EFFECTS OF COLLABORATIVE M-LEARNING AND INDIVIDUAL E-LEARNING ON THE ACADEMIC PERFORMANCE, ATTENTION BENEFIT AND CONSISTENCY OF LEARNING

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ABSTRACT
This study was a pre-test post-test non equivalent quasi-experimental design where both the experiment groups pre-tested.after an initial training, Experiment group 1 practiced through collaborative mobile learning for 3 months with 30-minutes session each day. Meanwhile, the experimental group 2 practiced individual e- learning with similar time frame and duration of learning and practice. The objective of the study was to study the effect of collaborative M-learning and individual E-learning on the academic performance, attention benefit and consistency of learning of the learners over the traditional approach of learning. To conduct the experiment, the researcher has selected 125 university students out of three Indian universities. The sample students were randomly selected from MA (Education) odd semester, those were the targeted population. Out of more than 10,000 PG students of five universities of Assam, the researcher has randomly selected odd semesters from three education departments from three Universities. It was found that collaborative mobile learning and individual e-learning provides better academic performance among the students over the traditional approach. It was generalized that new method creates awareness among the learners over traditional approach. In this 21st century learners are thinking freedom of learning which is beyond normal classroom situation. That is why students were performed better in collaborative m-learning and individual e-learning but not in a traditional mode.
Key words: Academic performance; attention benefit; collaborative m-learning; consistency of learning, and individual e-learning

Origin of the research problem: An introduction
21st century, called as the 'Information Age', brought along with itself an era where computer technologies develop rapidly and become widespread among all levels of the community. Alkan, 2002 and Isman, 2006 stated that the 2000's are based on the scientific and technological developments because of their being scientific and technological age, that scientific and technological developments of the 2000's increase global, national and individual necessities. Learners require new structuring in education and that education has 1) Science, 2) Technology and 3) Application dimensions. However, Mobile learning is a candidate system to fill the deficiency of former distance learning systems with mobile technologies as well (Inceoglu, 2006). Harris, 2001 defined mobile learning as an point interacted to provide mobile computer technologies and internet-based learning to be 'everytime, everywhere' learning experience. Grosso, 2003 defined mobile learning as an obtainment of every kind of information and ability by using mobile technologies. Mobile learning is a type of learning which appeared as a conclusion of co-evaluation of 'mobile informatics' and e-learning fields, provides accession to e-learning content independently of a specific location, utilization of services created dinamically and communication with others. Mobile learning can be used to support traditional learning (Wang, 2009) as well as distance learning (Mutlu et al., 2000). Mutlu and others stated, laptops, tablet computers, pocket PCs with phones, pocket PCs, portable media players, MP3 players and smart phones exist within mobile informatics devices. Georgiev and others stated that mobile learning is a part of e-learning, m-learning should provide learning without any physical network connection every time and everywhere, communication technologies of GSM, WAP, GPRS, Bluetooth, IEEE 802.11 are used by mobile devices. M-learning is a distance learning model which is designed to meet education needs with the help of mobile devices. Thanks to m-learning, there appeared an education model which can be very beneficial for students with providing the opportunity of education independent of time and environment.

Collaborative M-learning academic performance, attention benefit and consistency of learning
Mobile collaboration in education and within organizations is a challenging task. Rezchav & Wu (2015) studied the effect of Mobile collaborative learning and found the relationships between the learning process (i.e., peer-influenced learning and individual cognitive absorption) and learning impact (i.e., satisfaction, perceived understanding and performance), especially the role of individual learning in groups. Significant differences were found between content delivery types in both individual and group learning modes in regard to how the learning

