Learning Dialogue through WhatsApp Messenger: Students' Experience and Attitude

By

Ibtesam Fares. Al-Mashaqbeh and Atef, F. Al-mashaqbeh
Department of Computer Science, Al al-Bayt University (AABU), Mafraq-JORDAN.

Abstract

This study examined students' perceptions of the effectiveness of the use of social media (WhatsApp) as a learning tool. A group of forty students from the Computer Education course was used to test the efficiency of this social media tool in learning. The students were placed in three WhatsApp groups and questionnaires designed to collect information about these student perceptions used. In this study, two mixed teaching strategies were used, which included regular teaching together wise-th mobile teaching strategy. The study further factored several interaction techniques, both inside and outside classrooms, which were learner to education package intercommunication, student -student interactions, and learner-teacher interactions. The study was conducted for a whole semester of the 2017-2018 school calendars. The results of the research showed that students improved their communication skills following the WhatsApp dialogue. Further, their learning improved as portrayed through enhanced student confidence and quick response in their information processing. The success of this research was attributed to WhatApp's feature of rapid response, social application of open communication in both formal and informal settings as well as the application's ability in making learning enjoyable due to its features that gives learners a pleasant learning experience.

Keywords: *Active learning; collaboration learning; mobile Learning; Whatsapp group dialogue; group learning, educational technology.*

1. Introduction

Technological advancement has brought about significant changes in the contemporary society. Because of this progress, challenging tasks that previously consumed lots of time and resources have been simplified. The most prominent advancement, however, is communication through social media. Unlike before when the telephone was the only fast means of delivering messages, modern programmers and technology experts have managed to develop applications that have made the communication process, more comfortable, simpler and cheaper. One of this advancement today is the WhatsApp mobile application. Whatsapp works in two ways. The first method involves sending messages, including multimedia such as videos, audios, text and other attachments. The second way is through voice and video communication where two people can communicate via video and audio. Whatsapp works in mobile phones with an internet connection. This makes it cheaper as one is not charged to make calls or send messages as long as he or she has a stable internet connection. With this sufficient flexibility, WhatsApp use can also be applied in other areas like learning. This research is, therefore, a proof of how WhatsApp is a useful tool in learning improvement by enriching students' experiences and attitudes.

Learning refers to a collaborative interaction between teachers, students and materials (Amry, 2014). It can be through interactions in the class or E-learning. E- Learning is learning through the web, a recent knowledge acquisition way, which is considered efficient as it supports advanced applications and processes as per (Barhoumi & Rossi, 2013). Students use mobile phones and laptops daily in their lives both in and out of school and a proper use of these in education will help improve their learning wellbeing (Jomon, Hope, and Justin, 2012) This method helps to advance learning outside the class set up through online discussion forums. Today, this type of learning has advanced to the use of online applications in a bid to help students improve new knowledge and learn new techniques (Sharples, Lonsdale, Meek, Rudman, & Vavoula, 2007). Mobile learning use tools such as WhatsApp, a free mobile

application used in mobile phones of windows, android and apple operating systems. Learning through this application offers flexibility in time and location, (Crescente & Lee, 2011). Additionally, Baffour-Awuah, (2015) sees the use of this application through group learning, to be a key feature that foster learning in different environments. Bouhnik and Deshen (2014), they further supports because this new way of learning helps users advance their communication skills through instant feedbacks on informal learning settings. This concept equips the students with skills to communicate, which they can apply in their education and life in general (Rovai, 2002). Furthermore, Rambe & Chipunza, (2013) add that this tool uses pleasant teaching aids that will help students improve tremendously. Therefore, the application of mobile learning in pedagogy makes learning enjoyable and thus, successful (Motiwalla, 2007).

