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sity. The mobile learning also wiped out class time and place difficulties in learning, and utilized various instructional strategies, including accessing lessons, delivering assignment via mobile anytime and anywhere. The results revealed that there were statistically significant differences at a level of $\alpha \leq 0.05$ between the mean scores of students from the first and second experimental groups in the post achievement test and learning engagement, with the results in favor of the second experimental group that used WhatsApp. This indicated that WhatsApp application is a more effective tool in the learning and teaching of e-learning concepts than multimedia service.

Students learn best when using visual and audible words. Using photos, text and graphics together through WhatsApp which confirmed multimedia effect. The existence of interconnectedness and complementarity between the texts and the drawings presented to the learner through WhatsApp, and this confirms the basis of coherence effect. Providing necessary pictures, graphics and texts that benefit the student, and this is in accordance with the split attention effect. Dividing the content provided through mobile learning and presenting it in the simplest form, and this corresponds to the rule of cognitive load theory, which means that the memory has limited capabilities in the amount of information. Consistency with constructivist theory, which indicates that learning occurs as a result of the learner's activity and interaction with content, teacher, and peers. Creating a new environment for students to enhance the learning process through mobile learning in an attractive and interesting way that suits the interest and needs. Finally, mobile learning overcame many obstacles to traditional education, as it exceeded the limits of time and place in viewing content, which helped learners to learn according to self-speed.

Recommendations For Study

1. It is important to design class's content and activities based on mobile learning.
2. The use of the mobile learning for teaching has a positive impact on students' level of engagement and achievement due to its spread among new generation of students and provide learning outside the classroom.
3. Mobile learning should be provided due to its great spread among students, especially the new generation of them.

Suggestions For Future Study

1. Conducting a study on the impact of mobile learning in achievement and self-learning
2. Conducting a study on the impact of mobile learning in developing critical skills.
3. Conducting a descriptive study to identify students' attitudes towards using mobile learning.
4. More studies are needed to investigate the effectiveness of mobile learning on learning in other subjects.
5. A similar study to the current study should be conducted across different subjects.

study indicated that students were more involved and more engaged in the group that was taught using the WhatsApp than those who were taught by MMS, which is consistent with the findings of other studies (Jamaludin & Osman,2014); (Fulton, 2012); (Kahu, 2013); and (Dixon, 2010). This was also evident when the lecturer directed students to the activities in class, as they listened more carefully, paid attention, tried to do well and participated in the class activities. The researcher calculated the measures of association of this study. Table 9 shows the values of these transactions.

Program Efficiency

Table 8 Measures of Association

Test	Eta	Eta Square
Post-test group	.970	.94

Table 8shows the Eta squared for the total grades of the posttest for the subject of e-learning application for the study sample (.94), which is equal to 94% from the grade changes of the posttests for both study groups, in favor of the second experimental group that was taught using a WhatsApp application.

The value of the eta squared also indicates that WhatsApp explains a rate of 94% for the scores variance of the e-learning concepts of the students in the second experimental group, which is a very large variance explained by the fact they used WhatsApp. From the previous results, it is clear it rejects the null hypothesis, as the results of this hypothesis did not indicate a statistically significant difference at a level of significance (0.05) between the mean scores of the first and second experimental groups in the post-test, in favor of the average scores of the second experimental group in the two cases. In addition, the WhatsApp had a very large impact on the development of the e-learning concepts of the students in the second experimental group, compared to those in first group. The researchers attribute this to the use of WhatsApp for teaching the course e-learning concepts improved the knowledge of lessons and learning engagement, as it provided a flexible learning environment, enabling them to learn effectively, building students 'knowledge, and provided learning resources, strategies, activities and various learning tasks appropriate to students' needs and previous experiences. In light of the constructivist theory that mobile learning leads the learner to knowledge in order to create new knowledge and thus improve thinking and the ability to solve problems through representation and alignment due to external stimuli reach the learner's desires and goals. The results of the study also agree with the theory of cognitive load by presenting the content through mobile learning, which provides the student with knowledge and the speed of preserving and remembering information, which leads to the development of the students' achievement and learning engagement.

Conclusion

The purpose of the study was to examine the effectiveness of mobile learning approach on the development of students' engagement and achievement among students at the College of Education, Al Baha Univer-

study indicated that students were equal involved and engaged in the group that was taught using the MMS than those who were taught by WhatsApp, which is consistent with the findings of other studies. This finding is in line with those reported in prior literature, including (Zhang, Song,&Burston,2011);(Yamamoto ,2008); and (Traxler ,2010).

4. There are no significant differences at the level of α≤0.05 between the mean scores of the experimental group taught using a MMS approach and the second group taught using WhatsApp during the learning engagement post-test as a result of implementing the program.

The t-test for the two independent samples was conducted on a scale to measure the engagement in learning of the two groups in the post-test. Table 7 shows the results of the post-measurement:

Table 7 The post-measurement of learning engagement

Group	N	Mean	Std.Deviation	T value	Df	Sig.(2-tailed)
Experimental(1)	25	42.00	9.51	22.50	48	.000
Experimental(2)	25	90.50	2.14			

The results of the study analysis in Table 7 show the results N= 50, p< 0.05 for the first experimental group of 25 students and second group of 25 students. In terms of the students' engagement measurement, the experimental group (taught using a MMS strategy) reported a means of = 42.00 in the posttest, with a standard deviation of σ =9.51, while the second group (taught using a WhatsApp application) reported a mean score of =90.50posttest, with a standard deviation of σ = 2.14. After running a t-test of experimental groups, highlighting that there was an improvement in students' engagement in learning in favor of second experimental group based on the results. P-value= .000, which here is a statistical significance at df (48) and as α≤0.05, the results indicated that there were statistically significant differences in their engagement in learning mean groups. Thus, the null hypothesis was accepted. In short, there were significant differences in the level of α≤0.05 between the mean scores in the e-learning application subject (the e-learning concepts unit) of the second experimental group, which used a WhatsApp, and the first group, which used a MMS, on the post-tests in favor of the second experimental group. The findings showed that the second experimental group did significantly better than the first group in terms of their engagement while learning. The results indicate that the use of mobile learning can influence students' learning engagement measurement. The researcher attributed this to the impact that mobile learning has on sparking classroom discussion, which in turn lead to learners increasing their engagement. The results of the study analysis show that there is a strong, positive correlation between the use of flipped learning and students' engagement.