process influences learning impact. Ke & Hsu(2015) examined the effectiveness of smartphone-based, AR artifact creation and other mobile collaborative learning activities in reinforcing the technological pedagogical content knowledge (TPACK) of pre-service teachers. The study indicated that mobile AR artifact creation with peer discussion tended to better promote the componential competencies of technological pedagogical knowledge (TPK) and the integrative development of technological pedagogical content knowledge (TPACK), whereas mobile media seemed to better support the content knowledge (CK) development. Glackin, Rodenhiser & Herzog (2014) examined the effect of mobile device use on student learning. Findings show that eBooks and mobile device use in the classroom have a significant impact on the student's educational experience. Wald, Li, & Draffan (2014) found that mobile enhancements to Synote, the freely available, award winning, open source, web based application that makes web hosted recordings easier to access, search, manage, and exploit for all learners, teachers and other users. Taleb, Ahmadi, Musavi(2014) found that Mobile technology opens the door for next generation and let the learning occurs in anytime, anywhere and to be influence in a variety of learning contexts. ANOVA was used to examine the effect of teachers' educational level and teaching experience on the effect of M-leaning on Mathematics learning. The results revealed that in teachers' viewpoint, mobile learning has a positive effect on motivating the students towards Mathematics. In addition, there is a positive and significant relation between using mobile learning and students' participation in Mathematics. Moreover, the relation between mobile learning and diversity of training methods of teachers is positive and significant. The findings of this survey show that teachers of Mathematics are interested in using the mobile technology in Mathematics learning. Miguel, Caballé, Xhafa, Prieto, Barolli(2015) found that mobile collaborative learning is an emerging educational model devoted to providing the learner with the ability to assimilate learning anytime and anywhere. Dai, Chen, Rau(2015)found students' learning, explore the problem-based learning effects, refine the history course, and reinforce the teacher's professional development. Ting & Tai (2013) found collaborative mobile learning practices enhanced learners' social interactions are synthesized with the subject content to represent the instructional information. In the above literatures, it is not clarified, whether collaborative mobile learning has certain effect on academic performance, attention and consistency of learning. That is why the present study undertaken this independent variable to assess its impact on the dependent variables like; academic performance, attention and consistency of learning.

Individual E-learning academic performance, attention benefit and consistency of learning

Tarhini, Hone & Liu (2014) studied the effects of individual differences on e-learning users' behaviour in developing countries and found individual differences as the moderators (e.g., age, gender, experience, educational level) in an extended Technology Acceptance Model (TAM). Liao, Yu, & Yi(2015)found a statistically significant moderating effect of two contingent variables, gender, job title and industry, on the relationship between predictors and e-learning system behavioral intention. The results suggested that a serious consideration of contingent variables is crucial for improving e-learning system behavioral intention. Hu , Hui , Clark , Milton , Ma and Tam(2005) found that learning effectiveness (measured objectively and subjectively) associated with e-learning is significantly higher than that observed in the conventional classroom. Subjects supported by e-learning are also more satisfied with the course contents than their conventional classroom counterparts. Personalized learning support appears to be stronger in e-learning than in the conventional classroom setting but the difference is not significant statistically.Oye, Iahad, Madar, and Rahim(2012) examined the application of e-learning model to explain acceptance of the e-learning technology within the academic settings. Individuals' intention to use an e-learning, positive perception on e-learning use is crucial. Linear regression analysis verified that, while attitudes have influence on intention to use, the actual e-learning use has significant effect on students' academic performance. E-learning use is associated with increased students' academic performance. Liao, Yu,& Yi(2015)showed that individual-level e-learning(performance expectations, effort expectancy, perceived behavioral control), and group-level variables (incentive, social influence) have a positive effect on behavioral intention. The incentive has an effect on behavioral intention through the moderating role of manager influence. Literatures are not clarified, whether individual e-learning has certain effect on academic performance, attention and consistency of learning. That is why, the present study undertaken this independent variable to assess its impact on the dependent variables like; academic performance, attention and consistency of learning.