2. Work Related

Constructivism approach

Whatsapp learning involves learners taking part in the active role of the learning process. This is echoed by the constructivism theory that view learning as an engaging process. This approach further examines the importance of the learner in the process, as the learner is the constructor of information according to his /her views and creativity Martin, (2012). The reliability and efficiency of WhatsApp use as seen through over 190 million users who use it today. Mental creations are subjective as new information is linked to previous knowledge possessed by the learner. Social negotiation, which is the critical feature of this application, is a crucial test of knowledge according to this theory Yavuz, (2016). Unlike the current pedagogy involving a teacher teaching new expertise in class as the students listen and gain insight, Sahajwani (2016). The teacher is seen as a useful tool in this process as he or she acts as a guide in encouraging students to create their knowledge based on their understanding. (Tamim, Colburn, El Saadi, and Qunneis, (2016); Kalpana, (2014).Further, Church & de Oliveria, (2013). Praises learning through the social platform, as it is secure and confidential as opposed to other social media platforms like, Facebook is equally influential in learning through improvement in communication skills, but lacks confidentiality as WhatsApp (Al-Mashaqbeh, 2015). Through advanced instruction design it can be a useful tool in teaching mathematics. Information interchange through group discussion can also help in learning English especially on countries using English as second language (Naidoo & Kopung, (2016) , (Riyanto, (2013) and Awada and Wang, (2016)),

Transactional Distance Approach

According to Benson & Samarawickrema, (2009), the theory of transactional distance is another useful approach that shows that WhatsApp learning can be beneficial to the students. Developed by Michael Moore, the theory explains that transaction distance is a pedagogical concept, as opposed to the thought of it being a physical distance separating the students from the teacher and vice versa. Saba & Shearer (2018) stated that, a distance even when students and the teacher are interaction in a classroom. This gap is therefore significant enough, calling for exceptional teaching and learning techniques and strategies to minimize it.

This approach applies two sets of variables namely dialogue and structure. Saba & Shearer, (2018), further illustrate that conversation involves the teacher-student communication where the teacher gives instructions while the learners respond. The degree and nature of the conversation rely on factors like the education philosophy between the interacting parties, the course designer, environmental factors, course content and more importantly the student and the teacher's personalities. Benson & Samarawickrema, (2009) stated that the structure is fundamental as shows the flexibility or rigidity of the pedagogical program's learning aims, styles used in teaching and appraisal methods this shows that transactional distance is presumably lower in programs that have more dialogue with pre-determined compositions such as WhatsApp learning and teleconferencing. The success of education as per by Moore &Kearsley,

(1996) involves the trainer focusing on trainee-subject interaction, interaction between trainees, and student-teacher association. Burgess (2006) define Transaction distance as a trait of all educational programs which supports the learning processes through change of behavior to aid learners achieve their educational objectives However, (Falloon, 2011) concluded that the differences in these programs arise in the dialogue extent as well as their structures, dialogue interaction, structure and student traits. Gullifer and Tyson, (2013) explained the success of this learning tool depends on the students adhering on the instructions provided by their learning guide as per. This is enough evidence that WhatsApp is a useful tool in learning as it has a high degree of dialogue with students interacting in the groups and has very little pre-determined structure unlike learning in classrooms.

3.   Literature review

The 21st century brought more of technology being applied in education and teaching environments. The technological advancement has equally improved communication and research through the availability of online libraries that provide comprehensive learning materials. For this reason, learning has been made simpler and more natural (Davidovich, 2010). However, the ease and simplicity of education is not the only guarantee of the students' success in knowledge acquisition and retention. Learning through this means is less engaging and annoying as most learning materials provided through the web are presented in plain texts, images, and videos. It is important to remember that communications have advanced leading to the extensive use of social media (Falloon, 2011). The success of social media is attributed to its ability to help people connect with one another and providing an avenue for people to share their opinions. Developers of social media content have also managed to understand the needs of the users through artificial intelligence and application of cognitive theories to create attractive applications that capture people's interests.