Regarding the field of student engagement, the results and findings of this research

a student-centered interactive classroom environment, taking into account individual differences, giving the teacher more time to help students, building stronger student-teacher relationships, allowing students to repeat the lesson more than once based on their individual differences, create an environment for cooperative learning in class and apply active learning easily. However, the traditional method did not increase students' achievement because they worked traditionally, which led to them lose focus, and therefore stop paying attention when learning about computer applications. In terms of academic achievement, the flipped learning and traditional learning approaches have been investigated in a number of studies.

Regarding the post-test results, while some research suggests there is a significant difference in favor of WhatsApp application, studies by Jabbour (2013); Bidaki, et al. (2013);Wang, et al. (2009); Udanor and Oparaku (2016); Kert(2011); Lu (2008); and Murray(2011) confirmed the effect of mobile learning(WhatsApp) in improving students' achievement and emotionally involved in their learning tasks. Also, Mobile devices allow students to use and save images and information of their own choosing and possibly create and distribute new photos and information separate from the lecturers and university.

However, findings of the present study do not go along with or support the findings of some studies, i.e. Kuznekoff and Titsworth (2013); Salem (2006) and Chu (2014). Which found that Mobile Learning was not an effective learning style and consequently could not affect learners" academic achievement. Nevertheless, such a disagreement does not negate or emphasize the effectiveness of Mobile Learning in improving learners' achievement.

3. There are no significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group taught using a MMS approach and the second group taught using WhatsApp during the learning engagement pretests as a result of implementing the program.

The t-test for the two independent samples was conducted to assure the equalization of the two groups in the pre-test regarding engagement. Table 6 shows the results of the pre-test:

Table 6 The equalization between the two groups (pre-measurement of engagement).

Group	N	Mean	Std.Deviation	T value	Df	Sig.(2-tailed)
Experimental(1)	25	27.20	4.40	1.60	48	.445
Experimental(2)	25	28.50	4.80			

Table 6 shows that there are no statically significant differences between the mean scores of the first experimental group (taught using a MMS strategy) and the second group (taught using a WhatsApp) on the pre-measurement in terms of engagement. As $p \leq 0.05$, it means it is accepted as a null hypothesis.

Regarding the field of student engagement, the results and findings of this research

icant difference between the mean scores of the two experimental groups in the pre-achievement test related to e-learning concepts.

2. There are no significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group taught a MMS approach and the second group taught using WhatsApp during the achievement post-tests as a result of implementing the program.

The t-test for the two independent samples was conducted to measure the study achievement of the two groups in terms of the e-learning concepts unit during the post-test. The results are shown in Table5 below:

Table 5 The post-test from the two groups

Group	N	Mean	Std.Deviation	T value	Df	Sig.(2-tailed)
Experimental(1)	25	18.42	1.80	11.01	48	.001
Experimental(2)	25	24.10	1.52			

The results of the study analysis in Table5 show the results N= 50, p< 0.05 from the first experimental group of 25 students and a second group of 25 students. In terms of the students' achievements, the experimental group (taught using a MMS) reported a means of = 18.42 in the posttest, with a standard deviation of $\sigma = 1.80$, while the second group (taught using a WhatsApp) reported a mean score of =24.10 posttest, with a standard deviation of $\sigma = 1.52$. After running a t-test on both the experimental groups, it showed that the difference between the posttest highlighting that there was an improvement in students' achievement based on their results in favor of second experimental group. The fact the P-value = .001 shows that there is a statistical significance at 48 Df, and as $\alpha \leq 0.05$, the results indicated that there were statistically significant differences in the achievement mean groups. Thus, the null hypothesis was accepted. In short, there were significant differences in the level of $\alpha \leq 0.05$ between the mean scores in the e-learning application subject (the e-learning concepts unit) of the second experimental group, which used a WhatsApp application, and the first group, which used a MMS, on the post-tests in favor of the second experimental group. The findings showed that the second experimental group did significantly better than the first group in terms of their achievements. The results also indicate that the use of mobile learning can improve students' achievements in the unit titled e-learning concepts. The researcher attributed this to the use of a WhatsApp approach which led to classroom discussion, and thus learners increased their understanding and reached a higher level of study achievement. Also, the combination of pedagogy (learning theories) and instructional technology increased the opportunity for students to learn more deeply.

Using the mobile learning approach provides many benefits for the educational process, including more time spent by the teacher face-to-face with students, building

that participated in the study, all with the ability to deal with visual and auditory data. The subject being studied by them was the use of phones in education, and the specific focus of the lesson featuring the phone use was the "the effectiveness of teaching by mobile learning". The first experimental group students used (MMS), and the second group (WhatsApp) with taking into account the speed and the time duration. This was consistent with the learning conditions and their characteristics.

