Social Network Applications as a Teaching-learning Platform: Effectiveness on Student's Performance in Higher Education

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ABSTRACT: In this paper we use Facebook and WhatsApp as social network applications for teaching-learning undergraduate students of Martin Luther Christian University (MLCU). This paper examined the effectiveness of using Facebook group and WhatsApp group during the course that was carried out over a period of 36 hrs. The study design is an experimental between two groups. Students have been divided in to two groups through random selection as experimental group (n=22) and control group (n=23). Pre test was performed before the experiment for both the control and experimental group and finding shows no significance difference. This can be explained with groups of students are beginners in the course, hence, they have had the same level of knowledge and hence no significant difference was noticed. Post test was conducted immediately after the experiment. The findings from the post test revealed that the experimental group made better and effective learning progress compared to the control group. Follow- up test was conducted after five months gap and results revealed better performance signifying long term retention for experimental group. Furthermore student's feedback from the experimental group showed positive feedback on the use of Facebook and WhatsApp for teaching-learning on the university students.

Keywords: Social Networking Sites, Facebook, WhatsApp, teaching-learning, e-learning, pedagogy, higher education;

I. INTRODUCTION

Facebook is the most popular Social Networking Sites (SNSs) today and most preferred SNSs by the students [1-4]. Regardless of the availability of many Social Networking Sites, Facebook has been announced "possibly the most powerful digital means of communication in modern times" [5]. Facebook is considered as one of the pinnacle Social Networking Sites and has a huge range of users more than all other SNSs [6-8]. Facebook is thought to be the social network choice among learners because it was initially launched for students in February 4th, 2004 by Mark Zuckerberg, Dustin Moskovitz, Chris Hughes and Eduardo Saverin (Facebook.com). It was first created for Harvard University students to link or connect with each other and was limited to users from Harvard University. By 2004, the website had multiplied to over 1million users. In 2005 it was expanded to introduce high schools [9-10] and international schools [11], while in 2006 communities for professional organizations were introduced. Since 2006 it was accessible to anyone with a valid email address [9]. Facebook has been constantly growing in membership and changing its features or adding new ones. Today Facebook is no longer an exclusively academic community, but has a variety of users from all areas of society [12]. A survey conducted by [13] demonstrated that Facebook dominates the space, with 92% of the respondents having a Facebook account. By August 2013 the total number of Facebook user has reached to 1.5 billion active users.

WhatsApp is a social network application and an instant messaging application platform for mobile phones and computers [14]. It was launched in 2009 by Lan Koum and Brian Acton. WhatsApp has reached to one billion users as of February 2016, making it the most popular messaging application [15]. WhatsApp Inc. is located in Mountain View, California, United States and on February 19, 2014 it was obtained by Facebook Inc. for approximately 19.3 billion US dollars. WhatsApp is a free messenger application that is used to support multimedia messages like photos, videos, audio and simple text messages and it is widely used among undergraduate students [16]. As of 2014, WhatsApp had over 500 million monthly active users, 700 million photos and 100 million videos were being shared daily, and the messaging system was handling more than 10 billion messages each day. On August 24, 2014, WhatsApp had over 600 million active users worldwide. At that point WhatsApp was adding about 25 million new users every month, or 833,000 active users per day. With 65 million active users representing 10% of the total worldwide users, India has the largest number of consumers. In May 2017, it was reported that WhatsApp users spend over 340 million minutes on video calls each day on the app. This is the equivalent of roughly 646 years of video calls per day. As of February 2017, WhatsApp had over 1.2 billion users globally, reaching 1.5 billion monthly active users by the end of 2017. India is the biggest market for WhatsApp as it reached 200 million monthly active users in February 2017. In India, WhatsApp is the most popular social network choice among learners [17-18].

II. LITERATURE REVIEW

(i) Facebook use for teaching-learning: Davidovitch and Belichenko [19] explored Facebook group use at university. Study shows that Facebook group facilitates easier communication among learners, create a positive social atmosphere and sharing expertise and