Social media contents are rich in color, graphics and improved functions allowing a face-to-face communication at no cost apart from that required to access the internet. Students, therefore, prefer this platform for communication and entertainment (Brown, 2017). Often, in their mobile phones and computers, they will always be on social media even in the middle of lectures. Sadly, educational stakeholders fail to understand and take advantage of social media richness to apply it in education (Abaido and El-Messiry, 2016). With the focus on WhatsApp, it is a handy tool for learning and idea creation as students interact on their own without limit, enabling them to be more reactive and attentive., through a research on Princess Nourah Bint Abdullrahman University school of computer Science conducted a research on how WhatsApp can be used as a learning tool and also how it affects the learning process. WhatsApp applications were used as a tool to enhance learning to expound the research. 100 students were asked to use WhatsApp to review the IS33D courses material. These students were distributed in four WhatsApp sections who were involved in the study as an experimental group. The results of this study showed that student were more motivated to review the course materials; it also saved studying time, and get higher score than others. As a result of the study, it found that the use of WhatsApp enhanced their education process. It also, has a positive reflection on the students' attitude toward learning, they also were motivated to share information and collaborate with each other and with the instructor (Nassar (2016). Abaido and El-Messiry (2016), also investigated the level of usage of WhatsApp applications and the impact this application on improving the two ways of interaction: instructor-student and student-student for creating, sharing and exchanging information using this tool. The study aimed at exploring the activities students practice by using Whatsapp applications. A questionnaire tool was used and administered to 100 students. The result showed that using Whatsapp applications made learning more engaging. Most of the participants of the study were in favor of using this social app as a tool to support the learning process. Nitza, & Roman, (2016) also examined the effectiveness of this tool in education communication with a goal of exploring the effect of WhatsApp group in a case study of a seminar course, on students' achievements in writing the seminar paper and their level of satisfaction. The result of the study revealed that that the use of WhatsApp applications as a groups learning method were served for improving the communicating with students, nurturing a social

atmosphere between learners, forming best dialogue between students themselves and between students and their instructor. Also, it showed a significant positive relationship between students' achievements and their level of satisfaction among this experimental group.

The attentiveness in students using this form of social media in learning arises as a result of exciting features provided by the application (Abaido and El-Messiry, 2016). For instance, a student who cannot find exact words to express his points can explain him/herself through voice notes or videos. As members listen to this, they will be able to figure out what the member is trying to communicate efficiently. Through this way, students find collaborative ways to advance their knowledge and rely on one another to succeed (White, King & Tsang, 2011). Additionally, learning using this social media tool helps to boost a learner's confidence. He or she will communicate freely as opposed to the formal classroom set up where some students may fail to express without fear of them giving out incorrect answers that will make the teacher and others perceive them to be slow learners or weak (Bouhnik, & Deshen, 2014).

According to Herring, (2015), entertainment is basically what holds the attention of the audience. Individuals, however, have subjective views on what makes up entertainment. Even so, most youths are likely to be fascinated by same things mostly involving music, jokes, and comic videos and learning games. Using WhatsApp in to improve the understanding is essential as the application presents new interfaces together with the ability to share entertainment contents easier. Technology has also shaped the production and sharing of the entertainment contents on social media platforms. When individuals are bored, they are likely to wander away and look for something that will cheer them up. The internet presents a comprehensive source of exciting materials that one is expected to find. For example, when the group members are bored, yet they want to keep their attachment with others in the group, they are likely to post funny images, messages, and videos that will cheer up all the members and eventually put them back to the learning track.

According to Bers, (2010), modern-day learning does not end in the classroom like it was in the past. All students now own internet enabled phone. With tools like WhatsApp, students have the ability and advantage of creating knowledge from wherever they are. The feature of WhatsApp which gives it the ability to connect people at the different place has been successful in fostering long-distance learning and discussion. Alghamdi, Rajab, & Rashid, (2016) investigated the use of WhatsApp as a learning tool for distance learning. The research chose randomly selected sixty-four students and asked them to create a WhatsApp group. The students were encouraged to communicate freely and engage each other actively. The investigation further examined students' perceptions of their participation in the group and the cheating techniques. The findings of this study revealed that online students perceived the term 'cheating" differently and they felt that this term should not be included in the distance-learning area. They concluded that online learning is an open educational environment that promotes collaborative learning, open discussion and sharing of ideas. This application also gives the student chances to learn excellent time-saving skills, since any free time in their hand, whether it is in car rides, at home or while in their outdoor activities like watching soccer, these students will still get a chance to connect with fellow students and continue the learning process. Thus, Whatsapp in education is an essential tool for improving learning culture and making the learning process a fun Furthermore, In Luaran, In Sardi, In Aziz, & In Alias, 2016) stated that the strength of Whatsapp is that, it is cheaper since it is free to download, and one does not incur charges thus giving users unlimited use. Whatsapp learning, unlike conventional education, is not affected by environmental factors like adverse weather and no communication procedures hence shortening the transactional distance between the users, and this is a critical factor in ensuring successful learning.