Research questions

Whether M-learning and E-learning has certain effect on the academic performance, attention, and consistency of learning or not. If so, then what extent the collaborative M-learning and individual e-learning has certain impact on the academic performance, attention, and consistency of learning? Does the collaborative M-learning is better effective over the Individual E-learning on the academic performance, attention, and Consistency of Learning? If so, then what extent and how frequent?

Objective

To study the effect of collaborative M-learning and individual E-learning on the academic performance, attention benefit and consistency of learning of the learners over the traditional approach of learning.

Hypothesis

There is no significant effect of collaborative M-learning and individual E-learning on the academic performance, attention benefit and consistency of learning of the learners over the traditional approach of learning.

Methodology

Population and sample

The present study conducted among the university students to assess the effectiveness of collaborative mobile learning and individual e-learning on the academic performance, attention and consistency of learning of the university students. Collaborative m learning and individual e-learning was the independent variables. Similarly academic performance, attention & consistency of the learning were the dependent variables. To conduct the experiment, the researcher has selected 125 university students out of three Indian universities. The sample students were randomly selected from MA (Education) odd semester, those were the targeted population. Out of more than 10,000 PG students of five universities of Assam, the researcher has randomly selected odd semesters from three education departments from three Universities.

Design of the study

This study was pre-test post-test non equivalent Quasi-experimental design where both the experiment groups pre-tested and after an initial training, experiment group 1 practiced through collaborative mobile learning for 3 months with 30-minutes session each day. Meanwhile, the experimental group 2 practiced individual e- learning with similar time frame and duration of learning and practice. The present study was a pre test post test quasi experimental design where the samples were selected on the basis of their interest of participation in the experiment and few students were randomly selected for the experimental purpose. In this design there were two experimental groups and one control group was learnt through collaborative mobile learning on philosophy of education. Group 2 was learned through individual e-learning model. Before instruction pre test and attention test was administered to each group. After three months intervention, both the experimental and the traditional group appeared attention test, and post-test, and after one month a stability test was administered to both the group. To minimizing the effect of ***extraneous variables***, the researcher has used ***ANCOVA*** and ***simple random sampling techniques*** and the findings of the study was generalized upon the whole population. See design of the study on box 1.

Box 1 Design of the study

Sl. no	Group	Pre Test	Treatment	Post Test	Stability test
1	Collaborative M-Learning Group (n=42)	Pre-test Attention Test	Collaborative M-Learning	Post Test Attention Test	Stability test
2	Individual E-learning Group (n=40)	Pre-test Attention Test	Individual E-learning	Post Test Attention Test	Stability test
3	Traditional Approach Group (n=43)	Pre-test Attention Test	Traditional Lecture	Post Test Attention Test	Stability test

TOOLS

In the present study three tools were used. These were Learning Attention Rating Scale, Achievement Test and Stability test.

1) Learning Attention Rating Scale

Learning Attention Rating Scale (Jena and Pokhrel,2015) has four basic areas: immersed, diffuse, objective and narrow, and all the four areas contain 20 items means each area has 5 items. The immersed area assessed

learners' integration, optimization of functions, physiological normalization, creativity, love, spiritual experiences. Similarly diffused area of the attention assessed well learned behavior, multiple modalities and wide field of knowledge. Objective area of the attention scale was assessed learners judge mental states, century and perceptual bias and learners' intention of learning. The fourth area of the scale was narrow. In this area the items were assessed learners' states of interest, diminished time sense and oneself consciousness. In all the four areas items were equally distributed having five point options.

These were definitely falls:
(1) Falls for the most part
(2) Sometimes true, sometimes false
(3) True for the most part and
(4) Definitely true
(5) Immersed area of the question found in item number 1,5,9,13,17, diffused area of the items were 2,6,10,14,18; objectives area of the items were 3,7,11,15 ad 19. Similarly narrow area of the questionnaire represent in item number 4, 8,12,16,20. The pilot study was conducted to find out the effect of factors through factor analysis. Similarly the content validity (CVR=.78) was calculated. The reliability coefficient was r=.85. Each individual took 10 minutes to response all the items. The detail of the tool specification is given in box 2.