The fifth stage is evaluation

To determine if the goals had been met, the pre and post-test were made to measure the learners' knowledge, taking into account the feedback from the learners. Then the data was recorded and monitored, and then the data was processed statistically, analyzed and the results were discussed. The researcher then made recommendations and suggestions in light of the results. The achievement test and learning engagement scale were conducted to measure the study achievement and engagement for both of the groups. Data management and statistical analysis were conducted using a statistical package for the Social Sciences (SPSS) including the t-test, Arithmetic Averages, standard deviation and Eta squared.

Study Variables

First: the independent variables: the mobile learning (MMS and WhatsApp).

Second: The dependent variable: Students' engagement and achievement.

Results And Discussion

After the completion of the study application and conducting the pre and post measurement of the two tools of the study, the data collected from the students of both the experimental and control groups for analyzing, and the results were found to be as follows.

1. There are no significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group taught a MMS approach and the second group taught using WhatsApp during the achievement pre-tests as a result of implementing the program.

The t-test for the two independent samples was conducted to assure the equalization of two groups in the achievement pre-test by having the same experience in terms of the e-learning concept unit. The results are shown below in Table 4:

Table 4 The equalization between the two groups (pre-test)

Group	N	Mean	Std.Deviation	T value	Df	Sig.(2-tailed)
Experimental(1)	25	15.14	1.31	1.030	48	.07
Experimental(2)	25	14.35	1.40			

Table 4shows that there are no statically significant differences between the mean scores of the first experimental group (using a MMS) and the second group (using a WhatsApp) on the pre-test achievement test. As $p \leq 0.05$, it means it is accepted as a null hypothesis. The findings are consistent with those of previous studies by Kuznekoff and Titsworth (2013); and Chu (2014) that there was no statistically signif-

use of two materials (MMS which included voice, photo, video, text and diagram and whatsApp which allows to interact by text, voice, photo and discussion). The 25 e-learning concepts from the e-learning application that were studied by mobile learning in the experimental groups. This was done using mobile codes with clear data, color and consistency of mobile learning. The scenario for the mobile learning strategy was drawn up. The achievement test was based on recall and cognitive goals, and featured 25 multiple choice questions to measure students' recall, comprehension and learning engagement using a scale of 19 items and 5 choices. Then, a specification table was made based on the number of questions.

The third stage is development

The researcher used a mobile learning approach consisting of (SMS, MMS and whatsApp) designed the lesson content based on the unit, which was entitled "e-learning concepts" and contained 25 e-learning concepts taught during the class. The researcher designed the mobile learning, which was titled "e-learning concepts", to teach 25 knowledge. The researcher started the production and testing of the methodology used in the project, then showed it to a number of reviewers in the technology department to check the clarity on screen, its availability, and the process of building the software program. The researcher conducted a pilot study among 20 learners, who were not included in the sample for the main study, to check the availability, to identify any obstacles to completing it and the time needed to conduct the main study by equation (time spent answering for the first student + time spent answering for the last student/2). The results of pilot study indicated there was no obstacle hindering the application of the program and that the time needed for each lecture was 1 hour. Then, the measurement tool was applied in the form of a post test, which recorded the data. The researcher then processed the data statistically, analyzed it and discussed the results, before making recommendations and suggestions in light of the results. The pilot study consisted of 20 learners. The first 10 students finished the test within 25 minutes, while the other 10 finished the test within 30 minutes, so the average was 30 minutes. Cronbach's alpha value was 0.74, which indicates the test was of high validity. In order to determine the difficulties facing the researcher when applying the study, it is clear from the coefficients of ease that the coefficients ranged from 0.73 to 0.50 and that the difficulty coefficients for the paragraphs ranged from 0.26 to 0.45. That is to say, the coefficient of ease or difficulty was55%.

The fourth stage is implementation

The researcher tested the mobile learning then revised it in terms of the availability of the software, the frequency of mistakes before applying it to the students. The researcher provided his email and cellphone contact details in case the students had any queries related to how to use the software. The age of the learners was between 20 and 24 years old. There were 50 male learners

interviewed college instructors, and then showed the arbitrator the content.

- Designing the achievement measurement tools.
- Designing a mobile learning to develop achievement and learning engagement based on ADDIE model.
- Conducting a pilot study for 20 students, to measure the validity of the program for application, make the necessary adjustments to the program and identify the difficulties and obstacles that the researcher may encounter during the pilot study.
- The random sample was determined, consisting of 50 students from among the fourth-year students.
- Conducting a pre-test on students to determine their level of knowledge and learning engagement in the content of the program before studying it.
- Applying the mobile learning to two research groups.
- Applying the post-test to know the impact of the program on the achievement and learning engagement of the program content.
- Monitoring the results, then processing them statistically, then analyzing and interpreting them.
- Writing recommendations and proposals.

The first stage is Analysis

The literature on the subject of previous studies related to the use of mobile learning and their impact was revised to prepare the theoretical framework of the study. Undergraduate students were selected as the target audience of the study and they watched and listened to lesson. The study was conducted in and out the computer lab, where there students had access to mobile phones. The effectiveness of teaching the e-learning concepts unit was chosen as the focus of the study, because it contained a great deal of e-learning concepts that could be taught effectively using mobile learning. The experimental group studied the unit with the aid of MMS for first group and the second experimental group with the aid of WhatsApp. The educational goals represent the outcomes of the educational system, that is to say, what students are able to do at the end of the teaching process. Therefore, setting the goals is one of the most important procedural steps in designing and preparing educational programs in terms of the appropriate content elements, as well as choosing the appropriate media and methods to achieve the objectives of the program. A number of factors were taken into consideration, including: academic factors, including factors affecting the ability of learner to learn information; the physical environment of the class in terms of sound, light and temperature; the social environment such as the learner's preference to work alone or with a group; the emotional environment such as the learner's motivation, perseverance to work and possibly responsibility; the learning unit of the program, which in this case was devoted to learning e-learning concepts through mobile learning.