4. The Study

Objectives of the Study:

a. Use WhatsApp applications as a tool for learning to open a learning dialogue among three ways of communications: instructor-learners, learners-learners, and learners-contents dialogue.

b. Measure students' attitude toward the effectiveness of the use of social media, WhatsApp, as a learning tool to increase their motivation for learning.

Research Questions

a. What are the students' views concerning the use of WhatsApp applications used in learning; through the three ways of communications: instructor-learners, learners-learners, and learners-contents dialogue?

b. What are the students' attitudes toward the use of WhatsApp applications as a learning tool?

Limitations of the study

i. The sample was obtained from the students of Al Al-Bayte University who register in the first semester of the academic year 2017-2018 in" Computer in Education" course. The sample size was limited to 40 students

ii. Inability to track communication between two or more member of the group outside the team to see whether their discussion relates to the educational debate on the group or not

iii. Likelihood of group members to miss the chances of contributing to the crowd during a debate due to personal matters

5. Methodology

Several methodologies were used in the gathering of information to support this study with key ones being observation, questionnaires and recording. A group of forty students from the Computer Education course was used to test the efficiency of this social media tool in learning. The students were placed in three WhatsApp groups and questionnaires designed to collect information about these student perceptions used. In this study, two mixed teaching strategies were used, which included regular teaching together with mobile teaching strategy. The study further factored several interaction techniques, both inside and outside classrooms, which were learner to education package intercommunication, student - student interactions, and learner-teacher interactions. The study was conducted for a whole semester of the 2017-2018 school calendars.

The research period was a semester. A lecturer was used as an observer and was a member of all the three groups. Before the analysis, an observation check-list (table of traits) was designed to be used in the study. Students were observed in the classroom for one month with the desired and undesired learning traits of each of these students recorded. Also, a survey instrument was created which was to be filled after the completion of the research to see any deviations on the desired learning skills or any improvements on the undesired abilities. A more significant degree of variation on the desirable tool would indicate that, during their interaction in Whatsapp learning, students lost their remarkable learning traits. This would be interpreted as a failure of WhatsApp to be used as a tool to influence creative learning. On the other hand, if the second table showed a student progress on their learning traits demonstrated through the improvement of the once undesired learning behaviors, learning through this tool would be deemed successful. During all these periods, the lecturer in those groups observed vital communication skills on each member and noted down any reasonable changes. This was done through

screenshots messages pinpointing success or deviation of learning in an individual student. These words were collected and put under a student's file. The results were later analyzed and used in the completion of the second table. During the process, students were also given a chance to give out their views on the progress through questionnaires. The analysis process took two weeks after the completion of the research. For the purpose of this study (WL) A flow chart that represent the procedure that was followed, were proposed by the researchers as shown in Figure 1, which represent the design for this study.

Chart 1: WL chart that represent the design for this study
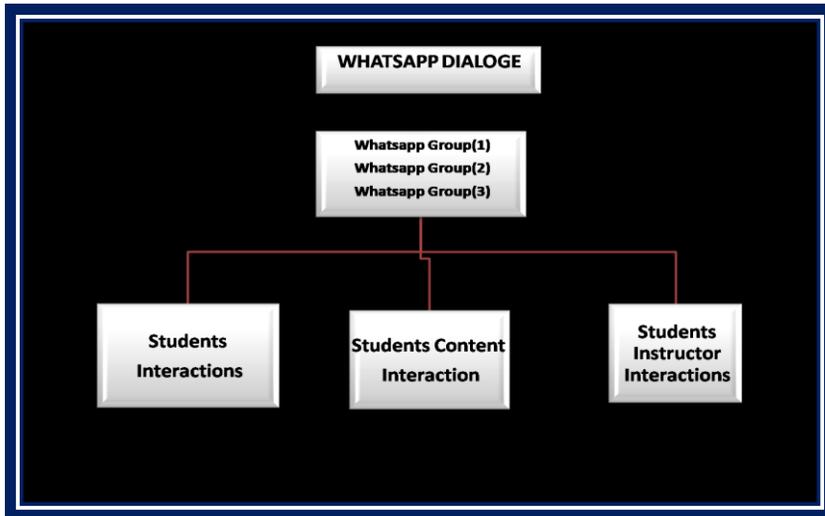
Reliability