Box 3.2 Learning Attention Tool specification

Standardization	
Material	Scale has four basic areas: immersed, narrow, diffuse All the four areas contain 20 items means each area has 5 items. The immersed area assessed learners' integration, optimization of functions, physiological normalization, creativity, love, spiritual experiences. Similarly diffused area of the attention assessed well learned behavior, multiple modalities and wide field of knowledge.
Scoring	01 point for each correct response of the item
Administration	Flexible
Norms	Percentile norms available
Reliability	
Internal consistency (Cronbach Alpha)	r=.85
Split-half	r=.81
Validity	The validity coefficients, with English version of this instrument was estimated on a sample of 200 students of PG classes
Criterion: concurrent	The concurrent validity of the tool (Cronbach, 1990; Cronbach & Meehl, 1955) has been supported in the form of positive correlations
Construct : convergent	The construct validity of the tool (Cronbach, 1990; Cronbach & Meehl, 1955) has been tested in several studies, showing moderate correlations (0.40-0.65)
Usability	
Availability	Sample available to administer the tool
Ease of use for tester	no
Range of use	no
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Achievement Test

Jena and Pokhrel (2015) has developed an achievement test on philosophy having 25 multiple choice items. Each item has four options and out of this one correct response and other three are good distracter. The pilot study was conducted to calculate the content validity ratio/reliability. The researcher has followed all the steps to standardize the tool. In planning stage the researcher has planned and prepares the blue print. In the preparation stage more than two times multiple choice questions were prepared and supervised by six experts of education and philosophy departments. The content validity ratio was established and it was found .83. In the secondary try out

item analysis was calculated and in the final try out stage the reliability was established and found .81. Each individual took 10 – 12 minute to response all the items (See Appendix-II). The detail of the achievement test specification is given in box 3.

Box 3 Achievement Test specification

Material	Achievement test on philosophy having 25 multiple choice items. Each item has four options and out of this one correct response and other three are good distracter.
Scoring	1 point for each correct response
Administration	Flexible
Norms	Percentile norms available
Reliability	
Internal consistency	r=.81
Split-half	r=.83
Validity	
Content	Lawshe(1975) developed a formula termed the content validity ratio:CVR=(n_e—N/2)/(N/2) where CVR = content validity ratio n_e =number of SME panelists indicating "essential" N= total number of SME panelists. This formula yields values which range from +1 to -1; positive values indicate that at least half the SMEs rated the item as essential. The mean CVR across items may be used as an indicator of overall test content validity. Here, the CVR=.83
Usability	
Availability	Sample available to administer the tool
Ease of use for tester	no
Range of use	no
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Consistency Assessment Test

This tool is just the parallel form of achievement test the researcher has followed all the procedures to develop the standardized test. The Consistency Assessment Test (Jena and Pokhrel, 2015) has developed an achievement test on philosophy having 25 multiple choice items. Each item has four options and out of this one correct response and other three are good distracter. The pilot study was conducted to calculate the content validity ratio/reliability. The researcher has followed all the steps to standardize the tool. In planning stage the researcher has planned and prepares the blue print. In the preparation stage more than two times multiple choice questions were prepared and supervised by 6 experts of education and philosophy departments. The content validity ratio was established and it was found 63. In the secondary try out item analysis was calculated and in the final try out stage the reliability was established and found 81. Each individual took 10 – 12 minute to response all the items. The detail of the consistency assessment test specification is given in box 3.