The second stage is design

The mobile learning strategy included the

Table 3 indicates that the correlation coefficients between the score of each level and the total score of the test ranged between 0.524 and 0.620, all of which are statistically significant at a level of significance of less than 0.05. This finding indicates that the items of each test level are valid.

The Procedure Of The Study

A pilot study was conducted prior to the main study, to ensure the reliability of the study instruments. The mobile learning platform included the SMS (short message service), MMS (multimedia messaging service), and WhatsApp. In addition the engagement and achievement tests were used in the pilot study among a group of 20 participants outside the sample of the original study, in order to verify the suitability of the educational program and test the time (25minutes) allotted for the study sample, as well as to identify any obstacles that could interfere with the process of applying the program. The pilot experiment showed that there were no significant obstacles and that the time required for implementing the program in each lecture would be one hour. Following this, two groups were randomly chosen to participate in the study. The first experimental group consisted of 25 students taught using MMS, and the second group was made up of 25 students, who were taught using WhatsApp. All of the participants were from the Faculty of Education and were exposed to 4 weeks of studying either in a mobile learning or using a traditional approach. They were also all given a pre-test prior to the study and a post-test after completing the fourteen weeks of the study. Students in the mobile learning were introduced to the procedures and given student roles in every single session in order to save session time.

The study was conducted on male students. However, pre-experimental measures of study achievement and learning engagement were incorporated to ensure the equivalence of research groups for the study. The course topics were sent on MMS and WhatsApp prior to classes. The subject of e-learning applications was taught to students. In the first class after the pre-test, students were taught from a unit about e-learning concepts in education, and during the classes students discussed and evaluated the lesson content, correcting each other when necessary. Students were given the chance to demonstrate/lead in the practical activity to prove they had mastered the knowledge and were engaged. At the end of the fourteen weeks, the test was administered to the participants in both experimental groups as a post-test to determine their engagement and level of achievement.

- The topics covered as part of the e-learning concepts in education unit included: patterns of e-learning use, methods of e-learning use, the advantages and disadvantages of e-learning use, designing lessons featuring e-learning use, educational software, and presentations.
- The researcher reviewed the literature related to the variables of the study, analyzed the content of the study unit,

engagement.

Achievement Test

Cognitive achievement test: The objective of the test was to measure the cognitive achievement of student sample after studying e-learning concepts by using mobile learning according to Bloom's cognitive levels and learning engagement using a scale of 19 items and 5 choices.

Test description: The test consisted of subjective questions (multiple choice) and each item had four choices, one of which represented the correct answer in light of the content of the e-learning concepts, with the total score of the test being 30 and using a scale of 19 items and 5 choices to measure learning engagement.

Validity of the test: The test was reviewed by)7) faculty members specializing in curricula, teaching methods and educational techniques to ascertain their views on the components of the test in terms of the following: the scientific validity of its vocabulary; its relevance to the student; the relevance of the vocabulary to the subject of the course, and the accuracy of its linguistic formulation; the suitability of the score for each test question. Consequently, adjustments were made to some of the vocabulary used according to their views by reformulating some questions to make them clearer.

Reliability of the test: The test was applied to a group of students at the College of Education, Al-Baha University, excluding sample of main study consisting (20) students. The reliability was calculated using the Spearman & Brown correlation equation to find the correlation coefficient between the two parts, and then find the reliability coefficient (Alsaid, 1979).The test reliability coefficient was 91.0, which is an acceptable value that confirms the reliability of the test.

To calculate the coefficients of difficulty and ease of the test vocabulary:

The ease factor was calculated for each of the test items through the following equation:

The ease factor = r / y + x

Y = number of correct answers

X = the number of wrong answers

The ease coefficients ranged between (0, 62 - 32, 0).

The difficulty factor was also calculated through the following equation:

Difficulty factor = 1 - ease factor

Difficulty coefficients ranged (0.64-32.00).

Test time: The answer time for the test was calculated, as the average time on the test was (60) minutes, according to the following equation: the fastest student time + the slowest student time /2.

Internal consistency validity

The Spearman correlation coefficient was calculated on the scores of the pilot sample members between the total score of the level (comprehension, and recall) and the total score of the achievement test, and the results came as in Table (3) following:

Table 3: Correlation coefficients between the degree of each level and the total score of the achievement test

N	Level	Correlation coefficient	Significance level
1	Recall	0.524*	0.05
2	Comprehension	0.620*	0.05

Materials And Methods

Research Design

The study adopted the experimental design, as it was carried out on two experimental groups, in order to check whether the use of mobile phones (MMS and WhatsApp) has an impact on students' achievement and learning engagement in e-learning concepts. The strategy related to mobile learning use, including the achievement test, was devised by the researcher of this study and the measure tool was made by Dixson (2015).

An experimental design explained easily the independent, dependent, and inconvenience variables. It also guides researchers how to implement the study sample randomization. In addition, it shows how to carry out the statistical aspects. Furthermore, it enables researchers to construct a relation between dependent and independent variables and excludes nuisance variables, (Kirk, 1995). Thus, an academic achievement pre and posttests of equivalent groups were employed for both groups. Besides, pre and post- participants' learning engagement ratings were implemented, too, as illustrated in table (2).

Table 2. Pretest and posttest experiment design

Group	Pretest	Treatment	Posttest
Experimental(1) (25 learners)	Achievement pretest and learning engagement (O1)	Teaching using multimedia service strategy (X1)	Achievement posttest and learning engagement (O2)
Experimental(2) (25 learners)		Teaching using whatsApp?(X2)	

The Study Population

The entire population of the College of Education at Albaha University is 1,080 learners. The two groups consisted of students that had not experienced the e-learning concepts through mobile phone strategy before and not having taken courses related to the mobile learning through an achievement test.