Cronbach's alpha has been used to measure reliability, it most commonly used when we want to assess the internal consistency of a questionnaire instrument that was made up of multiple Likert-type scales and items. For this study a reliability analysis was carried out on the perceived task values scale comprising three ways of deluge items (q1 to q45). Cronbach's alpha showed the questionnaire to reach acceptable reliability, $\alpha = 0.89$. Most items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted.

6. Findings and discussions

Result related to the first research question

The findings that answered the first research question "What are the students' perceptions towards the use of WhatsApp applications as a learning dialogue in three ways of communications: instructor-learners, learners-contents, and learner-learner dialogue?" were collected. The result of the descriptive analysis is shown in Table1. A descriptive analysis that involved mean and standard deviation was used to identify students' attitudes toward the use of WhatsApp for instructor-learners Dialog.

Table 1 below showed that every item in relation to the students' attitudes toward the use of WhatsApp for instructor-learners dialog were all at the very high level. The highest mean of the item was item #1 and item #9 (mean= 4.79). Overall, it can be concluded that the students' attitude towards the use of WhatsApp for instructor-learners dialog, were rated at the very high level (mean = 4.67).

While the result of the descriptive analysis is shown in Table 2. A descriptive analysis that involved mean and standard deviation was used to identify students' attitudes toward the use of WhatsApp for learners-contents Dialog.

Table1: students' attitudes toward the use of WhatsApp for instructor-learners Dialog.

Item	Attitude	Mean	Std. Deviation
1	Remind us of upcoming assignments to start work and organize my time	4.79	.413
9	It is easy to reach the lecturer.	4.79	.474
6	The instructor finds time to respond if there are queries	4.76	.490
11	The teacher encourages my participation	4.76	.542
7	The instructor aids in problem identification areas in my study	4.74	.724
10	Teachers respond on time to our questions and comments	4.74	.644
5	Teachers support us digest the misunderstood or the unclear contents facing the trainees	4.63	.589
8	The instructor gives me valuable (positive and negative) feedback on my assignments	4.61	.638
3	The instructor is supportive during course discussion and offers continuous support with the class.	4.55	.645
2	The instructor continually model appropriate disclosure	4.53	.687
4	The instructor provide students with links to a relevant video or article	4.47	.762
	Total	4.67	.267

Table 2: students' attitudes toward the use of WhatsApp for learners-contents dialog.

Item #	Attitude	Mean	Std. Deviation
18	WhatsApp allows me to academically engage with lecturers materials at any time and any place	4.79	0.622
21	Allows students time to think about response	4.71	0.611
29	There was an assignment at the end of each lesson.	4.71	0.927
17	Interaction via WhatsApp with the class content helped me to increase my confidence level in class activity	4.66	0.627
19	Allows tracking of work throughout project cycle	4.63	0.489
32	Allows students to demonstrate mastery of course concepts	4.63	0.589
31	The internet connection was good outside and within the university	4.61	0.718
12	I have time to learn to use the resources provided	4.5	0.604
30	All the comments, pictures, or video were posted in the whatsapp were appropriate	4.5	0.688
13	I have opportunity to interact with the resources provided.	4.47	0.725
14	We have Interactive content that gives direct and frequent performance.	4.47	0.83
20	Provides a space to discuss team assignments	4.47	0.687
22	The discussion questions encourage students to share relevant experiences and examples.	4.42	0.793
15	Course resources and materials that were perceived to be helpful in completing course requirements and assignments	4.39	0.755
25	Send graphics such as pictures or charts directly to students	4.34	0.966
26	It allows free unlimited messaging	4.34	0.938
16	I actively engaged with course materials that I identify to be secondary resources	4.29	0.984
27	Teacher used to send personalized feedback on these assignments.	4.29	0.898
28	exchange information	4.16	0.945
23	Audio learning guides are sent to learners	4.03	1
24	Out of class extra learning materials and homework provided	3.97	1.026
		4.43	.393