educational material across group members. Study examined the relationship between student's participation in an educational Facebook group with students' achievements and satisfactions. Results revealed a strong correlation between these variables which may help sensitize the benefits of Facebook group use for educational purposes. Davidovitch and Belichenko [20] analyzed the gender differences among the undergraduate students use of Facebook in Malaysia. Male students had a higher frequency of Facebook visit (93.9%), male students felt more competent (48.5%) and more satisfied (42.2%) in using Facebook in comparison to female students. Moreover male students had a higher overall score on the perceived usefulness of Facebook in higher education, while female students had a higher overall score on the perceived ease of use of Facebook. The study also revealed that there was no gender difference in using Facebook in higher education. Sirivedin, Soopunyo, Srisuantang and Wongsothorn [21] studied on the use of Facebook by English language teachers. All participants used the English language to interact on Facebook every day for six weeks. The findings of this study indicated that Facebook could significantly help improve writing skills. It also improves fluency and confidence. Saif, Tlili, Essalmi and Jemni [22] aimed to evaluate the efficiency of designed Facebook learning tool for the undergraduate students. This study reported that the use of Facebook tool in game development led to better learning compared to the control group. Besides, learners found this tool useful, interesting and safe, resulting in better engagement and a more competitive attitude. Kazi, Saxena and Vinay [23] studied the use of Facebook for second year BDS students. The students were divided in two groups as Facebook and control group. The results showed that Facebook group performed better. Iqbal, Rehman and Khushi [24] conducted a study to explore the views of students regarding Facebook as an instructional tool at the university level in Pakistan. The findings proved that Facebook based learning is flexible and always accessible and therefore, feasible for working students. Ping and Maniam [25] studied on the effectiveness of Facebook group discussions on writing performance. This study tested the effect of Facebook discussions by comparing two groups of learners control and experimental group on writing tasks. The results showed that there are positive attitudes of college students on Facebook group discussions. In contrary, there is significant effect of Facebook group discussions on students' writing performances. Albayrak and Yildirim [26] investigated the relationships between Facebook page as course management system and acceptance of Facebook for learning. A Facebook page was created to serve as the course management system for two courses. Course content and other teaching and learning activities were conducted on the Facebook page. It was discovered that Facebook has the potential to improve student- centered discussions and communication beyond classroom among instructors and students. Relationships between Facebook page as course management system and acceptance of Facebook for learning depends on the course.

(ii) WhatsApp use for teaching-learning: Stone and Logan [27] conducted three separate cohorts of students from the Masters in Special Educational Needs (MSEN) at St. Patrick's College. The results emerged that the use of WhatsApp was widespread, offering students an opportunity to forge a sense of connection and the basis for developing a learning community. Gon and Rawekar [28] examined WhatsApp as a teaching learning tool for medical students and to compare the improvement of knowledge gain through e-learning and didactic lecture. Assessment of knowledge was done by giving pre and post-test questionnaire. The results revealed that constant available of facilitator and learning anytime anywhere has made WhatsApp a new and convenient tool for teaching learning. Though there was no significant difference between gain of knowledge from WhatsApp or didactic lectures, advantages (technical, educational or instructional) out pars the disadvantages. Message flooding and eyestrain were some of the drawbacks reported by the students. Jafari and Chalak [29] investigated the role of WhatsApp in the vocabulary learning improvement for high school students. Findings revealed that there was no difference between male and female students regarding their vocabulary knowledge after using WhatsApp. Nitza & Roman [30] explored students' level of achievements and satisfaction as part of a WhatsApp group with the aim of investigating whether use of a WhatsApp group as part of guiding an academic seminar will improve achievements in writing the seminar paper. The findings show a significant positive relationship between the achievements of WhatsApp users and their satisfaction, such that the higher the achievements of WhatsApp users the higher their satisfaction. The findings illuminate the possibilities offered by technological tools for teaching practice. Ashiyan and Salehi [31] examined the impact of WhatsApp on school work and out of school work. The results demonstrated that the experimental group who used WhatsApp application in learning had better performance compared to the control group in post test. Thus use of WhatsApp application can reinforce and enhance the process of collocations acquisition and it guarantees retention of collocations. Bansal and Joshi [32] explored collaborative learning in WhatsApp mobile learning atmosphere to B.Ed. teacher trainees. Findings showed that students feel that learning through WhatsApp were effective, interesting and educationally useful. They found that their social interactivity with their peers and teacher has increased moreover they learned collaboratively. The attitude of the students toward WhatsApp learning was favorable. The study also revealed that married students found learning through WhatsApp were disruptive and that they prefer learning in traditional classroom as it does not collide with their family time. Barhoumi [33] explored blended learning using WhatsApp reflected that students who were connected with WhatsApp in addition to classroom activities performed well in academics as compared to the control group without any WhatsApp.

III. RESEARCH QUESTIONS

Q1. What will be the level of performance if students use Facebook and WhatsApp as a teaching-learning platform?

Q2. What benefits will Facebook and WhatsApp provide to the learning experience of the student?