Participants

A sample of present study (50) students who were enrolled in two equal groups of "E-learning Application" course in the first semester of the academic year 2020/2021. One of these groups was assigned as a first experimental group (25) learners, was taught by multimedia service while the other one represented the second experimental group (25) learners, and studied the course content via WhatsApp. Both groups were subjected to the experiment for fourteen weeks. A quantitative data collection process was selected to provide a general picture of the research problem, and the t-test method was used in this study to analyze the data. The goal of the descriptive design was focused on two aspects, specifically mobile learning usage, and learning engagement and achievements.

Study Instruments

Two main instruments were developed for answering the questions of the present study, namely an academic achievement test and a scale for rating students' learning

learners and lecturers used MMS and SMS integration in educational system to learn foreign language because of visual learning of lessons. The study recommended creating MMS content and a SMS quiz system for educational purposes.

The study sample consisted of 44 male and female students who were chosen purposely from the study population. A quasi-experimental pre-post-test design was used in this study. The sample were divided into two groups: the experimental group was comprised of 22 male students taught using the flipped learning method, and a control group consisting of 22 female students taught using a traditional approach. The study tools consisted of an achievement test. The results of the study demonstrated that there was a significant difference between the two groups in terms of achievements in favor of the experimental group, which was attributed to the teaching strategy and not attributed to gender. The results recommended encouraging science teachers to teach students using the flipped classroom strategy.

In this study, the research questions require the determination of whether significant differences exist in terms of engagement and achievement between the experimental and the control groups, due to the effect of flipped classroom strategy.

In a multimedia message service environment, students become active learners. MMS represents texts, voice, photos, graphs, and music, it allows the teacher to send content up to 100 kilobytes in a message, personal messages can be delivered automatically and immediately. Multimedia messages become more personal and expressive than before (Victor, 2007), (Trifonova, 2003).

For example, in a study by Bouhnik and Deshen (2014) WhatsApp is one of the dialogue programs that allow the discussions between individuals simultaneously and directly. So WhatsApp eliminates the psychological problems of students such as shyness and introversion so that encourages them to talk to their teachers and peers boldly, as well as the speed of dialogue and communication that facilitates its use in achieving educational goals.

Table 1: Comparison of common social media and instant messaging tools in education

	MMS	WhatsApp
Cost	Payment	Free
accessibility	ability to change text size	ability to change text size
information about user availability	no information	Full information
opening a group	Possible	Easy
adding and removing members to a group	Possible	Easy
having a fluent conversation as a group	Impossible	Easy
privacy	relatively high	relatively high
Faculty members usage in private life	relatively high	relatively high
Undergraduate student usage in private life	relatively high	relatively high
collaborative learning	not natural	enables
sharing content	Ungainly	relatively high

which was made up of 25 students taught using a traditional approach. The study tools consisted of an academic achievement test and conversational skills rating scale. The results of the study demonstrated that there was significant difference between the two groups in terms of achievement and conversational skills. The results recommended for faculty members more adapting to use mobile learning strategy in classes.

However, previous studies that made comparisons of students' achievement between traditional and mobile learning courses have reported mixed findings. To begin with, Bensalem (2018) found that students' attitudes toward the use of whatsApp was positive. While Bouhnik and Deshen(2014) concluded that WhatsApp allows learners to course materials anytime and anywhere, and work as a team which is not fully developed in the traditional class. WhatsApp application classified into no cost, availability all the time, easy use, learning outside of the classroom, easy access to educational materials, access to the teacher anytime and anywhere.

A study carried out by Sayan (2016) conducted a study aimed at exploring the impact of a WhatsApp İnstant messaging on students' achievements. A quasi-experimental pre-post-test design was used in this study. The undergraduate students were divided into two groups: an experimental group of 60 students comprised the WhatsApp group, who were taught using WhatsApp techniques, and a control group, which was made up of 32 students taught using a traditional approach. The study tools consisted of achievement test. The results of the study demonstrated that there was significant difference between the two groups in terms of achievement in favor of experimental group who used whatsApp. The results recommended more studies being conducted to examine the impact of the WhatsApp application on achievement.

A study by Prensky (2005) aimed to explore the use of the cell phone, MMS and SMS within educational environment. The study sample was 164 students from college of society in U.S.A. A quantitative method design was used in this study and the measuring tool was a survey. In conclusion, undergraduate learners have a positive attitude related to cell phone, MMS and SMS integration in educational system. The study recommended conducting an examination of how intentionally mobile learning affects students' attitudes.

A study by Saran and Seferoglu (2010) aimed to explore the impact of mobile learning in foreign language learning. The multimedia messages provides to learners the definitions of words, example sentences, related visual representations, and pronunciations. After students finished reading multimedia messages, interactive short message service (SMS) quizzes for testing their learning were sent. The study sample was 311 students from Turkish college and 8 lecturers. A quantitative and qualitative methods was used in this study and the measuring tool was a survey and interview. In conclusion, undergraduate

visualizations and graphic representations improve user cognition (Hullman, 2011). The mobile learning is a platform where millions of people engage in the creation and exchange of information, and has had a significant effect on a student's academic achievement and learning engagement. Smart phones is defined as a small mobile devices connecting together millions of instructors and students in educational institutions and other organizations at numerous applications in nearly every nation. For smartphones users, the smartphones may be regarded as a worldwide community – one with a very active life. In today's world, the mobile phones plays a vital role in teaching, as well as the research and learning process in academic institutions. As the use of mobile devices increases in society, this study focused on the use of mobile learning in education environment. Mobile phones have spread among large numbers of students, and their use in the educational process has become important. So students must benefit from mobile phone services in learning. Also, mobile phones are available in the educational field, which necessitates the provision of a special environment to make use of phones to develop students' abilities to use them in learning. Students have the opportunity to see everything new and useful to reach a level of excellence and innovation.

