

## Effectiveness of Video Lessons Using Mobile Learning Technology

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**Abstract-** Electronics and communication and manufacturing technology are gaining much importance in the new millennium. The advents in electronics and communication technologies have been offering inexpensive, more convenient and more functionality in a single device. The engineering students and teachers can access data and communicate with each other anytime, anywhere, on any device, and any data and network. The researcher has to implement new technology, new ideas, and innovations in the research area of wireless communication and wireless networks. In wireless and mobile communication, to develop these engineering laboratories into virtual labs and study materials in hand (within a Pocket). This research is focused on and related to engineering education research. The quasi-experimental design has been used in this research study to measure the effectiveness of mobile learning using video lessons in engineering education. The questionnaire is used to evaluate the effectiveness of mobile learning for undergraduate engineering students. This paper describes the main study of the research results shows that 506 students of second year engineering students of Electrical and Electronics Engineering (EEE), Electronics and Communication (ECE), and Bio-Medical Engineering (BME) in Chennai, Tamil Nadu, India their usage of wireless communication technology in mobile learning using video lessons. The video lessons used for this study are Electromagnetism which is common for EEE and ECE and Electrocardiography is common for BME and ECE. During the study smart phones, mobile phones and wireless devices, tablet pc, personal digital assistants, etc are used and the duration of the video lesson is 30 minutes. These video lessons can be transmitted using Bluetooth technology in the classroom, library, and corridors during the free hours.

Keywords: E-learning, m-learning,

### I. INTRODUCTION

This research study is to enhance mobile learning in India and improve personalized learning in an adaptive learning method. In the Covid-19 pandemic situation, many universities and colleges focus on mobile as a supplemental source of learning for students and to provide distinctive approaches to individualized learning. Nowadays each student's a minimum of two smart phones or tablets pc can carry in their pockets because the usability and need for smart phones are increasing

and adapted video content is an effective tool for a personalized learning system.

"Mobile learning is a wireless and communication technology are used in the education system, by upgrading the access to the on-line learning for wireless devices such as smart phones or tablet pc used a part of a mobile learning [Farooq, 2002]

Mobile learning uses the latest smart phones or PDAs with wireless communication network technology to achieve the weakness of traditional learning systems. This project is paying attention to video lessons, using mobile learning which paves techniques for the enrichment of learners' knowledge, skill, behavior, and performance, achievements in self-learning systems, and also to develop their difficult concept-solving skills. The main motivation of the research is to encourage students' attention and interest them to learn difficult concepts and to find a supplemental source of learning material and them to practice in the field of the education system.

Mobile learning has been widely accepted by the next-generation student community along with teachers when compared to other modes of the learning system in education. In the conventional learning mode students has to spend time and money to reach the spot where education is thought but in the present busy world, the new mode is getting momentum both with the teachers and students. While engaging in the electronic learning method students has to purchase a desktop facility with a wired or wireless internet connection which is a must to continue education in this mode, particularly electronic gadget, television is a similar mode of education where one has to dedicate time to reach the medium or else they have to miss the same, but next-generation television sets possess the facility of recording mode which can be later viewed. [Hemabala J, 2015].

According to Mlearn 2002 to Mlearn 2009 and

Smart phones or PDA's are used in mobile learning,

- Attractive, availability and accessibility is 24x7 in network technology.
- A greater flexibility and functionality in a single device.
- Interactive and interoperability.
- Communicative and collaborative learning in education system.
- Adaptability and affordability of learning environment.
- Mobility and memory ability for learners.
- Reusability and reliability.

## II. REVIEW OF LITERATURE

Kwang.B., Lee R.S author designed and developed a tool for mobile collaborative learning it shifted towards the mobile learning new approaches, the main goal of this tool as identified the advantage of mobile devices, to access data, and transmission of learning material anywhere at any time and evaluated usability issues, online test status, and heuristic-based questionnaires were used to the student's results.

Dr.FahadN.AI-FAHAD, 2009 the author studied students' attitudes and perceptions of the use of mobile learning technology in education, mobile learning offerings for improving retention capabilities and enhancing their teaching and learning innovation, and mobile learning technology can be used anywhere, anytime, and adopted by their learning by improving and communication, enriching students learning experiences and skills.

Shailu, S.W., Wan Ahmad, W.F developed and designed a mobile learning tool for effectiveness and usability, author evaluated the advantages of mobile learning and assessed the weakness of traditional learning and the learners interest and involvement to the use of mobile learning tool. Kotrlik. J.W. &Williamms. H.A. (2003), describes the results of the research report as advantages of teaching in a real-time wireless classroom learning using mobile devices over weaknesses of conventional learning, and research reflected mobile learning as an effective method of learning in the wireless classroom learning.