Table 2 above demonstrated that every item in relation to students' attitudes toward the use of WhatsApp for learners-contents dialog were most of the items at a very high level. The highest mean of the item was item# 18 (mean= 4.79). Above all, it can be concluded that the usefulness attitudes toward the use of WhatsApp for learners-contents dialog were rated at the very high level (mean = 4.43). The result of the descriptive analysis is shown in Table3. A descriptive analysis that involved mean and standard deviation was used to identify students' attitudes toward the use of WhatsApp for learners-learners dialog.

Table 3: Students' attitudes toward the use of WhatsApp for learners-learners Dialog

Item	Attitude	Mean	Std. Deviation
33	The Course WhatsApp group offers communication with other	4.76	0.49
38	WhatsApp applications good tool for knowledge sharing with others	4.76	0.49
39	My interaction with others using WhatsApp was clear	4.71	0.565
34	We can interact with other through the use of group discussions	4.66	0.781
36	Interaction via WhatsApp with other students in the class helped me to increase my confidence level in class activity	4.66	0.847
41	Teaching guides provided that oversights reflection and discussion aid interaction among learners	4.63	0.675
42	Engages students in ongoing social interaction	4.63	0.675
37	We practice together the application skills	4.61	0.595
43	Allows "traceable" path of conversation	4.58	0.683
40	Using WhatsApp, it helped me to discussed information with other students in the class	4.47	0.862
44	WhatsApp allows me to academically engage with peers any time and any place	4.47	0.922
45	Activities in the group require students' cooperation, result sharing, and impacts students learning life.	3.79	1.212
35	WhatsApp offers a telephone call for communication with other students	3.71	1.354
	Total	4,52	.410

Table 3 above demonstrated that every item in relation to students' attitudes toward the use of WhatsApp for learners-learners dialog were most of the items at a very high level. The highest mean of the item was item# 33 and item#38 (mean= 4.76). It can be concluded that the students' attitudes toward the use of WhatsApp for learners-contents dialog were rated at the very high level (mean= 4.52).

From the above result, chart 2, shows the students' attitudes toward the use of WhatsApp for three ways of dialog. It revealed that students-instructor dialog has the highest overall mean (4.67).

Chart 2: students' attitudes toward the use of WhatsApp for three ways of Dialog.
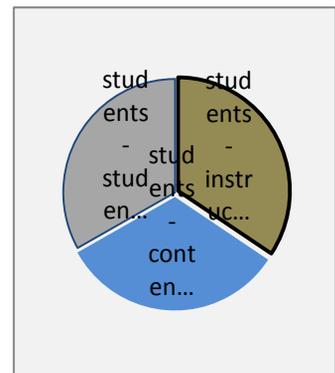
7. Result related to the second research question

The finding answered the second question of the study, which is, "What are the learner's views on WhatsApp application use as an educational tool?" The outcomes were shown on Table 4. A descriptive analysis that involved mean and standard deviation for the whole questionnaire items (45items) was used to identify students' feelings concerning WhatsApp applications in learning.

Table 4: Students' responses on WhatsApp application in study

No	Attitude	Mean	Std. deviation
1	Reminds us of upcoming assignments to start work and organize my time	0.413	4.79
9	It is easy to contact the instructor	0.474	4.79
18	WhatsApp allows me to academically engage with lecturers materials at any time and any place	0.622	4.79
35	Whatsapp offers a telephone call for communication with other students	1.354	3.71
	Total Instrument	.321	4.52

The results shown on Table4, revealed the descriptive analysis (Mean and indexes of variability) of the forty five items in the questionnaire instrument that have been used to describe students attitude. It indicated that the overall mean score for this instrument items was 4.52. It shows that item#1, item#9, and item# 18 received the highest mean value (4.79). On the other hand, it revealed that item# 35 the last rank with a mean value (3.75).