IV. METHODOLOGY

(i) Research design: The research design adopted in this study was quantitative design. The study design was an experimental between two groups. Students have been divided in two groups through random selection as experimental group (n=22) and control group (n=23). To encourage online interaction among teacher and students, Facebook and WhatsApp group was created for the experimental group to participate online and associated in conversation during the course of study. The control group has been exposed to the conventional face to face lectures for learning the course. The two learning group was taught by different teacher to ensure the consistency of the implemented content. The course was carried out over a period of 36 hrs between March 2019 - June 2019.

(ii) Sample unit and Size: The sample unit is the undergraduate students of BSc Psychology from the department of Psychology of Martin Luther Christian University (MLCU). The sample size is 45 students.

V. RESULTS

Q1. What will be the level of performance if students use Facebook and WhatsApp as a teaching-learning platform?

To answer the above research questions a pre test, post tests and follow up test questionnaire tool was designed and prepared for the students of the control and experimental group. A pre-test questionnaire was conducted before starting of the course to test the knowledge of the students in the subject. A post-test was conducted immediately after the end of the course. Follow up test was conducted after 5 months gap.

(i) Pre test results: This section provides a comparative quantitative data of the two groups control and experimental groups. As shown in Table 1, the obtained mean of the pre-tests of both control and experimental groups is almost the same. Besides, as shown in Table 1, there is no significant difference between the pre-tests mean of both groups since the obtained p value is equal to .801 and greater than 0.05. This can be explained with groups of students are beginners in the course; hence, they have had the same level of knowledge and hence no significant difference was noticed.

Table 1: Pre test scores of control and experimental groups.

Test	Group	n	Mean	SD	p value
Pre test	Control	23	8.750	2.78	.80
	Experimental	22	8.98	3.14	

(ii) Post test results: As shown in Table 2, there was a significant difference between the mean scores in post tests of both groups, since the obtained p value is equal to .001 and less than 0.05. In particular, the experimental group had better post test results compared to the control group.

This is explained with the designed Facebook and WhatsApp group activity tool which has significantly influenced the students' level of performance compared to the control group. As a result, the experimental group made better learning progress compared to the control group.

Table 2: Post test scores of control and experimental groups.

Test	Group	n	Mean	SD	p value
Post-test	Control	14	16.71	3.17	.001
	Experimental	20	20.75	3.09	

(iii) Follow- up test results: As shown in Table 3, there was a significant difference between the mean scores in follow up test of both groups, since the obtained p value is equal to .003 and less than 0.05. In particular, the experimental group had better follow up test results compared to the control group. Follow up test revealed a better performance signifying long term retention for experimental group.

Table 3: Follow- up test scores of control and experimental groups.

Test	Group	n	Mean	SD	p value
Follow-up	Control	20	10.72	2.46	.003
	Experimental	21	13.40	2.90	

Q2. What benefits will Facebook and WhatsApp provide to the learning experience of the student?

To answer the above research question student's feedback questionnaire on Facebook and WhatsApp was prepared for the experimental group which included usefulness, learning resources, distraction and privacy of Facebook, advantages and disadvantages on WhatsApp. Likert scale rating Strongly Disagree (SD=1), Disagree (D=2), neither agree nor disagree (N=3), Agree (A=4) and Strongly Agree (SA=5) were used as measurement.

In Table 4, responses have median value 4. Thus, majority of the students agree on the usefulness of Facebook as learning tool.

Table 4: Results of usefulness of Facebook group (n=22).

	Usefulness	SD=1	D=2	N=3	A=4	SA=5	Median
1	Facebook group was beneficial as a learning tool	0	2	9	7	4	4
2	Use of Facebook improve communication between group members	0	4	7	4	7	4
3	Facebook group is a good place to contact with teacher outside the class	1	3	2	8	8	4
4	Use of Facebook improve performance in subject	0	0	5	8	9	4
5	Use of Facebook improve skills in technology	0	3	2	8	9	4

In general Table 5, responses have median value 4. Therefore, majority of the students agree on Facebook group as a platform for learning resources.
Table 6 show the analysis on the average response to questions on distraction and privacy of Facebook. In general, responses have median value between 1 to 4. Students seems to have different opinion on distraction and privacy of Facebook.

In Table 7, responses have median value ranges between 4 and 5.Thus, majority of the students at median value 5 strongly agree on the advantages of using WhatsApp group for learning.
In general Table 8, responses have median value between 1.50- 2.50 for all the questions. Thus, majority of the students disagree on challenges faced when using WhatsApp group.

Table 5: Results of Facebook group as platform for learning resources (n=22)

	Platform for learning resources	SD=1	D=2	N=3	A=4	SA=5	Median
1	Features like posting videos and pictures were helpful in Facebook	0	1	5	9	7	4
2	Facebook is a good place to ask for help about homework assignments	0	1	5	7	10	4
3	Facebook is a good place to check for class related updates and notices	0	1	4	9	8	4
4	Facebook is a good place to access links to learning resources provided by the teacher	0	1	7	8	6	4
5	Features like solving quizzes and puzzles related to subject is helpful in Facebook group	0	2	7	4	9	4

Table 6: Results for distraction and privacy (n=22).