## III. METHODOLOGY

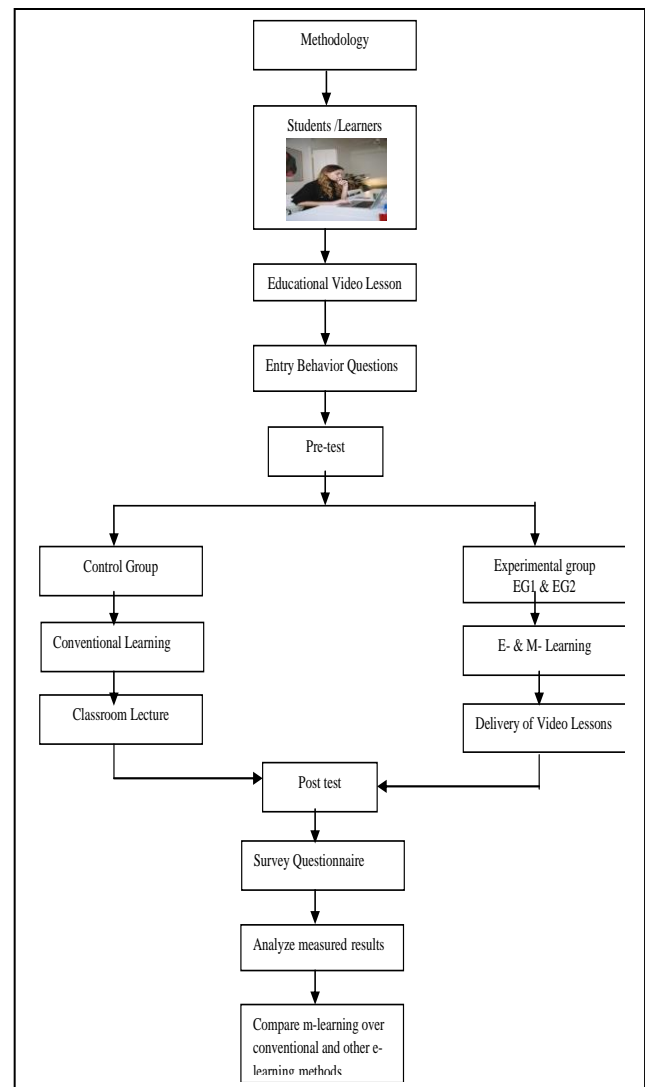
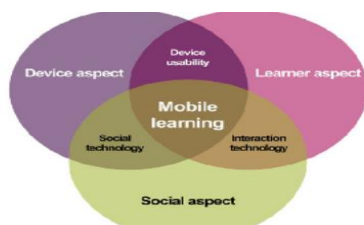


Figure 2. Research Methodology

Koole's FRAME [Framework for the Rational Analysis of Mobile Education] - A Model for Mobile Learning Framework (2009)] is shown in figure 1. Frame work model using video lessons in Mobile learning and technology can be divided into three aspects: Device aspect, Social aspect and Learner aspect. The combination of device with learner aspect, learner with social aspect and device with social aspect can be called as Device Usability (DU), Interaction Technology (IT) and Social Technology (ST).

The figure 2 shows the research methodology of this research study. The survey was conducted from 506 male and female students, to collect the data on technology enabled learning, usage of video lessons in learning, usage of mobile phones or wireless devices, learner's interaction technology and devices used with social technology for this research study. Mean while

learning was more effective than e-learning and conventional learning, the factors that influence the device aspect, learner aspect and social aspect and whether the student's performance can be increased through mobile learning technology. The quasi experimental design has been implemented, involving control group (conventional learning, CG) and experimental group1 ( e-learning, EG1) and experimental group2 (m-learning, EG2). The control group attended classroom lecture and EG1 learning material in DVD video format used from desktop and laptops for e-learning and EG2 (m-learning) used for smart phones and wireless devices for mobile learning. Some snap shots of video lesson are shown in figure 4.



Figure 3 Students Mobile learning photos



Figure 4 Snap shots of video lesson (ECG) & video lesson in mobile phone

#### IV. RESULT AND DISCUSSIONS

The survey was conducted in three stages of study - First stage collect the general information from students about the availability of mobile devices and conducted a pre-test for CG, EG1 and EG2 for all three groups for the student's entry behavior performance test about the subject context studied in high school level of education. Second stage conducted by attending classroom lecture for CG and delivered the video lessons for EG1 to DVD format, Bluetooth technology and stored in the memory stick and EG2 through Bluetooth technology for their free hours. Third stage, the students from CG, EG1 and EG2 all three groups conducted the post-test to evaluate their learning performance. Finally, the effectiveness of mobile learning technology were examined and

questionnaires given to all the groups, evaluate the usage of mobile device, learner experience, learning experience

and different modes of delivery of content in learning [Hemabala J, 2015].

In main study participated 506 learners (male N=299 and female N=207) from second year undergraduate engineering students of Electronics and Communication, Electrical and Electronics and Bio- Medical Engineering at Chennai, Tamil Nadu, India, questionnaire indicates 21 indicators. In Table IX shows the sample frequency of CG, EG1 and EG2 on pre-test and post-test.

The quantitative data were collected through pre-test and post-test, the pre-test was used to obtain baseline of student's performance and compared with their post-test results. At the end, questionnaires were distributed to measure the effectiveness of mobile learning. Qualitative data was used for decision making process. The comparison of the pre-test and post-test will indicate the effectiveness of the mobile learning in education system and analyzed the usage of video lesson in learning, factors that influence the device, learner and social aspects and students performance results, three main objectives were identified,

1. Is mobile learning more effective than e-learning and conventional learning?
2. What are the factors that influence the device aspect, learner aspect and social aspect?
3. Can the student's performance be increased through mobile learning technology?