Box 3 Consistency Assessment Test specification

Standardization	
Material	Achievement test on philosophy having 25 multiple choice items. Each item has four options and out of this one correct response and other three are good distracter.
Scoring	1 point for each correct response
Administration	Flexible
Norms	Percentile norms available
Reliability	
Internal consistency	r=.81
Split-half	r=.83
Validity	
Content	Lawshe(1975) developed a formula termed the content validity

	ratio:CVR=(n_e—N/2)/(N/2) where CVR = content validity ratio n_e =number of SME panelists indicating "essential" N= total number of SME panelists. This formula yields values which range from +1 to -1; positive values indicate that at least half the SMEs rated the item as essential. The mean CVR across items may be used as an indicator of overall test content validity. Here, the CVR=.83
Usability	
Availability	Sample available to administer the tool
Ease of use for tester	no
Range of use	no
Time limit	No time limit is given for the test. However, most of the students finish it within 10 minutes.

Procedure of Experiment

The present study examined the effects of collaborative m–learning and individual e-learning on the academic performance, attention and consistency of learning over traditional approach. To conduct the experiment, the researcher has randomly selected the samples and assigned into three groups for traditional treatment, collaborative mobile learning and individual e-learning intervention.

Experimental group I

Experimental group 1 (one) was learnt through collaborative mobile learning that is why M.A. education semester I (one) student was assigned and accordingly the researcher installed 3 months interactive packages in the mobiles of all the participants and provided them the selected courses to learn philosophy of education. Before going to start the experiment, the experimental group I students were advised to interact in the mobile with conferencing. This was the self study collaborative mobile learning where the researcher only facilitated the learners with a interval of time. Initially, the researcher advised the learners to interact every day in conferencing mode for 1-2 hours.

ACTIVITY I

Collaborative Mobile Learning: Experimental group I (n=40) was assigned collaborative mobile learning. All the participants used normal mobile phone, Tablets PC's and 3G internet packages. All the students were trend how to connect and talk through mobile conferencing. The researcher everyday connected one another with mobile conferencing applications and shared information like knowledge skill and other competences among their peers. Collaborative mobile learning was a collaborative self study where researcher was the facilitator. Collaborative mobile learning needs smart mobile phone or tablet PCs, 3G internet package and learners' technical knowledge. The contents of learning is fixed by the researcher and accordingly learners will connect their networking to share these contents for their better sharing of information understanding for developing the skills and competencies. The following contents the learning will share through their mobile networking. Box 3.5 is showing the time table of collaborative mobile learning. Before co-cooperative Mobile learning, a pre test on Philosophy of education, and an attention test will administer among the group of students. After the treatment, an attention test and a post test will administer. After two months, the researcher will administer the stability test to assess the stability of learning performance.

Experimental group II

It was assigned the individual e-learning. This participants had the laptop and through the laptop the individually learned through online the selected concept of philosophy of education. The researcher has advised the individual e-learners to read the website pages on the assigned concept for 1 hour every day. However, the content syllabus and duration of the study provided equal to both the experimental group.

ACTIVITY II

Individual e-learning was assigned to 3rd semester students of M.A. education of an Indian University. These participants had their own Laptop, Desktop and 3G Internet connection. The researcher for the experimental purpose provided 3 months internet packages for their individual data packages. Before instruction, the researcher has provided the contents and curriculum of study to the participants. In this way the researcher continued three months of self study on philosophy of education regarding the contents given below in the table no.

Individual e-learning needs laptop, Dextop or tablet PC, 3G internet package and learners' technical knowledge. The researcher fixes the contents of learning, and accordingly individual learner will learn online the e-learning materials or they will learn the downloaded e-contents. There is no need to share the knowledge, skill, and competency among the peers. Table 2 is showing the time-table of Individual e-learning. Before Individual e-learning a pre test on Philosophy of education and attention test will administer among the students and after the treatment an attention test and a post test will administer. After two months, the researcher will administer the stability test to assess the stability of learning performance. Box 3.6 is showing the time table of individual e-learning.

Traditional Approach Group

No modern/approaches were exposed to the traditional group students except traditional lectures on these concepts.