8. Discussion of findings and Conclusion

At the end of the analysis, significant improvements were seen, with most students with undesirable learning skills now adopting a more confident and active role in class discussions unlike before. Additionally, no significant changes were noted on the desirable traits, meaning they were not eroded during the research. From these findings, the study concluded that WhatsApp is a useful tool for learning and communication improvement due its speed in addressing learning deficiencies. (NorashuhaTajuddin et al. 2013). The researchers also found that had the investigation continued for more days, the students would display more desirable learning behaviors.

Recommendations

The research findings proved beyond doubt that most students were in favor of the use of WhatsApp group dialogue in learning. As a result, teachers should adopt this strategy especially when issuing out assignments. Through strong teamwork displayed by the results of this analysis, students can scale to commendable milestones, hence increasing their knowledge through group discussions and develop desirable interpersonal skills. This approach is therefore essential for every institution and teacher to adopt.

Conclusion

The advancement of technology has facilitated students and teachers the opportunity to make learning better and easier. WhatsApp is one of the mostly used interactive platforms by the students for communication and entertainment purposes. However, from this study, it is clear that the application can prove essential if properly implemented in the education arena. The study showed that once the application was turned into an educative and learning platform, students improved their skills

significantly through interactions and discussion. Although WhatsApp can yield positive results if used as an academic tool, teachers need to ensure that the application is implemented in the recommended manner, to avoid students missing the platform for other purposes other than fir academic gains. Therefore, from the study, it is clear that WhatsApp qualifies as an integral tool that can be used in learning.

References

[1].   A.P. Jomon, M.B. Hope, and D.C. Justin, "Effect of online social networking on student academic performance," Computers in Human Behavior, Elsevier Ltd, USA, pp. 2117- 2127, 2012.

[2].   Abaido,. G. and El-Messiry,.H. (2016) Efficiency of WhatsApp as a Means of. Disseminating Educational Information.*IT & Knowledge and Excellence*.(Paper.5.2) pp.1-6.

[3].   Alghamdi, E. A., Rajab, H., & Rashid Shah, S., (2016). Unmonitored students self -created WhatsApp groups in distance learning environments: A collaborative learning tool or cheating technique. *International Journal of Research Studies in Educational Technology* . 5(2), 71-82.

[4].   Al-Mashaqbeh,   I. (2015) "Facebook Applications to Promote Academic Engagement: Student's Attitudes towards the Use of Facebook as a Learning Tool". Modern Education and Computer Science, 2015, 11, 60-66.

[5].   Amry, A.B. (2014). The Impact of WhatsApp Mobile Social Learning on the Achievement and Attitudes of Female Students Compared with Face to Face Learning in the Classroom. European Scientific Journal.Vol.10(22), pp. 116-136.

[6].   Awada.Gh. and , Wang. Sh. (2016).Effect of WhatsApp on critique writing proficiency and perceptions toward learning.*Cogent Education*, 3(1), 1264173.

[7].   Baffour-Awuah, E. (2015). Institutional case-based study on the effect of research methods on project work in the curriculum of mechanical engineering programmes in Ghanaian polytechnics. *Journal of Education and Practice*, 6, 20–32.

[8].   Barhoumi, C., Rossi , PG. (2013). The   Effectiveness of the Instruction Oriented Hypertext Systems compared to Direct Instruction in e-learning Environment. *Contemporary Educational Technology*, 4(4), 281-308.

[9].   Benson, R., &Samarawickrema, G. (2009). Addressing the context of e-learning: using transactional distance theory to inform design. *Distance Education*, 30(1), 5-21.

[10].   Bers, M. U. (2010). *New media and technology: Youth as content creators*. San Francisco: Jossey-Bass/Wiley.

[11].   Bouhnik, D.,   &   Deshen, M. (2014).WhatsApp goes to school: Mobile instant messaging between teachers and students. *Journal of Information Technology Education: Research*, 13, 217-231.

[12].   Brown, M. A. (2017). *Social media performance evaluation and success measurements*.