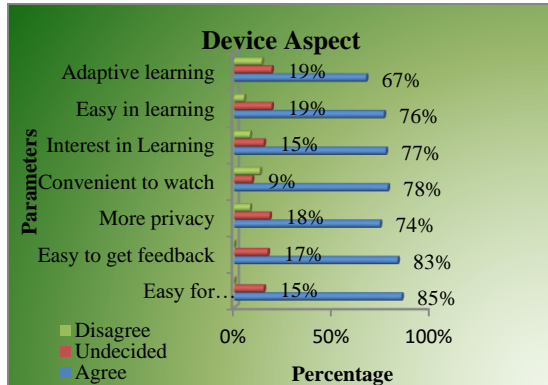
Table. I. Parameters of Device Aspect

SL. NO.	Device Aspect	M	SD
1.	Mobile phones or a wireless device is <b>easy to communicate</b> with teachers and other students.	4.18	0.659
2.	Mobile phones or wireless devices are simple and <b>easy to get feedback</b> from learners and teachers	4.10	0.660
3.	Mobile Learning technology can provide an <b>adaptive learning</b> environment	3.78	1.055
4.	Mobile phones or wireless devices offers <b>more privacy</b> than other learning devices	4.09	0.890
5.	Watching video lesson in mobile phones is <b>convenient</b> when compared to television	4.00	1.074
6.	Mobile phones or wireless devices can increase students <b>interest in learning</b>	4.00	0.963
7.	Using mobile phones or wireless devices is <b>easy in learning</b>	3.93	0.895

The frequency descriptive statistics and percentage of each parameter has been described in the Annexure – I as

*Journal of Engineering Education Transformations, Volume No 36, January 2023, Special issue, eISSN 2394-1707* indicated in Table I, seven parameters under Device aspect, the students have assessed the effectiveness of mobile learning, the mobile phones or wireless devices

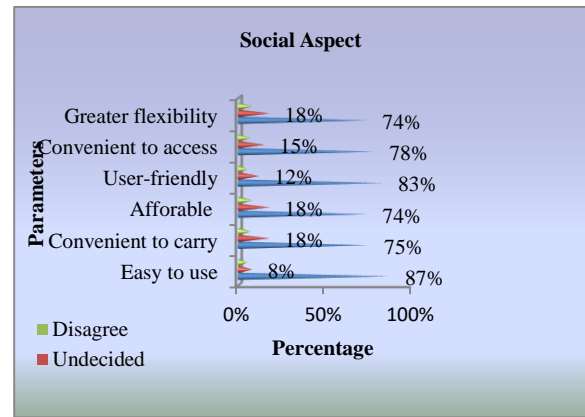
where it is easy to communicate with teachers and other students is the highest mean value is 4.18 and the same has been represented in Graph.1, 85% of students were agreed, 15% of students have decided, Mobile learning technology can provide adaptive learning environment is the lowest mean value is 3.78, and graph 1 represents 67% of students were agreed, 19% stands with undecided and 14% were disagreed.



Graph 1 Percentage of Device aspect parameters

Table II Parameters of Social Aspect

SL. NO.	Social Aspect	M	SD
8.	Mobile learning technology has <b>greater flexibility</b> where and when explanation needs	3.97	1.004
9.	Learner feels <b>convenient to carry</b> their data with them to almost all the place	3.91	0.952
10.	Mobile Learning technology is <b>affordable</b> for every one	3.90	0.952
11.	Mobile Learning Technology is <b>convenient to access</b> information anywhere, anytime, anyplace, any network on any data	3.92	0.924
12.	Mobile Learning Technology is <b>easy to use</b> while travelling by bus/car/van/train	4.19	0.858
13.	Mobile Learning Technology is <b>User-friendly</b>	4.14	0.904



Graph 2 Percentage of Social aspect parameters

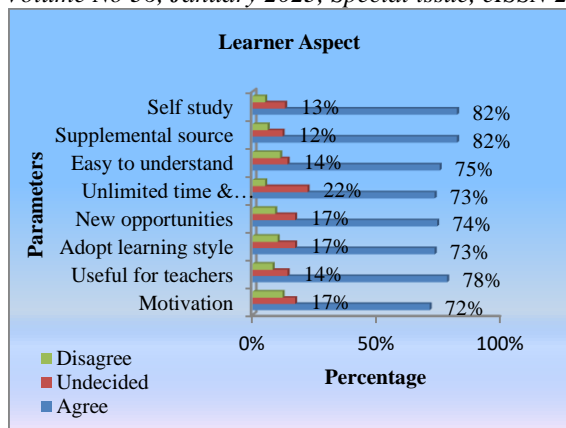
Table II shows six parameters under social aspect,

assessed the effectiveness of mobile learning, mobile learning is easy to use while travelling by bus/car/van/train; and the highest mean value is 4.19 and represented in Graph.2 shows that 87% of students were agreed, 8% of the students stand undecided and remaining 5% disagree and mobile Learning is affordable, everyone had greater flexibility where and when explanation needs, is the lowest mean value 3.90 it represents in graph.3 74% of students agreed, 18% undecided and 8% disagreed.

Table III Parameters of Learner Aspect

SL. NO.	Learner Aspect	M	SD
14.	Usage of video lesson in mobile phone <b>motivates</b> the students to learn.	3.90	1.083
15.	Video lesson is more <b>useful for the teachers</b> to teach the subject.	4.00	0.988
16.	Mobile learning technology can help to <b>adopt their learning style</b> .	3.95	1.028
17.	Mobile Learning can bring <b>new opportunities</b> of learning	3.96	1.013
18.	Learners can revise their lessons in an easy method through mobile learning system with <b>unlimited time and location</b> .	3.91	0.910
19.	Usage of video lessons in mobile phone is <b>easy to understand</b> for students.	3.90	1.037
20.	Mobile Learning Technology an additional or <b>supplemental source of learning</b>	4.12	0.931
21.	Mobile Learning Technology can be used for <b>self study</b> or individualized learning.	4.10	0.894