Procedure of Data collection

According to the design of the study the researcher has assigned semester 1 of M.A. to collaborative mobile learning and 3rd semester of M.A. participants to individual e-learning. Before, instruction and pre test of philosophy of education assigned to both the group. Along with this an attention test was administered to both the groups. All the participants of the collaborative mobile learning group took 20minutes to respond the pre test and attention test. Similarly, all the individual participants of individual e-learning took 20-21 minutes to response the pre test and attention test. After collecting these pre test and attention test from the participants of collaborative mobile learning group and individual e-learning. After 3months collaborative m-learning the researcher again administered the post test and attention test to assess learners' performance and attention in their learning. These questionnaires like post test and post attention test was collected. After 3months the researcher again administered consistency assessment test to assess learners' consistency in the learning.

Analysis and result

There is no significant effect of collaborative M-learning and individual E-learning on the academic performance, attention benefit and consistency of learning of the learners over the traditional approach of learning.

Table 1 The mean S.D of collaborative m-learning individual e-learning on the academic performance attention benefit and consistency of learning of the learner over the traditional approach

		N	Mean	Std. Deviation
Post-test	Collaborative M learning	42	23.64	.727
	Individual E learning	40	20.53	3.226
	Traditional Approach	43	14.19	1.651
	Total	125	19.39	4.506
Post-attention	Collaborative M learning	42	18.98	2.006
	Individual E learning	40	18.30	2.472
	Traditional Approach	43	10.09	1.784
	Total	125	15.70	4.588
consistency	Collaborative M learning	42	22.50	.890
	Individual E learning	40	20.13	2.980
	Traditional Approach	43	8.28	1.368
	Total	125	16.85	6.591

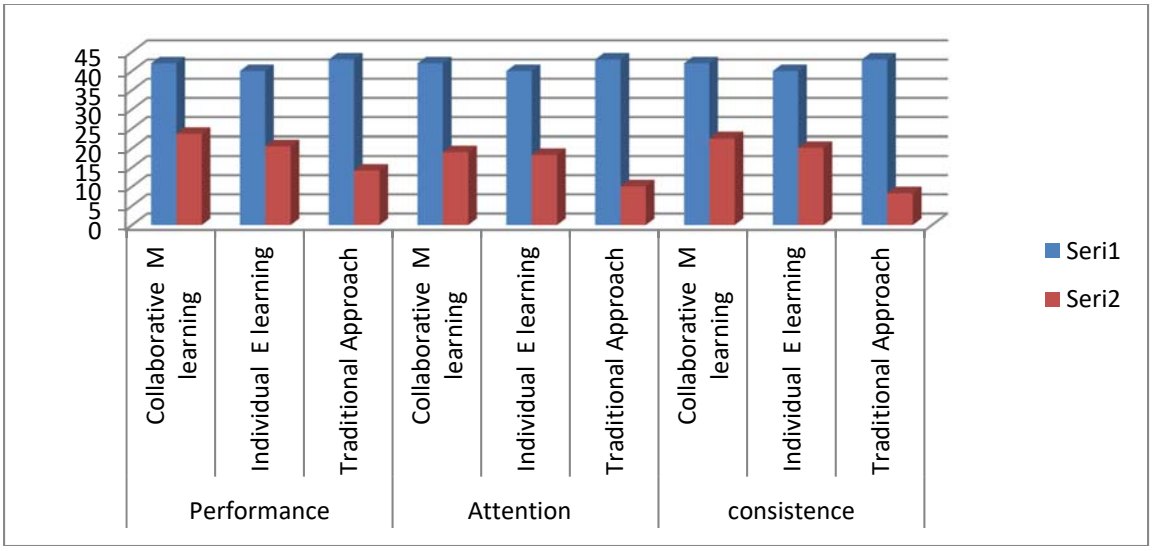
Table 1 analyzed the mean and S.D of collaborative m-learning and individual e-learning on the academic performance attention benefits consistency of learning over the traditional approach. Collaborative m-learning performance (m=23.64 ± .727) was surprisingly better over individual e-learning (20.53 ± 3.226) and traditional approach (m=14.19 ± 1.651). Similarly the post attention benefit was better in collaborative m-learning (m=18.98 ± 2.006) was better over individual e-learning and traditional approach. The consistency of collaborative m-learning m=22.50 ± .890) was surprisingly better over individual e-learning and traditional approach.

