

A Research on Stress and Mobile Learning Device

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Abstract:

The aim of the research is to analyze the stress factors during the mobile learning process. Also, it discusses the blended mode of learning, user feedback, and user performance on various mobile learning devices. The main purpose of the research is to investigate the stress factors and mobile learning system's links during the learning process. A comparative study is conducted among the undergraduate degree computer science & engineering students and social science students between the age groups 20 to 25. From this research it is observed that there are difference exist due to the use of blending mode of mobile learning tools such as personal computers, laptops, smart mobile phones, electronic readers, and tabs.

The stress factors related to the course and contents, graphics, user interface design, input devices, personal stress level, motivation level, technical difficulties, etc. affects the performance among the learners. It is also observed that combination of various mobile devices during the teaching and learning process helps o perform well. At that same time availability, compatibility, previous knowledge, digital skills, duration of usage etc, creates another type of stress due to digital learning. Particularly, use of mobile phones affects the eye and physical stress. The digital divide is developed among the new generation learners. This research shows the wide gap between the various discipline learners, stress level and other parameters related to technology

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I. INTRODUCTION

Modern era of globalization and information super highway in which digital tools are helping the educators and users together in communicating educational information which is normally no possible through any other traditional ways. Unlike the previous Gurukul education system, the present digital education system has welcomed the electronic devices for faster communication and education process due to the global competition in education sector in general and in the field of mobile based learning in particular. Youngsters with high digital and information technological background are considered the most sought human potential for overall technological development of the nation. Digital technologies support educational communication and interaction that overcome traditional teacher-centered and class room based teaching methods. Now a day digital tools are very common among the higher education learners. Hence, several universities, colleges, organization, educational institutions are utilizing the digital devices to improve the learners' performance and learners' learning experiences so as to reach without any boundary.

There has been a great explosion of information technology during the last three decades. Along with the information technology explosion, we observe another explosion, namely digital tool explosion, which is helping to change the way of life into digital world. Advancements in the digital communication bring out changes and shifts in educational communication which in turn stimulate the innovation of newer methodologies and these methods are applied to solve the educational problems. There are many different types of innovative tools and techniques used in the educational system for fastening the educational communication.

Computer Assisted learning, Computer Based learning, online learning, and, cloud based learning, M-learning, Web learning E-learning, etc. are the very common names for technological assisted learning in the educational set-ups. Mobile assisted learning is a term used to describe smart phones and handheld computers to assist the learning process. The following electronic resources are used in the technological based learning environment. This research paper helps to analyze the issues facing by the digitized learning environment and the users. In this investigative work, section 1 introduce the basic concepts and problems

related to digital tools and digitization, section 2 discuss the previous related research outcomes, section 3 helps to frame the methodology for the research problem, section 4 discuss the procedures, sampling, statistics and findings, section 5 helps to tabulate the research findings and visualization, and section 6 helps to write the solution to the problem. Also, section 6 discusses the future directions of the research.

II. REVIEW OF THE LITERATURE

Early electronic learning systems was based on computer-based learning and computer based training often tried to apply autocratic (teacher centered learning) teaching and learning ways. Later developed into the computer assisted learning and computer assisted training. In the early 1960s psychologist Atkinson and Patrick conducted experiments among the gifted young learners by using computers to teach mathematics and language [1]. It encouraged the way of sharing knowledge in an interactive manner in the educational set-up. In the early 1990s William used the internet and email for his teaching, evaluation and tutorials. They developed the new strategy for technology-based course, content and management system for learning. They also suggested various parameters like affordability, scalability, and usability related to the computer assisted online learning system [2].

Cassandra B White conducted research about the increasing role that computers and information technology would play in primary and higher education. The advancement of computers and software tools have changed over the years from heavier, slow devices utilizing much space in the educational environment, office and home to handheld devices, tablets, laptops that are easily portable in size and form[3].

Major headings should be typeset in boldface with the words uppercase.

A. E-Resources

- e-books, electronic books
- e-dictionaires, electronic dictionaries
- e-journals electronic journals
- Educational DVDs and CDs
- e-libraries, electronic libraries
- Web blogs
- Websites
- e-forum
- Social media
- e-content
- e-learning systems and portals etc.