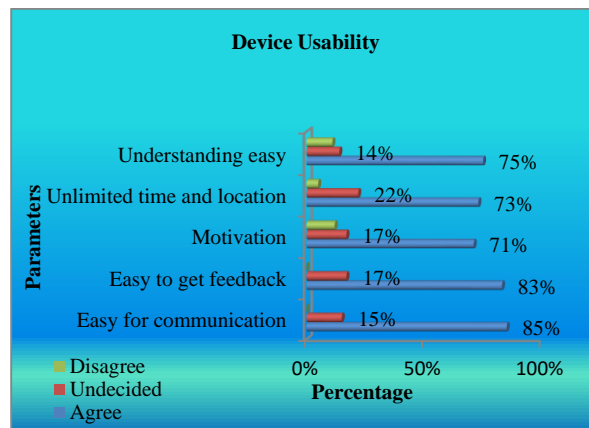


Graph 3 Percentage of Learner aspect parameters

Table III. shows the eight parameters under learner aspect, assessed the effectiveness of mobile learning, mobile learning as the additional or supplemental source of learning and mobile learning is used for self study is the highest value of mean 4.12 and it has represented in Graph.3, 82% of students agreed, 13% and 12% undecided and 5% and 6% disagree, and the lowest mean value is 3.90. The students found the usage of video lesson in mobile phones easy to understand, and also motivates them to learn. 72% of students agree, 17% undecided and 11% disagree.

Table IV. Parameters of Device Usability

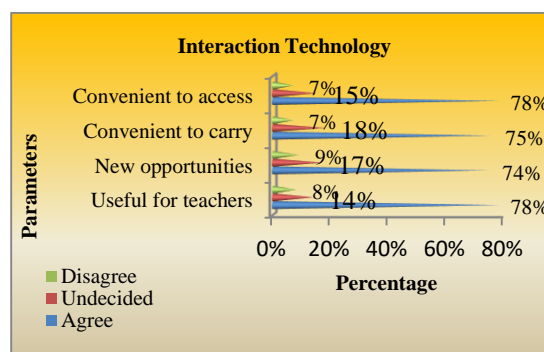
SL. NO.	Interaction Technology	MM	SD
9.	Mobile phone is convenient to use is easy to communicate with teachers all the places.	3.91	0.952
14.	Mobile phone and wireless devices are convenient to access information anywhere, anytime, anyplace, any network on any data.	3.92	0.924
17.	Usage of video in mobile phone motivates the students to learn.	3.96	1.018
18.	Learners can revise their lessons in video lesson is more useful for the teachers to teach the subject.	4.00	0.988
19.	Usage of video lessons in mobile phone is easy to understand for students.	3.90	1.037



Graph 4 Percentage of Device Usability parameters

Table IV and Graph 4 shows the device usability (DU), which is a partial combination of device aspect and learner aspect, the students have assessed the effectiveness and the highest mean value 4.18, where the use of mobile phones or wireless devices are easy to communicate with teachers and other students. 85% of students agree, 15% undecided. Lowest mean value is 3.90 for the usage of video lesson in mobile phones. The students find it easy to understand and the usage of video lesson motivates them to learn, lowest percentage of 71% of students agree, 17% undecided and 11% disagree.

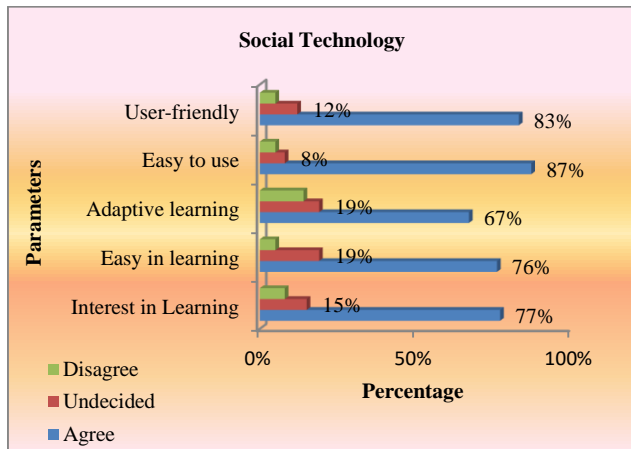
Table V Parameters of Interaction Technology



Graph 5 Percentage of Interaction Technology parameters

Table V and Graph 5 shows the Interaction Technology (IT) which is a partial combination of social aspect and learner aspect of highest mean value 4.00 useful for teachers to teach the subject and convenient to access information anywhere, anytime at anyplace. 78% of students agree, 15% and 14% undecided and 7% and 8% disagree. Lowest mean value 3.91 the learners feels convenient to carry their data with them to almost all the places and lowest percentage 74% of students agree,

Table VI Parameters of Social Technology



Graph 6 Percentage of Social Technology parameters

Table VI and Graph 6 shows the Social Technology (ST), which is a partial combination of device aspect and social aspect, the students have accessed the effectiveness and the highest mean value 4.19 mobile learning is easy to use while travelling by bus/car/van train 87% of students agree, 8% undecided and 5% disagree and lowest mean 3.78 mobile learning can provide adaptive learning environment, 67% of students agreed, 19% undecided and 14% disagree.