According to Lan and Huang (2012) services provided by mobile and smart devices included the SMS (short message service) which allows mobile phone users to exchange text messages with each other. MMS (multimedia messaging service) can mobile phone users send and receive multimedia messages as text messages, video clips, animations and color images. WhatsApp has the ability to communicate via chat and voice, exchange pictures, videos, and navigation links.

The mobile learning strategy is a way to improve academic achievement and learning engagement through the use of whatsApp in mobile learning. A mobile learning platform was used as an e-learning system to deliver the lesson and content by wireless connection to students, and to allow them access anytime and anywhere, and in order to improve students learning outcomes. Furthermore, mobile learning was described as a useful tool(WhatsApp) for sending course materials such as videos, teaching resources, photos, tasks, and quizzes about the lessons by SMS (short message service), and MMS (multimedia messaging service). Therefore, mobile learning was used in this study as a means of students in a mobile learning classroom compared to students in taught using traditional methods.

A study by Elfeky and Masadeh (2016) conducted a study aimed at exploring the impact of mobile learning on undergraduate students' achievements and conversational skills at Najran University. A quasi-experimental pre-post-test design was used in this study. The students were divided into two groups: an experimental group of 25 students comprised the mobile learning group, who were taught using mobile learning techniques, and a control group,

priate mobile learning application for their area.
2. Be a starting point for further research that can be applied to different areas across a range of higher education institutes.
3. Excitement in e-learning application subject and inspires cooperation between students, responsibility and self-reliance.
4. Students acquire the skills of using the mobile phone with a variety of knowledge.
5. The modern approach of social learning environments to create a learning environment.

Limitations Of The Study

The study was conducted at the Faculty of Education at Al-Baha University in Saudi Arabia, and included 50 students who registered for the course titled "E-learning Application" during the first semester of 2020-2021. The researcher selected the "E-learning Concepts" unit to track learners' achievements and engagement, as this particular unit involves reading a great deal of text. The study focused on students being taught using a mobile learning approach, which involved pre-class assignments and out-of-class work, in addition to well-planned and designed activities to attract learners during their classes.

The Definition Of Terms

- The term impact is defined as the effect of the investigation as an independent element on the dependent factors, or an individual's need to obtain goals, feedback, and experience achievements (Jain& Singh, 2017). Operationally, in this study, effectiveness refers to the statistical effect on the dependent variable, that is to say, the students' progress in learning the information featured in the unit titled E-learning Concepts after using the independent variable (mobile learning) as a teaching method.
- A study by Ally, Lin, McGreal and Woo (2009) defined mobile learning is as learning that delivers course materials with the assistance of mobile devices to allow course materials anytime and anywhere.
- Operationally, in this study, mobile learning use refers to mobile phone by three programs of SMS, MMS, and WhatsApp that can be used to develop students' achievement and learning engagement.
- Engagement represents the range of action students take to advance from not knowing, not understanding, not having skill, and not achieving to knowing, understanding, having skill, and achieving (Reeve, 2013).
- According to Reiser and Dempsey (2007), the ADDIE model, which stands for analysis, design, development, implement, and evaluation, is a general process, and can be used to design a lesson. Operationally, it is an instructional design model to develop subjects and programs in several ways based on the five listed previously.

Literature Review

Given our brain's ability to identify correlations, and patterns, studies show that

a great extent in the field of e-learning application, because of the ineffectiveness of traditional teaching methods. Therefore, the use of the mobile learning merits to address this deficiency is required.

WhatsApp, as a relatively new tool in education, has positive merits as previous technological tools that are applied, but WhatsApp seems to have some features up to date features that inspire teacher and students to implement it in order to enhance understanding (Bouhnik& Deshen, 2014). It also aimed to explore which of these two learning ways is more effective and to what extent.

Research Questions

1. What is the impact of the mobile learning strategy on academic achievement in e-learning concepts for students at the Faculty of Education at Al-Baha University?
2. What is the impact of the mobile learning strategy on learning engagement in e-learning concepts for students at the Faculty of Education at Al-Baha University?
3. Is there a significant relationship at the level $\alpha \leq 0.05$ between students' engagement and achievement in the subject of e-learning concepts?

Hypothesis

1. There are no statically significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group) those using a multimedia service) and the second experimental group (those using WhatsApp application) during the achievement pre-test as a result of implementing the program.
2. There are no significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group (those using a multimedia service) and the second experimental group (those using WhatsApp application) during the achievement post-test as a result of implementing the program.
3. There are no significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group (those using a multimedia service) and the second experimental group (those using WhatsApp application) during the learning engagement pre -test as a result of implementing the program.
4. There are no significant differences at the level of $\alpha \leq 0.05$ between the mean scores of the first experimental group (those using a multimedia service) and the second experimental group (those using WhatsApp application) during the learning engagement post-test as a result of implementing the program.

The Study Objectives

1. To measure the effect of mobile learning based on mobile phone on students' achievements and engagement.
2. To design a mobile learning strategy for the e-learning concepts unit.
3. To explore the educational design for mobile learning based on mobile phone in developing achievement and learning engagement among undergraduate students.

The Signifigance Of The Study

1. Help educators select the most appro-

ditional teacher-centered curricula such as lectures (Zappe, Leicht, Messner, & Lee, 2012).

Therefore, the study aimed to overcome the fact that students have not developed their knowledge of e-learning concepts in the classes on the subject of e-learning application through traditional teaching methods. This is due to the ineffectiveness of using traditional methods, and so it is proposed that the use of modern technology, specifically the mobile learning strategy, will address this deficiency, as reflected by the findings of the studies featured in the literature review.