B. Advantages of E-resources:

Easily accessible
More information and different views
Pace according to the learners' style
Quick responses and feedback
Easy to share at global level
No need of physical storage
Accuracy of information
Easy to organize based on need

According to Neeraj and Ganesh electronic learning or e-learning means e education or electronic education. According to them e-learning is basically the online delivery of educational information, communication, training and learning [4].

According to Rosenberg e-learning refers to the science and engineering of internet technologies to find a broad array of educational problems and solutions that improves performance and knowledge [5].

Bates and Poole suggested a new strategy for computer assisted learning in 2003. They uploaded the class lecture and power point slides of course content in a website or learning management system. They used the hybrid way of learning that is blended mode of face ot face learning and teaching with computer assistance. They tried to utilize online learning method along with face to face teaching strategy. In the Bates and Poole continuum, blended learning includes, classroom aids, laptops and hybrid learning [6]. According to Ahmed et al., blended mode of learning and learner centered approach need to satisfy the learners of the new tech-savvy generation. Due to the expectations and demands of the new younger generation this type of blended more was useful to attract the younger generation towards higher education [7]. Poindexter suggested the requirement of holistic approach in the learning and teaching for the new millennium tech savvy learners [8].

Levine and Arafeh suggested the advanced computer assisted learning tools for the tech savvy new generation. Due to their experience and exposure, the new generation learners had more expectations in their new learning (higher learning environment) [9]. Weimer's research showed the requirements of the conversion of autocratic teacher centered learning approach to learner centered approach [10].

III. HYPOTHESIS

Blended mobile learning mode of teaching and learning to enhance the motivation level of the undergraduate level students of computer science and engineering and undergraduate level students of social science. There is a difference exists between the exam performance developments among the two different discipline learners. There is a difference in stress factors among the face to face and mobile learning learners. The parameters such as screen size, weight, storage capacity, processing speed, software loaded, screen resolution, learning system loaded, electronic resources availability, etc, are very important during the learning stage. The stress factors have significantly affects the learners with very low computer and digital skills. Motivation of the learners develops due to the mobile assisted learning in the educational set-up. The head, eye and bodily pains are common among the mobile learning users particularly smart phone users in the learning environment.

IV. HYPOTHESIS METHODOLOGY

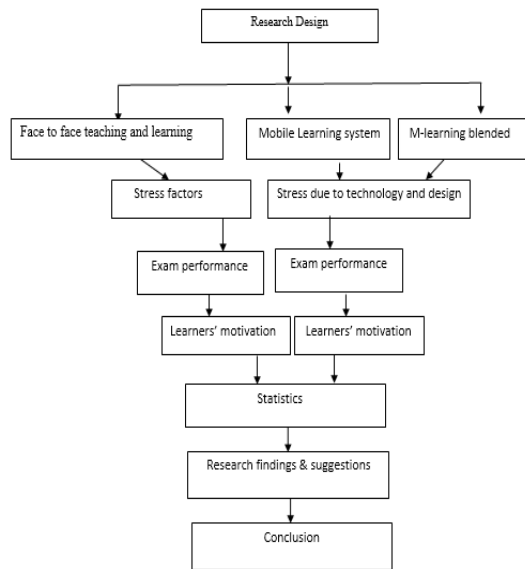


Figure: 1 Hypothesis methodology

The SI unit for magnetic field strength H is A/m. However, if you wish to use units of T, either refer to magnetic flux density B or magnetic field strength

symbolized as $\mu_0 H$. Use the center dot to separate compound units, e.g., “A·m².”

V. SAMPLING

The experiment was conducted among the three different group members consist of thirty of computer science and engineering undergraduate level students in a private deemed university. Three different mode of teaching and learning was applied among the three groups. In order to select the commonness among the computer science and engineering undergraduate learners, motivational test was conducted. Pre-test and post test conducted among the learners of two different groups named CAG and SSG. A comparative study conducted between the exam scores and motivation test scores of the two different groups. The stress factors identified and gather through structured NSAD questionnaire. Both the pre-test and post test conducted to identify the variations. The parameters such as user interface design, screen resolution, size, weight, software loaded, storage capacity, device differences, internet service availability, etc, and their links with motivation and performance were compared.