Table VII Percentage of each aspect in mobile learning

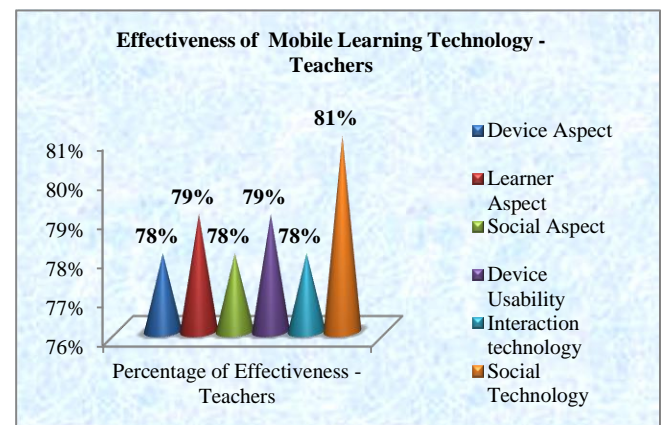
N o	Asp ects	PARAMETERS									%
1	DA	1	2	3	4	5	6	7			80
		4.18	4.1	3.78	4.0	4.00	4.0	3.9			
2	LA	14	15	16	17	18	19	20	21		90
		3.90	4.0	3.95	3.9	3.91	3.9	4.1	4.1		
			0	6			0	2			
3	SA	8	9	10	11	12	13				80
		3.97	3.9	3.90	3.9	4.19	4.1				
			1	2			4				
4	DU	19	18	14	2	1					80
		3.90	3.9	3.90	4.1	4.18					
			1		0						
5	IT	11	9	17	15						79
		3.92	3.9	3.96	4.0						
			1		0						
6	ST	13	12	7	6	3					80
		4.14	4.1	3.93	4.0	3.78					
			9		0						

The Table VII and Graph 7 indicates the percentage of effectiveness of the six aspects (Koole's aspects) of mobile learning technology as assessed by the teachers ranges from 78% to 81% and based on the assessments of teachers, it can be concluded that Social technology (81%) is the most effective learning aspect, followed by Learner aspect and Device usability (79%), Device aspect, Social aspect and Interaction technology (78%).of mobile learning

technology. The Table II and graph 7 shows the percentage of each aspect., It can be calculated ,as sum of mean of each parameter and divided by highest scale

SL. NO.	Social Technology	M	SD
3.	Mobile Learning technology to provide <b>adaptive learning</b> environment	3.78	1.055
6.	Mobile phones or wireless devices can increase students <b>interest in learning</b>	4.00	0.963
7.	Using mobile phones or wireless devices is <b>easy in learning</b>	3.93	0.895
13.	Mobile Learning Technology is <b>User- friendly</b>	4.14	0.904
12.	Mobile Learning Technology is <b>easy to use</b> while travelling by bus/car/van/train	4.19	0.858

rating of parameters in each aspect,-when multiplied by 100 it gives the percentage of each aspect.



Graph 7 Effectiveness of Mobile learning Technology

#### A. Reliability Analysis

The data can be validated by exploratory factor analysis (EFA) and principal component analysis (PCA) method. The results were analyzed and considered as 21 parameters and identified 6 variables on three aspects. The parameters each aspect it has represented by Device aspect, Social aspect and Learner aspect figure 5 shows the research method for student's performance test model.

**Device Aspect:** In the device, seven parameters factor ranging from 0.525 – 0.890, mobile devices are easy to communicate, easy to get feedback, more privacy, convenient to watch a video lesson and an adaptive learning system.

**Social Aspect:** In the Social aspect, six parameter factor ranges from 0.556 – 0.705. In the social aspect mobile learning was found to be easy to use while travelling, user friendly, learners feel convenient to carry their data and access anytime, anywhere.

S. No .	Rotated Component Matrix		Cronbach's Alpha	Mean Ranks	Chi-square	Sig
	1	2				
1.		0.832	0.602	4.29	61.81	0.002
2.		0.890		4.07		
3.		0.601		3.54		
4.	0.750			4.17		
5.	0.768			4.16		
6.	0.565			4.03		
7.	0.525			3.75		
<b><math>\alpha</math></b>	<b>0.553</b>	<b>0.585</b>				
8.	0.705		0.745	3.47	67.676	0.000
9.	0.703			3.32		
10.	0.653			3.31		
11.	0.671			3.29		
12.	0.688			3.88		
13.	0.556			3.74		
<b><math>\alpha</math></b>	<b>0.745</b>					
14.		0.804	0.706	4.28	37.720	0.000
15.		0.702		4.53		
16.	0.650			4.47		
17.	0.628			4.55		
18.	0.684			4.26		
19.	0.626			4.29		
20.	0.707			4.84		
21.	0.712			4.77		
<b><math>\alpha</math></b>	<b>0.678</b>	<b>0.588</b>				
<b>Overall Reliability</b>			<b>0.859</b>			

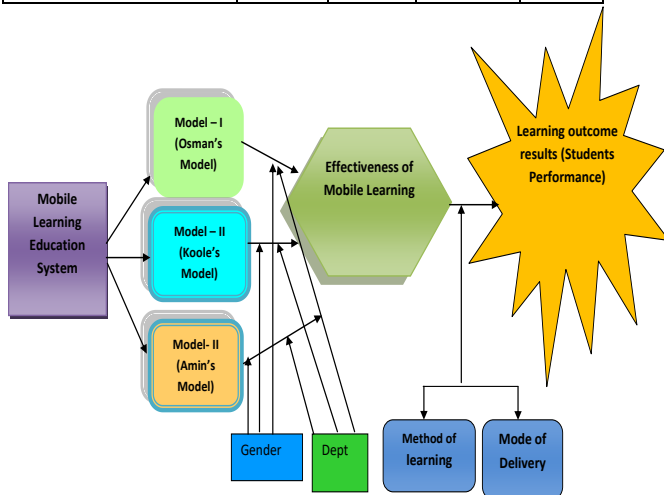
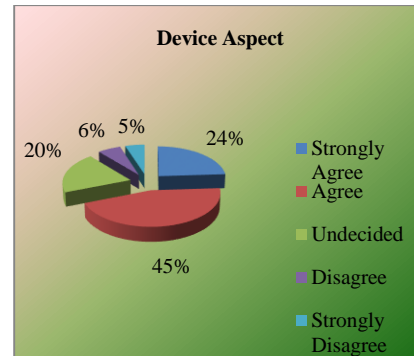