The results of the study revealed that 85% of students do not have knowledge and engagement of e-learning concepts in education because the traditional method does not take into account individual differences between students. Therefore, the researcher felt that by changing the teaching approach to a more modern one, it could help students achieve more. In this case, the researcher sought to establish the impact of mobile learning on the achievement and learning engagement of students studying the e-learning concepts unit of the selected subject at the Faculty of Education at Al-Baha University. It was expected that the use of mobile learning would increase students' engagement during the course and also result in them acquiring greater knowledge of computer applications. Therefore, the problem of the study centered on the lack of students' understanding of e-learning concepts and the low level of engagement in the classes on this subject when taught by traditional methods. Thus, it was proposed that a mobile learning was needed to implement the course material.

The researcher has worked as a faculty member at the Faculty of Education at Albaha University teaching males and females since 2013. Based on the researcher's experience, students' engagement and achievement have not reached their full potential due to the inability of traditional methods to attract and maintain students' attention. They also fail to meet their needs and provide practical training. Consequently, students frequently complain about the textbooks, which provide no opportunities for the practical application of what they learn, and thus result in a low level of engagement and achievement among students. Therefore, a more modern, effective approach must be used to develop students' academic engagement and achievement in a way that is attractive and meets their needs. The researcher's solution is through the frequent use of mobile learning. Studies by Hassan (2014) and Muhammad (2015) indicated the ineffectiveness of traditional methods used to develop knowledge, and thus recommended the use of technological innovations to develop students' information.

In the meantime of Ministry of Education concerning on mobile learning as a new platform of teaching and suitable way to educate students. Hence, the research problem was found in the following statement: students lack knowledge related to e-learning concepts and do not engage to

mobile learning.

Problem Of The Study

Several studies by Zorofi, Gargari, Geshlagi and Tahvildar (2011); Ozben(2013); Geduld (2016); Turki, Jdaitawi and Sheta (2018) have highlighted the challenges faced by university students in higher education institutions. These include limited self-regulated learning approaches, low levels of connectedness, a lack of motivation, a lack of leisure time, a lack of learning engagement and poor academic achievement. Therefore, to discover the impact of mobile phone learning on their engagement and academic achievement, the mobile learning strategy was used in the study, with the expectation it would improve learning outcomes. The process of transferring from a traditional classroom to a mobile learning can be difficult, due to a lack of facilities, effective model and poor Internet access.

However, lecturers can enrich presentations by integrating multimedia content as an innovative approach to teaching, for example by using PowerPoint (Leicht, Zappe, Messner, & Litzinger, 2012). However, students still have to memorize the material included in the notes and PowerPoint slides, which in itself does not increase classroom engagement (Ahlfeldt, Mehta, & Sellnow, 2005).

It is important to understand what causes engagement, as it may not be due to environmental reasons, lack of understanding or satisfaction, access of local education services (Kettlewell, Southcott, Stevens, & McCrone, 2012). The implementation of the mobile learning will improve students' engagement, leading to positive educational outcomes and improving their achievement.

According to Sankoff (2014), traditional lectures often lead to a waste of precious resources and fail to take advantage of teachers' experience, knowledge, and abilities by making them deliver the same information to different groups.

However, the mobile learning strategy has many merits for students and teachers such as learners' study at their own speed and smartness, making effective use of class time, teachers are encouraged to develop professionally, and it provides an opportunity for group discussion and peer instruction.

The researcher first conducted a pilot study with a group of 20 learners outside the sample of the main study to determine any problems with the study. The study began with an achievement and engagement learning pretest to measure the starting point for the sample. The researcher detected a low achievement and engagement level of around 35-45% among students' knowledge of e-learning concepts in education. This was seen due to the ineffectiveness of traditional teaching methods, which prompted the researcher to use the mobile learning method, with the aim of increasing their engagement and achievement.

Indeed, according to previous research, active learning approaches often lead to higher engagement and learning achievements of students when compared to tra-

Besides, students' interest in using all accessible resources of mobile learning through their mobile phones and personal digital assistants (PDAs) to see information at anytime and anywhere has also played a significant part in the success of the spread of mobile learning, (López, et al., 2009).

As stated by Demouy, Kukulska, and Hulme(2010) mobile technology is a way to deliver the content related to time, place and person so the student can select the content based on personalized preferences. While study of Jonas-Dwyer, Clark, Celenza and Siddiqui(2012); Teng and Helps(2010) indicated to the use of mobile devices for educational goals by teachers and students approximately 53 million of subscribers up as one of the most common technologies between individuals speedy and greatly.

In addition, a study by Huang, Liaw and Rauch (2010) showed that structural theory supports the concept of active learning experiences, which directly links the learner to knowledge in order to create new knowledge, and thus improve their thinking and problem-solving abilities

According to West (2013) mobile learning is a way to address a pile of educational issues. Devices as tablets and smart phones allow innovation and assess learners, educators, and parents obtain a way to digital content and personalized assessment vital for a post-industrial world.

Mobile learning facilitates access to educational resources on the Internet and helps to increase and produce fun educational content that can be employed inside or outside the classroom (UNISCO, 2013). Mobile phones are not addition any longer; they are included as our clothes, (Dos, 2014). It is better for mobile learning to provide the right knowledge to the right individual at the right period than other learning / teaching techniques that have been devised to date, (Little, 2012).

A study by Elfeky and Masadeh (2016); and Klimova(2019), revealed that the mobile learning method has a positive impact on academic achievement and conversational skills in comparison with traditional learning approaches. Furthermore, they recommended to use mobile learning in class.