The stress factor identities due to the following criteria and differences

Table 1

Factors	Mobile device	Other parameters
1	laptop	Screen resolution
2	Mobile phone	Screen size
3	E readers	Storage capacity
4	Tablets	Internet connectivity, speed
5	MP3 players	Interactivity
6	Ipod	Software loaded
		Learning system loaded
		User interface design

Table 2

Primary data collected through the constructed questionnaire	
1.	Do you use smart phone for your learning purpose?
2.	Are you satisfied with the blended mode of mobile learning with face to face learning?
3.	Do you feel stress due to screen size of your mobile device?
4.	Is it flexible to learn by using smart devices?
5.	Is it useful to get high marks?
6.	What is your opinion about the User interface design?
7.	It communicates easily

VI. MAJOR FINDINGS OF THE STUDY

Mobile Device

Out of the total respondents (180) 82 per cent of the respondents had smart phones and internet connectivity, 58 percent of the respondents had 4 size inch mobile screen phone, 62 per cent of the respondents had laptops. 10 per

cent of the respondents had smart ipod, 8 per cent of the respondents had mp3 players. 70 per cent of the respondents had desk top personal computers. 8 per cent of the respondents had smart e-readers.

Table 3 Smart phone and internet connectivity

S. No	Learners	Number of respondents n:180	Percentage
1	Computer science and engineering	83	82 per cent
2	Social science	64	

Mobile Learning Experience

This study showed that 60 per cent of the (total 180) respondents were having previous learning experience. 80 per cent of the computer science and engineering respondents were having previous learning experience. 40 per cent of the social science respondents were having previous learning experience.

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Table 4
Previous learning experience

S. No	Learners	Number of respondents n:180	Percentage
1	Computer science and engineering	70	60 per cent
2	Social science	38	

Digital knowledge

The research showed that 85 per cent computer science and engineering respondents have the adequate that is more than 60 per cent, digital knowledge. Also it showed that 30 per cent social science respondents have the adequate that is more than 60 per cent, digital knowledge.

Pre-test exam Score

Digital knowledge score for 180 learners i.e., 40 per cent were in moderate level (60 to 75), 31 per cent were in high low (75 % more) 29 per cent were in low level (less than or equal to 60).

Post-test exam performance

70 per cent computer science and engineering respondents fall in the high level of exam score (75 & and more) in the blended mode of mobile learning. 52 social science learners fall in the high level of exam score (75 & and more) in the blended mode of mobile learning environment.

VII. RESULTS AND DISCUSSIONS

The factors such as individual stress levels, individual's motivation, previous learning experience, computer proficiency, etc, affects the learning and performance among the learners. The parameters such as screen size, internet speed, user interface design, content relevance, input methods, screen resolution, and usage duration, etc., play an important role in motivating the learners to continue mobile assisted learning. This research shows the significant difference among the educational background of the learners with regard to the digital knowledge. Also, it shows the relationship between the stress factors due to the incorporation of advanced mobile devices. It is concluded that there is a difference among the mobile device user groups with regard to the average exam score. Furthermore,

the learners who are having more accessible to digital tools have scored higher in their exam than the other groups.

VIII. LIMITATIONS

This research works conducted only among the private deemed University science and engineering and social science undergraduate learners with different learning mode. Also it included only two different disciplines. To identify the stress level a newly constructed stress questionnaire used among the learners. The digital divide exists between the learners of different geographical location and University standards. Smart phone user group and tablet user group various among the city base colleges, universities, and village based colleges and universities. This research included only the learners between the age group 20-25.

IX. CONCLUSION

This research outcome clearly shows the difference due to the use of mobile devices during the learning process. Teaching and learning through digital devices significantly helps to improve the learning outcome. Lack of previous learning experience and knowledge among the social science learners, their exam performance significantly affected by the learning mode. Mobile learning gives high satisfaction and individual learning experience, also it enhances the learners' exam performance. This research outcome shows the difference between the social science undergraduate learner and computer science and engineering undergraduate learners in exam performance. Furthermore, it shows the digital knowledge difference among the two different discipline learners. While implementing the mobile learning strategy and model, the educators should consider the digital knowledge of the users in order to enhance user satisfaction and performance. The mobile tool's screen size, resolution, science and engineering, weight, storage and processing capacity, software availability, system design,

etc. significantly affects the learners' motivation and performance. Also, this research shows the increasing stress factors related to mobile and handheld devices and user interface design.

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