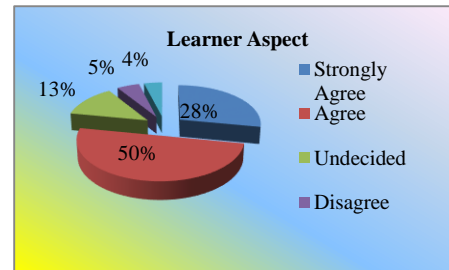
Figure 5 Research Method for Students Behavior Performance Model

**Learners Aspect:** In the learner aspect, eight parameters factor ranges from 0.626 – 0.804, usage of video lesson in mobile learning, motivates the students to learn and unlimited time and location, alternate or supplemental source of learning and self study.



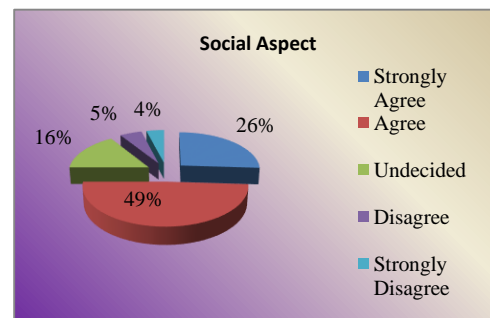
Graph 8 Responses of Device Aspect

Graph 8 shows overall responses on Device aspect 31% of students strongly agreed, 47% agreed, 15% of students were undecided, 5% and 4 % disagree and strongly disagree.



Graph 9 Responses of Learner Aspect

Graph 9 shows that the overall responses on Learner aspect, 33% of students strongly agreed, 43% agree, 16% of undecided, 5% disagree and 3% strongly disagree.



Graph 10 Responses of Social Aspect

Table VIII Cronbach's Alpha value of mobile learning aspects

Graph 10 shows that overall responses on Social aspect 32% of students were strongly agreed, 46% agreed, 15% undecided, 4% disagree and 3% strongly disagree.

Table IX Students for pre and post test results

The reliability analysis was carried out by Cronback's alpha method for each aspect, as follows:

The statistical results analysis was found large effect size is greater than 0.80 for all experimental groups shown in the Table VIII. From this results the student performance would increased through mobile learning, third objective has proved from these effect size results. From the factor analysis loaded twenty one questionnaire indicators into three aspects, indicators 1-7, 8-13 and 14-21 respectively. In the first aspect two components has been extracted, the alpha value is represented by 0.602 consistency of this component, in the second aspect extracted only one component alpha value is 0.745 it has high internal consistency and the third aspect extracted two components represents the alpha value is 0.702 representing a consistency of this component. The second objective is concluded that all the three aspects are high internal consistency and effective parameters in mobile learning.

#### B. Correlation Analysis

The correlation coefficient between all six aspects Table X shows that the correlation coefficient values significance at 1% level.

Table X Correlation Analysis of Mobile Learning Aspects

	DA	LA	SA	DU	IT	ST
DA	1	0.631**	0.627**	0.654**	0.621**	0.813**
LA	0	1	0.705**	0.653**	0.792**	0.618**
SA	0	0	1	0.597**	0.764**	0.743**
DU	0	0	0	1	0.518**	0.527**
IT	0	0	0	0	1	0.564**
ST	0	0	0	0	0	1

The correlation coefficient between Device Aspect (DA) and Learner Aspect (LA) is 0.631, indicates 63% positive relationship, DA and Social Aspect (SA) is 0.627, indicates 63% positive relationship, DA and Device Usability (DU) is 0.654, indicates 65% positive relationship, DA and Interaction Technology (IT) is 0.621, indicates 62% positive relationship, DA and Social Technology (ST) is 0.813, indicates 81% positive relationship, LA and SA is 0.705, indicates 71% positive relationship, LA and DU is 0.653, indicates 65% positive relationship, LA and IT is 0.792, indicates 79% positive relationship, LA and ST is 0.618, indicates 62% positive relationship, SA and DU is 0.597, indicates 60% positive relationship, SA and IT is 0.764, indicates 76% positive relationship, SA and ST is 0.743, indicates 74% positive

Score	Pre-Test			Post-Test		
	CG	EG1	EG2	CG	EG1	EG2
00-04	22	12	14	0	0	0
05-09	139	125	121	24	0	0
10-14	201	230	222	197	29	13
15-19	127	124	135	171	213	137
20-24	17	15	14	105	195	249
25-30	0	0	0	9	70	107
Mean	11.71	11.94	12.03	16.07	19.77	21.55
SD	3.563	3.431	3.513	3.77	3.956	3.465
Students Pre-test marks – paired t-test value, Cohen's d						
	Mean Diff	't' value	Cohen's d	Effect Size	Sig	
CG EG1	0.23	7.934	0.70612	0.33292	0.640	
EG1 EG2	0.09	2.50	0.225	0.11057	0.543	
CG EG2	0.32	5.443	0.48442	0.2225	0.764	
Students Post- test marks- Paired – t-test value & Cohen's d						
	Mean Diff	't' value	Cohen's d	Effect Size	Sig	
CG EG1	3.70	43.898	3.907	0.890	0.000	
EG1 EG2	1.78	29.748	2.648	0.798	0.000	
CG EG2	5.48	75.870	6.75	0.959	0.000	