	Distraction and Privacy	SD=1	D=2	N=3	A=4	SA=5	Mean	Median
1	I feel secure when uploading course related materials, videos and pictures on Facebook group	1	1	4	13	3	3.73	4
2	Use of Facebook group has cause distraction in studies	11	6	3	2	0	1.82	1
3	Privacy would be invaded when using Facebook	5	2	10	5	0	2.68	3
4	Use of Facebook will be waste of time for educational purpose	8	8	3	3	0	2.05	2
5	Group privacy settings (that limit access to personal information in FB) is useful	0	2	8	8	4	3.64	4

Table 7: Results for Advantages on using WhatsApp.

	Advantages on using WhatsApp	SD=1	D=2	N=3	A=4	SA=5	Median
1	WhatsApp group was simple to use	0	0	0	4	18	5
2	WhatsApp group is free of charge	0	2	1	6	13	5
3	WhatsApp was easily available and downloadable	0	0	1	6	15	5
4	I feel secure when uploading course related materials, videos and pictures in WhatsApp group	0	0	1	7	14	5
5	High interaction with teacher in WhatsApp group	0	0	2	12	18	4
6	WhatsApp group is a good place to access links to learning resources shared by the teacher and group members	0	0	0	11	11	4
7	High interaction with classmates in WhatsApp group	0	0	5	11	6	4
8	Doubts was immediately cleared while interaction in WhatsApp group	0	0	5	11	6	4
9	WhatsApp group is a good place to check for class related updates, assignments and notices	0	0	0	10	12	5
10	WhatsApp group can be use in coursework as often as possible	0	0	5	9	8	4

Table 8: Results for Challenges faced on using WhatsApp.

	Challenges faced on using WhatsApp group	SD=1	D=2	N=3	A=4	SA=5	Median
1	No smart phone for joining WhatsApp group	7	7	4	3	0	2.00
2	Message flooding in WhatsApp group	2	11	2	7	0	2.00
3	WhatsApp group was a waste of time for education	11	9	2	0	0	1.50
4	Group maintenance problem in WhatsApp group	1	13	6	2	0	2.00
5	WhatsApp group has cause distraction in your studies	7	11	2	2	0	2.00
6	Use of inappropriate language in WhatsApp group	8	10	2	2	0	2.00
7	Huge amount of learning material makes it confusing in WhatsApp group	5	14	2	1	0	2.00
8	No efforts by some group members	3	8	5	6	0	2.50
9	Some students share materials and contents to impress teacher without actually learning about it	3	11	6	2	0	2.00
10	Privacy would be invaded	3	10	6	2	1	2.00

VI. DISCUSSION

The effectiveness of the study may be looked at from the outcome of the results. Effective learning takes place when students are actively engaged in the learning process through different activities and tasks. A similar study demonstrates that social network application like Facebook is valued for enhancing communication between classmates, connecting with teachers, improved performance and skill in technology [34].

(i) Post test results: The effectiveness of the study may be looked at from the outcome of the results.

In comparing the performances of the students in the control group and experimental group, there was a significant difference in the mean scores between the two groups in post test. Use of Facebook and WhatsApp has significantly improved the students' level of performance in the experimental group. Similar studies have shown the beneficial use of Facebook [19-24] and WhatsApp [28-33] as a learning platform.

(ii) Follow-up test results: The performance of the students in the experimental group was found to be better than those in the control group in a follow- up test administered after a gap of five months. This seems to indicate that the use of Facebook and WhatsApp has significantly provided long term potential benefit in retention of knowledge. Similar findings have shown the benefits of SNSs that can provide to students and to academic education [3, 4, 10, 12].

VII. CONCLUSION

The findings from the study showed the positive impact on the use of Facebook and WhatsApp on the university students. The findings revealed that the experimental group made better learning progress compared to the control group. This is explained with Facebook and WhatsApp group which have significantly influenced the student's level of performance compared to the control group. Furthermore student's feedback from the experimental group showed positive feedback. Nevertheless, the study was carried out for single course in the university and moreover to know the long term effects in learning it is essential to explore the use of Facebook and WhatsApp across the discipline of study to be able to generalize the results.

VIII. FUTURE SCOPE

Considering that the study was confined to single university, future studies may involve the students from various institutions to examine the effectiveness of using Facebook and WhatsApp for teaching-learning.

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