicate with their students were interviewed in half-structured interviews. So, class groups are utilized for four purposes: communicating with students, cultivating the social climate, creating dialogue and encouraging sharing among students, as well as a platform for learning and teaching. In terms of technical advantages, participants cited the ease of use, low cost and availability of WhatsApp. Educational advantages like creating a pleasant environment and getting to know one's classmates better were also mentioned as having an impact on how people spoke. Additionally, the participants cited academic advantages, such as the availability of learning materials, the availability of teachers, and the continuation of learning outside of class hours. Despite this, there remain obstacles and issues to overcome.

Allagui (2014)[12] tested WhatsApp's usefulness for undergraduate students in higher education by sending immediate text messages. Students in a class of 50 were given a written assignment and instructed to communicate by text message. To improve their writing in English as a Second Language (ESL), the students employed messenger. After completing the writing assignment, students completed a survey in which they described their experiences. Students' talents and weaknesses were evident from the findings. Despite the fact that their overall scores remained low, the spell checker seems to have helped them improve their spelling and vocabulary. Students' motivation to write was boosted by the usage of WhatsApp in the classroom, according to the findings.

Mehdipour and Zerehkafi (2013)[13] separated M-learning from electronic learning. E-learning can be synchronous or asynchronous, often known as real-time or self-paced. It's also believed to be formal and structured, making e-learning a good fit for formal education. M-learning, on the other hand, tends to be more unstructured, autonomous, and self-paced than traditional classroom instruction. Mobile devices are rapidly being employed in educational settings to facilitate communication, collaboration, and content delivery. Innovative training methods in higher education are made possible thanks to the inclusion of M-learning activities in online courses.

Susan Lea and Lynne Callaghan (2011)[14] introduce and explain the mobile learning initiative developed and implemented by the Centre of Excellence in Professional Placement Learning (CEPPL). Up to half of a health and social care student's course time is spent in the field. These children' ability to learn could be greatly enhanced by the use of mobile technologies. The authors conducted a three-year study programme on mobile learning, launching 13 experiments that included students from a variety of health and social care programmes and diverse placement settings and were all properly reviewed. Stakeholders are better served by participatory assessment when evaluation results are put to good use. Due to the varying lengths of placements, students were required to use leased equipment during their practice participation.

Hong-Ren Chen and Hui-Ling Huang (2010)[15] Learners should be encouraged to acquire, save, share, apply, and develop information through a mobile knowledge management learning system. In terms of task performance and system performance, a larger screen performs better than a smaller one. While learning outcomes are taken into account, the experimental group outperforms the control group when using a mobile knowledge management learning system. When two different sorts of experiments are carried out, the experimental evaluations can be assessed. 1. System performance analysis. 2. Examining one's educational progress. There were 132 elementary school pupils in the experimental group, and they were split up into 22 groups of six each. Mobile phones, PDAs, and laptops all benefited from an analysis of system performance.

OBJECTIVES OF THE STUDY

- To determine the impact of mobile learning on student teacher gain scores in learning theories.
- To determine the impact of mobile learning on student teachers' ability to retain learning theories.
- To determine the influence of mobile learning on student teacher engagement.

RESEARCH METHODOLOGY

In the sense that the researcher is attempting to examine something new, the experimental technique, a scientific method, is directed to the future. It is a process of adding to a body of information that has already been accumulated. Experimentation merely allows you to alter the conditions in which you'll be observed and, as a result, get more precise outcomes. The scientific method is based on this principle. Experimentation is used to extract proven functional correlations between phenomena under controlled settings, or, to

put it another way, to determine the conditions that cause a phenomenon to occur.

Research design

A research design is a strategy for obtaining information from here to there, where 'here' refers to the original set of questions to be answered and 'there' refers to a set of conclusions (solutions) related to those questions. There are a number of significant phases between here and there, including the collecting and processing of pertinent data. The plan is the research's overarching scheme programme. The experiment will be guided by the investigator using the pre-test post-test equivalent group strategy.

Sample

The study's sample included two big groups of student teachers: a control group (n=40) and an experimental group (n=40) from a College of Education in the Churu District of Rajasthan. The study's participants will be chosen using a technique called purposeful sampling.

Pilot-study

The redesigned software package will be validated again with 30 B.Ed College student teachers in the pilot project. Students participating in the pre-study and pilot-study will differ. The time it took the pupils to finish the package will be recorded as well. Appropriate changes will be made, such as making the software more appealing, changing long films, and simplifying ambiguous notes. As a result, the graphics for the study that will be used in the classrooms will be completed.

Tools Used

The study's direction will be guided by four tools. For determining student homogeneity in terms of IQ level, S. Jalota's Test of Intelligence for College Education Adults (JTICEA), Blessy. T and B. William Dharma Raja (2017) will be BlWi's Achievement Test in Learning Theories (BALT) and BlWi's Student Engagement Inventory (BSEI).