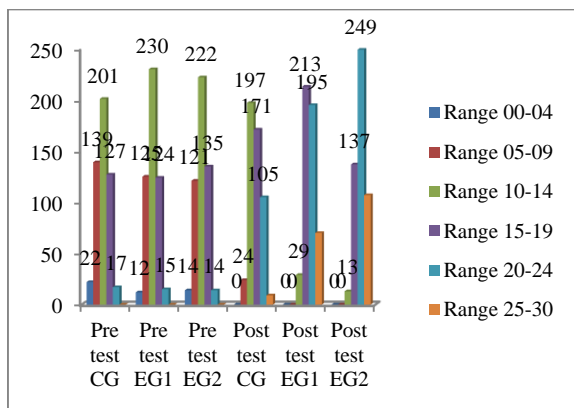
relationship, DU and IT is 0.518, indicates 52% positive relationship, DU and ST is 0.527, indicates 53% positive relationship, IT and ST is 0.564, indicates 56% positive relationship, The correlation analysis of effectiveness of the six aspects of mobile learning technology as assessed by the students shows a positive correlation and **hence it indicates that when effectiveness of anyone aspect increases, the effectiveness of other aspect also tend to increase.**

The strength of a relationship between two aspects is indicated by the absolute value of the correlation coefficient. The correlation coefficient between Device Aspect and Social Technology has a high absolute value of 0.813. **Therefore, the relationship between Device Aspect and Social Technology is stronger than the relationship between other aspects.** The correlation between Device Usability and Interaction Technology has a low absolute value of 0.518. **Therefore, the relationship between Device Usability and Interaction Technology is weaker than the relationship between other aspects of mobile learning technology.** Students widely accepted Device Aspect and Social Technology in mobile learning.

Table IX shows the learning outcome of students from control group (CG) (conventional learning), experimental group1 (EG1) (E-learning) and experimental group2 (EG2) (M-learning) pre-test conducted between groups is almost similar. The mean performance of control group is 11.71 and the experimental groups are 11.94 and 12.03. In post test of control group the learning outcome observed a mean of 16.07. Performance of students in experimental



groups after the post test showed remarkable improvement. The mean value obtained by the experimental group1 (E-learning) and group2 (M-learning) are 19.77 and 21.55. The mean value of student's performance shows that the mobile learning is interesting improvement from students learning. The observed from student's behavior performance in pre test and post test results, since significance is less than 0.01, the null hypothesis is rejected at 1 level of significance. Hence it is concluded that there is a significant difference in the acquisition of information by students taught through the video lesson on mobile learning over electronic learning and conventional learning. The first objective is concluded that mobile learning is effective than e-learning and conventional learning.



Graph 11. Students Learning Outcome of CG, EG1 & EG2

#### IV CONCLUSION

The mobile learning system is easy to carry being weightless and cost-effective when compared to other mediums which are widely accepted by academic administrators, teachers, and students. Students carry a lot of books to attend class and carry the same during their vacations if they want to complete the syllabus. In advanced technology, learners can carry digital form of data which is easy to access and convenient to go head anywhere, anytime, anyplace, any data on any network and on any wireless device. By using this new learning system the students can get more marks which is agreed by most of the teachers. The impact is more when students are shown the lessons in the video before they attend the class; secondly, as it was the second feed the memory level is more when compared to other modes where mobile phone operation is the easiest form which even a rural uneducated people can easily learn as almost all people are aware of mobile phone operation across the globe. Students repeatedly watch the lesson the impact is more and learning is easy for them. If students altogether discuss the theme with mobile format more

reach is seen among the students. Even then students and teaches strongly feel that mobile learning is a good additional or supplemental source of learning, teachers are the main source of learning which cannot be turned a leaf and accepted by all walks of people across the globe. Finally research study results were concluded that from each aspect parameters to the concept of mobile learning system in education is the alternate or supplemental source of learning, self study and the mobile devices are user-friendly, convenient to carry their data and convenient to access information anytime, anywhere, any data, any network on any wireless devices. Current research study has focusing on Ubiquitous learning for engineering students and for developing the video lessons for all other disciplines and can be implemented into wireless handheld devices using 5G/Beyond 5G technology.

#### REFERENCES

- Cronbach I.J (1951), Coefficient alpha and the internal structure of test. *Psychometrical*, 16, 297-334.
- Devinder Singh & Zaitun A.B., "Mobile Learning In Wireless Classrooms", *Malaysian Online Journal of Instructional Technology (MOJIT)*, August 2006, ISSN: 1823- 1144 Vol.3, No.2, Pages 26-42.
- Dr. Fahad N. Al-FAHAD, 'Student's Attitudes and Perceptions towards the effectiveness of Mobile Learning in King Saud University, Saudi Arabia', *The Turkish Online Journal of Educational Technology –TOJET* April 2009 ISSN 1303- 6521 volume 8 issue 2 Article 10
- Farooq U. Shafer, W., Rosson, M.B. & Carroll, J.M (2002). *M- education: bridging the gap of mobile and desktop computing*. In *IEEE international workshop on wireless and mobile technologies in education (WMTE'2002)* pp.91-94
- Hair, J. F Anderson, R.E., Tatham, R.L., & Black, W.C., (1998). *Multivariate Data Analysis*. 5<sup>th</sup> ed. Upper Saddle River, New Jersey; Prentice – Hall
- Hemabala, J, Suresh ESM, "The framework design of Mobile Learning Management System, *International Journal of computer and Information Technology*, Volume 01, Issue 02, November 2012
- J. Hemabala, ESM Suresh (2015), "Effectiveness of mobile learning using video lessons and analyzing the performance of undergraduate engineering students", *International Journal of Advance Research In Science and Engineering, IJARSE*, Vol.4, Special Issue 901), March 2015, ISSN – 2319-8354(E)