Table 2 ANOVA for collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach

		Sum of Squares	df	Mean Square	F	Sig.
Posttest	Between Groups	1975.663	2	987.831	222.300	.000
	Within Groups	542.129	122	4.444		
	Total	2517.792	124			
Post-attention	Between Groups	2073.044	2	1036.522	235.484	.000
	Within Groups	537.004	122	4.402		
	Total	2610.048	124			
Consistency	Between Groups	4928.586	2	2464.293	657.107	.000
	Within Groups	457.526	122	3.750		
	Total	5386.112	124			

Table 2 reveals that there was significant difference in the methodology of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach. The academic performance among the students of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach was significant. The F-value (d*f* 2/122 222.300 P<.05) was significant. The post attention difference among the students of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach was significant. The F-value (d*f* 2/122 235.484 P<.05) was significant. Similarly, the consistency difference among the students of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach was significant. The F-value (d*f* 2/122 657.107 P<.05) was significant.

Graph 1 showing learning performance of students through different methods, attention benefit and consistency of learning of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach



Graph 1 interpreted the learning performance of students through different methods, attention benefit and consistency of learning of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach. The mean learning performance of students through different methods, attention benefit and consistency of learning of collaborative m-learning, individual e-learning on the attention benefit of learners over traditional approach. Here x-axis is based on types of learning methodology and y-axis was showed the mean consistency score of the learner.

Findings and discussion

It was found that there was significant effect of collaborative m-learning and individual e-learning on the academic performance, attention benefit and consistency of learning of the learners over the traditional approach of learning. There was no significant difference between collaborative m-learning and individual e-learning on the

academic performance of the individual attention benefit of the learners and consistency of learning of the learners.The researcher assessed the effects of collaborative m-learning and individual e-learning performance over the traditional approach. It was found that there was significant difference between the virtual learning (collaborative m-learning and individual e-learning) and traditional approach. This result was supported by (Alvarez, Alarcon & Nussbam, 2011; Kiger Herro & Prunty,2012; Chiang,Yang & Hwang, 2014; Mendoza,2014; Zheng, Yang,Cheng & Huang,2014; Fabian,Topping & Barron, 2016) but not supported or rejected by (Caballe, Xhafa & Barolli, 2015; Chen, Seilhamer, Bennet,Baller,2015; Shadiev, Hwang, Huang, Liu, 2015;Shin,Sug, Kang & Minseok,2015; Sun, Chang & Chen, 2015). In the present research work, the researcher has found collaborative m-learning and individual e-learning provided more attention benefit over the traditional approach of learning. This result was supported by (Meng,Chu & Zhang, 2004; Roxas & Uranoy, 2012; Scottman & George, 2014). It was also found that there was a significant effect of collaborative m-learning and individual e-learning on the consistency of learning of the learner over the traditional approach of learning. This result was supported by (Vogel,Kennedy,Kuan, Kwok & Lai, 2007;Wang,Shen, Novak & Pan, 2009; Lglesia,Milrad & Anderson, 2012; Jabbour, 2013; Jumoke,Oleruntoba & Blessing, 2015; Kua, Chu & Huang,2015; Reilly, Shen, Calder & Duh, 2015). It was found that there was significant effect of collaborative m-learning, individual e-learning on the academic performance attention benefit and consistency of learning over traditional approach. This result was supported by (Li & Iribe, 2010; Mahmoudi, Koushafar, Saribagloo & Pashavi, 2015) and not supported by (Iigaz, Altun & Askar, 2014).