Proposed Analysis

The pre-test, post-test, and delayed post-test reactions of the sample students will be calculated and assessed using the scoring technique. After the intervention and testing have been organized, the data will be quantitatively evaluated using SPSS software version 21.

- t-test
- ANCOVA

Results and analysis

T-test, ANCOVA, and paired-t-test were used to analyze the data. Experimentation and control groups were often tested using the t-test. Direct comparisons between sample mean variation and sample mean variation around the mean were done by using the ANOVA test.

Pretest Analysis

During this stage, which is called pre-testing, the experimental therapy is being tested for side effects. The experimental therapy can be compared to this as a benchmark. It's impossible to tell whether or not a student's performance has improved, stayed steady, or declined based on pre-test data. It also shows if the group means are comparable before the upcoming measurement. Tables 1 and 2 include the results.

Table 1: Significance of Difference between Pretest Achievement Scores of Students in Control and Experimental Groups

Group	Size	Mean	SD	t value	p value
Control	40	21.98	4.77	0.654	0.515^{NS}
Experimental	40	22.68	4.80		

NS - Not Significant

In the above table, since the p-value is greater than 0.05, the null hypothesis is accepted at 0.05 level of significance. Hence, it is concluded that there is no significant differencebetween the pretest scores of control and experimental groups.

POSTTEST ANALYSIS

A post-test is the measurement made immediately after the experimental treatment or the control for the experimental treatment has been made. The analyses are shown in Tables 2.

Table 2: Significance of Difference between Posttest Achievement Scores of Students in Control and Experimental Groups

Group	N	Mean	SD	t value	p value
Control	40	30.30	5.69	4.743	0.001*
Experimental	40	36.45	5.90		

**** Significant at 1% level**

Thus, it may be argued that the posttest achievement scores of the control and experimental groups differ significantly. In the posttest, the experimental group scored higher than the control group.

PRETEST-POSTTEST ANALYSIS

A comparison of the pretest data with the posttest data enables the researcher to concludethat the differences between these two sets of data, if any, are caused by the effect of the independent variable.

Table 3: Significance of Difference between Pretest and Posttest Achievement Scores of the Experimental Group

Level of Intelligence	N	Mean	S.D	T- Value	p value
Pretest	40	22.68	4.80	12.64	0.000*
Posttest	40	36.45	5.90		

**** Significant at 1% level**

There appears to be a significant difference between the experimental group's pre- and post-test scores in the preceding table, given the p value is less than 0.01. It appears that the experimental group performed better on the posttest than on the pretest.

ANALYSIS OF COVARIANCE (ANCOVA)

There are times when it's necessary to take into consideration variations in prior test results in order to properly examine differences in post-test results. Analysis of covariance is the most appropriate statistical test for this situation.

Table 4: Comparison of Mean Achievement Scores of Control Group (Traditional teaching) and Experimental Group (WhatsApp mobile learning teaching)

Test	Mean	Exp.	Source	Sum of Squares	df	Mean Square	F	P
Pre-test (X)	21.98	22.68	Between	9.80	1	9.80		
			Within	1785.71	78	22.89	0.428	0515 NS
			Total	1795.52	79			
Post-test (Y)	30.30	36.45	Between	756.42	1	756.42		
			Within	2622.27	78	33.62	22.500	0.0002**
			Total	3378.68	79			
Adjusted Post-test (Y.X)	30.34	36.41	Between	732.46	1	732.46		
			Within	2598.01	77	33.74	21.709	0.000*
			Total	3330.46	78			

****Significant at 1% level NS - Not Significant**

Students who took part in a study in which they were taught utilizing a mobile learning strategy were found to have considerably higher post-test results than those who were taught using a traditional method. Because of this, it can be inferred that the use of mobile learning to instruct student teachers has a substantial impact on their learning theory performance.

CONCLUSION

Mobile learning is a worldwide instant messaging application for cellphones that serves as a learning platform. Mobile learning allows for the transmission and reception of a wide range of material. Mobile learning allows people and groups of friends to share free photos, audios, and video communications. In the academic sector, there has been a paradigm

shift in the usage of social media by students. Because everyone has a phone and almost everyone has access to the internet, mobile learning is a feasible alternative for both teaching and learning. The mobile learning group offers a new route in higher education in order to meet the demands of students in today's world. Mobile learning was supposed to encourage students to become more active in their own learning, which might lead to better long-term memory recall. This social media group may be used to increase one's education. Since then, with methods like these, it's been feasible to reach convergence. It is possible to have discussions amongst students, professors, lecturers, and instructors, To see if student teachers may benefit from mobile learning as an academic tool.

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