- Kotrlik, J.W. &Williamms. H.A. (2003). *The incorporation of effect size in information technology, Learning and performance research. Information Technology, Learning and Performance Journal*, 21(1) 1-7
- Kwang B. Lee, Raied Salman, 'The Design and Development of Mobile Collaborative Learning Application Using Android' *Journal of Information Technology and Application in Education*, (JITAE), vol. 1 No.1, 2012 PP-1- 8, World Academic Publishing.
- Luvai F. Motiwalla, "Mobile learning: A framework and Evaluation", *Computer & Education* 49 (2007) 581-596 available online at [www.sciencedirect.com](http://www.sciencedirect.com)
- Marguerite L.Koole- *A Model for Framing Mobile Learning-(FRAME- Framework Rational Analysis Mobile Education)*, Published by Athabasca University Press, 2009
- Paul Williams and Mary J. Granger, "Effectiveness and Acceptance of Mobile Learning", *Proceedings of the AIS SIG-ED IAIM 2008 conference*.
- SahilWendesonSahilu, Wan Fatimah Wan Ahmad, And Nazleeni Samiha Haron, 'Development and Usability Evaluation of Platform Independent Mobile Learning Tool (M-LT)', *World Academy of Science, Engineering and Technology* 80 211.

### STUDENTS DESCRIPTIVE STATISTICS

SA – Strongly agree, A- Agree, UN – Undecided, D- Disagree, SD- Strongly disagree

	Parameters / Indicators	SA %	A %	Un %	D %	SD %	Mean	SD
1	Mobile phones or a wireless device is <b>easy to communicate</b> with teachers and other students.	164 (32%)	270 (53%)	72 (15%)	0	0	4.18	0.659
2	Mobile phones or wireless devices are simple and <b>easy to get feedback</b> from learners and teachers	137 (27%)	281 (56%)	88 (17%)	0	0	4.10	0.660
3	Mobile Learning technology can provide an <b>adaptive learning</b> environment	139 (28%)	199 (39%)	98 (19%)	56 (11%)	14 (3%)	3.78	1.055
4	Mobile phones or wireless devices offers <b>more privacy</b> than other learning devices	169 (33%)	247 (49%)	66 (13%)	13 (3%)	11 (2%)	4.09	0.870
5	Watching video lesson in mobile phones is more <b>convenient</b> when compared to television	193 (38%)	204 (40%)	44 (9%)	48 (10%)	17 (3%)	4.00	1.074
6	Mobile phones or wireless devices can be increased students <b>interest in learning</b>	171 (34%)	219 (43%)	74 (15%)	31 (6%)	11 (2%)	4.00	0.963
7	Using of mobile phones or wireless devices is <b>easy in learning</b>	130 (26%)	255 (50%)	94 (19%)	12 (2%)	15 (3%)	3.93	0.895
8	Mobile Learning Technology has <b>greater flexibility</b> where and when learning needs are present.	175 (34%)	197 (39%)	94 (19%)	24 (5%)	16 (3%)	3.97	1.004
9	Learners feels <b>convenient to carry</b> their data with them to almost all the places	136 (27%)	243 (48%)	89 (18%)	21 (4%)	17 (3%)	3.91	0.952
10	Mobile Learning technology is <b>affordable</b> for every one	136 (27%)	236 (47%)	93 (18%)	27 (5%)	14 (3%)	3.90	0.952
11	Mobile Learning Technology is <b>convenient to access</b> information anywhere, at any time , any place , any network on any data	126 (25%)	268 (53%)	75 (15%)	20 (4%)	17 (3%)	3.92	0.924
12	Mobile Learning Technology is <b>easy to use</b> while <b>travelling</b> by bus/car/van/train	197 (39%)	243 (48%)	42 (8%)	13 (3%)	11 (2%)	4.19	0.858
13	Mobile Learning Technology is <b>User-friendly</b>	197 (39%)	222 (44%)	59 (12%)	17 (3%)	11 (2%)	4.14	0.904
14	Usage of video in classroom <b>motivates</b> the students to learn	175 (34%)	185 (37%)	84 (17%)	44 (9%)	18 (3%)	3.90	1.083
15	Video lesson is more <b>useful for the teachers</b> to teach the subject	170 (34%)	225 (44%)	72 (14%)	20 (4%)	19 (4%)	4.00	0.988
16	Mobile learning technology will help to adopt <b>their learning style</b>	174 (34%)	198 (39%)	85 (17%)	33 (7%)	16 (3%)	3.95	1.028
17	Mobile Learning Technology can bring <b>new opportunities</b> of learning	173 (34%)	202 (40%)	86 (17%)	28 (5%)	17 (3%)	3.96	1.018
18	Learners can revise their lessons in an easy method through mobile learning system with <b>unlimited time and location</b>	136 (27%)	231 (46%)	110 (22%)	17 (6%)	12 (2%)	3.91	0.910
19	Usage of video lessons in classroom is <b>easy to understand</b> for students.	151 (30%)	228 (45%)	70 (14%)	37 (7%)	20 (4%)	3.90	1.037
20	Mobile Learning Technology is as additional or <b>Supplemental source of learning</b>	196 (39%)	217 (43%)	61 (12%)	20 (4%)	12 (2%)	4.12	0.931
21	Mobile Learning Technology can be used for <b>self study</b> or individualized learning	181 (36%)	232 (46%)	68 (13%)	13 (3%)	12 (2%)	4.10	0.894