Policy-makers should take stock of existing ICT investments and approaches, and devise strategies to complement rather than replace the current infrastructure. Policy-makers should consider the local contexts of the country or region when creating new policies or adapting existing ones, as strategies that work for one country may not be appropriate in another. Policy-makers should encourage the use of open, standards-based platforms for mobile learning applications, to increase access and streamline the development process. Policy-makers should promote cooperation between different branches of government and encourage partnerships between stakeholders from a variety of sectors and levels. Policy-makers should create or revise mobile learning policies at both the national and local levels, regardless of whether education is decentralized. National policies should provide overarching structure and guidance, while local policies direct implementation in individual districts or institutions. Policy-makers should revisit existing policies, particularly at the local level, that may be overly restrictive in regard to the use of mobile technology at schools and universities. National policies may need to be clarified or revised to give better guidance to districts and institutions. Policy-makers should ensure that mobile learning policies promote gender equality and accessibility for learners with disabilities. This effort is essential to meeting EFA goals of providing quality education to all learners worldwide. ICT is a powerful vehicle for enhancing learning, and mobile devices form an essential part of that vehicle. If current ICT strategies for education begin to include mobile devices along with digital learning materials, support for teachers, and guidelines on best practices, mobile learning will soon become an important part of education.

Conclusion

The present study was an experimental study assessed the effect of collaborative m-learning, individual e-learning on the academic performance, attention benefit and consistency of learning of t he learners over the traditional approach. In general it was found that collaborative mobile learning and individual e-learning provides better academic performance among the students over the traditional approach. It was generalized that new method creates awareness among the learners over traditional approach. In this 21st century learners are thinking freedom of learning which is beyond normal classroom situation. That is why students were performed better in collaborative m-learning and individual e-learning but not in a traditional mode. In the second objective of the research work revealed that collaborative m-learning and individual e-learning provides better attention benefit over the traditional approach. Traditional approach is teacher centered and does not attract y=the learner to listen even the lecture. But collaborative mobile learning needs learners' mobile conferencing and technology which is more attention centered than listening centered. That is why collaborative m-learning and individual e-learning provided more attention benefit over the traditional approach. If we observe the result of the study related to hypothesis 3, we can find collaborative m-learning & individual e-learning provides more consistency of learning performance among the students over the traditional approach. This is because collaborative m-learning and individual e-learning needs a student's attention, awareness, interest and which are ultimately provide better consistency of learning among the students. So, collaborative m-learning & individual e-learning has the significant rule in the world of education.

Educational Implications

The following educational implications, the researcher has developed for the world of colleagues, researchers and students.

1) Recent mobile learning is an innovative ICT to apply in the various level of education to encourage t he self reading efficiency of the learner.
2) Mobile learning is adequate for network of learning and at a short time many students could be share their experience, learning out comes and their draw backs.
3) In a self study teachers should promote to use all the learners to read through collaboration and co-operation through mobile conferencing.
4) Individual Laptop, Tablet, Smart Phone should be provide to the learners to minimize the learning kit bags.
5) Freedom should be given to the learners for self study discussion and thinking creativity.
6) Mobile conferencing is the actual method in remote and rural areas where schools are not in a common place or not to accessible to the students.
7) Internet facilities should be provided to the schools institution and that should be assessable to rural and urban areas.
8)

Recommendations of the study

The following recommendations the researcher has put in front of the world of education:

1) It needs to further study how collaborative mobile learning is applicable to elementary and secondary level.
2) The present study investigated the effect of mobile learning on learning attention, consistency and achievement but it needs further to investigate how mobile learning influence learners creativity, personality, intelligence and emotion.
3) It needs to further investigate the level of anxiety after exposed to collaborative m-learning and individual e-learning.
4) Whether mobile learning and individual e-learning is applicable in virtual learning environment if so how YouTube learning, Wikipedia learning effective over collaborative mobile learning.
5) It needs to investigate effect of collaborative mobile learning on learner attention, memory and retention of the learner.

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