Almost 90% of adults between the ages 18 to 29 in the United States are owned smartphone (Anderson, 2015). Started in 2009, WhatsApp now leads the global market by having more than 2 billion customers in more than 180 countries (WhatsApp, 2016) As a consequence, mobile learning has become a crucial platform in the educational environment between students which saves time and effort to develop achievement and learning engagement. Therefore, the current study seeks to explore the interaction between preparation and treatment to reach the appropriate educational design through two elements of mobile learning the multimedia message service, and WhatsApp. Furthermore, the current study explores the impact of mobile learning strategy on students studying the subject of e-learning concepts on learners' engagement and achievement during

Introduction

The rapid growth of technology has revolutionized the world of education, playing an important role in both learning and teaching today. However, the use of technology without applying appropriate pedagogy will not have much impact. The mobile learning is a form of teaching that has emerged from the spread of technology. It consists of mixed-learning models that focus on student-centered learning activities, thus providing students with a self-paced learning environment. Consequently, students can learn according to their learning abilities using technology as an intermediary. In addition, when using this method, classroom instruction also emphasizes active learning activities, resulting in greater opportunities for interaction and collaboration. The mobile learning has been demonstrated through the experimental use of technology to improve students' achievement and learning engagement. However, the use of technology does not replace the role of the teachers. This paper will discuss the use of technology in the mobile learning based on previous studies and present the challenges involved in the implementation of mobile learning methods. This paper will also make a comparative study of the use of technology in the mobile learning to reveal the technology applications have the most potential to benefit students' engagement and achievement when implemented. Mobile learning is an electronic learning system based on a wireless connection to access information at any time or place. The first university to use mobile devices in the field of education was Duke University to present lessons to students. Babo and Azevedo (2013) indicated in their study the need to move from the traditional method to the e-learning method and its applications. Amasha and Al-Shaya (2009) indicated as well to the necessity of using e-learning and its applications and employing Internet innovations to develop students' knowledge and provide effective learning that saves effort and time of the educational system.

According to Walsh, White and Young(2007) this rise in popularity of wireless invention occurred in the world at the end of the twentieth century and the beginning of the twenty-first century, as mobile phones and wireless devices spread rapidly and in large numbers in the world. This led to a new method of learning, which is learning through mobile phones, which depends on the use of wireless technologies, including the mobile phone, the personal digital assistant and the mini-computer. Therefore, the shift from a wired learning environment to a wireless learning environment in teaching and learning.

According to Sahin and Turan (2009), whose study aimed to establish the impact of using technology on learning and teaching in a classroom environment, only pedagogically sound teaching and appropriate technologies lead to improvements in learning. In addition, their study found that, from the point of view of the students who participated, the integration of technology in learning requires some critical skills.

The Effect of Some Different Mobile Learning Applications for Developing Students' Engagement and Achievement in the E-learning Concepts Unit

أثر اختلاف بعض تطبيقات التعلم المتنقل لتنمية مشاركة الطلاب وإنجازهم في وحدة مفاهيم التعلم الإلكتروني

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Abstract

The study aimed to focus on the use of the mobile learning strategy to increase learning engagement and achievement in e-learning concepts for students. The study used a descriptive and quasi-experimental approaches to prepare the literature framework and two measurement tools and apply experiment, including an achievement test and engagement scale . The study sample consisted of 50 learners. The researcher used a t-test to measure the differences between the first experimental group taught by a MMS (multimedia messaging service), and second experimental group taught using the WhatsApp. The content of subject consisted of videos, photos, PowerPoint presentations and the use of appropriate URLs, which was provided through mobile learning platforms. The results showed that there were statistically significant differences in $\alpha \leq 0.05$ between the mean students' scores of the first and second experimental groups in the post-tests in achievement and learning engagement. This was in favor of the second experimental group, which used WhatsApp on achievement and learning engagement, unlike the first experimental group that used multimedia service.

Keywords:
Mobile learning; Smart phones; E-learning concepts; Academic achievement; Learning engagement.

ملخص البحث

هدفت الدراسة إلى التركيز على استخدام استراتيجية التعلم المتنقل في تنمية الانخراط في التعلم والتحصيل في مفاهيم التعلم الإلكتروني لدى الطلاب. استخدامت الدراسة المنهجين الوصفي و شبه التجريبي لإعداد الاطار النظري وأداتي القياس وتطبيق التجربة المتمثلة في اختبار تحصيلي ومقياس الانخراط في التعلم. وتكونت عينة الدراسة من ٥٠ طالباً. استخدم الباحث اختبار ت لقياس لقياس الفروق بين المجموعة التجريبية الأولى التي تم تدريسها بواسطة خدمة رسائل الوسائط المتعددة MMS والمجموعة التجريبية الثانية التي درست باستخدام الوتس أب WhatsApp. يتكون محتوى المادة من مقاطع فيديو وصور وعروض تقديمية وروابط المواقع المناسبة التي تم توفيرها من خلال تطبيقات التعلم المتنقل. وأظهرت النتائج وجود فروق ذات دلالة إحصائية عند المستوى ($\alpha \leq 0.05$) بين متوسط درجات الطلاب في المجموعة التجريبية الأولى والثانية في الاختبار البعدي في التحصيل والانخراط في التعلم. وكان ذلك لصالح المجموعة التجريبية الثانية التي استخدمت الوتس أب في التحصيل الدراسي والانخراط في التعلم على عكس المجموعة التجريبية الأولى التي استخدمت خدمة الوسائط المتعددة.

كلمات مفتاحية:
التعلم المتنقل؛ الأجهزة الذكية ؛ مفاهيم التعلم الإلكتروني؛التحصيل الدراسي ؛الانخراط في التعلم.