[13].   Church, K., & de Oliveira, R. (2013, August). What's up with WhatsApp? Comparing mobile instant messaging behaviors with traditional SMS.*In Proceedings of the 15th   international conference on Human-computer interaction with mobile devices and services* (pp. 352-361). ACM

[14].   Crescente, Mary Louise; Lee, Doris .(2011). Critical issues of m-learning: design models, adoption processes, and future trends. *Journal of the Chinese Institute of Industrial Engineers*, 28 (2): 111–123.

[15].   Davidovich, R. (2010). *Beyond school improvement: The journey to innovative leadership*. Thousand Oaks, Calif: Corwin.

[16].   Falloon, G. (2011). Making the Connection: Moore's Theory of Transactional Distance and Its Relevance to the Use of a Virtual Classroom in Postgraduate Online Teacher Education. *Journal Of Research On Technology In Education*, 43(3), 187-209.

[17].   Gullifer, J. M., & Tyson, G. a. (2013). Who has read the policy on plagiarism? Unpacking students' understanding of plagiarism.*Studies in Higher Education*, (August), 1–17.

[18].   Herring, M. Y. (2015). *Social media and the good life: Do they connect?*

[19].   In Luaran, J. E., In Sardi, J., In Aziz, A., & In Alias, N. A. (2016). *Envisioning the Future of Online Learning: Selected Papers from the International Conference on e-Learning 2015*Journal of Educational and Instructional Studies in The World, 6(1), 2146-7463

[20].   Martin, D. J. (2012). *Elementary science methods: A constructivist approach*. Belmont, CA: Wadsworth, Cengage Learning.

[21].   Motiwalla, L. F. (2007). Mobile Learning: A framework and evaluation. Computers &Education, 4, 581- 596

[22].   Naidoo.J. & Kopung.K. (2016)."Exploring the Use of WhatsApp in Mathematics Learning: A Case Study".*Journal of Communication*, 7(2), 266-273

[23].   Nassar.D (2016). Case Study of Using Whatsapp In Princess Nourah University.

[24].   Nitza, D. &Roman,Y. (2016) WhatsApp Messaging: Achievements and Success in Academia. *International Journal of Higher Education*.5(4).

[25].   Norashuha T.; Hamdan S.; Ros I.; Nguyen T., Tee T. ;Mohd. R.; Noriadah. A. (2013). Keperluan Medium Perkhidmatan AtasTalianDalamPelaksanaanPenasihatanAkademik.2nd *International Seminar on Quality and Affordable Education* (ISQAE 2013). Pp. 506-514.

[26].   Rambe, P., &Chipunza, C. (2013). Using mobile devices to leverage student access to collaboratively-generated resources: A case of WhatsApp instant messaging at a South African University. *Paper presented at the International Conference on Advanced Information and Communication Technology for Education*, ICAICTE 2013, Hainan,   China.

[27].   Riyanto, A. (July 2013). English Language Learning Using WhatsApp Application‖.khmadRianto, Love for All, Hatred for None. Word Press, the Splendid Theme.

[28].   Rovai, A. P. (2002). Development of an instrument to measure classroom community. *Internet and Higher Education*, 5, 197–211.

[29].   Saba, F., & Shearer, R. L. (2018). *Transactional distance and adaptive learning: Planning for the future of higher education*.

[30].   Sahajwani., L. (2016). Impact of WhatsApp messenger on academic performance of students- A   Case Study of SIRT-Bhopal.*TIMSR Journal of Management Research Conference Special Issue June*2016 .

[31].   Tamim, R., Colburn, L., El Saadi, L., and Qunneis ,S. (2016). What's Up With Whatsapp In The Classroom?, *the annual International Conference of Education,Research and Innovation Seville, Spain*. 14-16 November, 2016.ISBN: 978-84-617-5895-1 / ISSN: 2340-1095, ICERI2016 Proceedings, p. 2752.

[32].   White, B., King, I., & Tsang, P. (2011). *Social Media Tools and Platforms in Learning Environments*. Berlin: Springer Berlin.

[33].   Yavuz, F (2016). "Do Smartphones Spur or Deter Learning: A WhatsApp Case Study. *International Journal of Educational Sciences*". 15(3), 408-415.