

University Students' Attitudes towards Cell Phone Learning Environment

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Abstract—This study aims at investigating Jordanian university undergraduate and graduate students' attitudes towards the learning environment where cell phones are used as learning tools in classroom. To achieve this goal, the researchers distributed two questionnaires among two groups of two different levels of randomly chosen university students at the Faculty of Educational Sciences at Al-al-Bayt University. The first one addresses 30 undergraduate students, 12 male and 18 female. The other addresses 20 graduates, 7 male and 13 female. The study comprised two independent variables, level and gender, as covariates. The findings indicate that undergraduates are more favorable to cell phone environment than graduate students. The study also reveals that cell phone has more influence on male students than on female students.

Index Terms—students' attitudes, cell phone, mobile learning, mobile phone, digital age.

I. INTRODUCTION

The rationale of studying students' attitudes towards the cell phone learning environment stemmed from the rapid innovative technological revolution, especially in the field of telecommunication. This tool has mostly affected the young due to their noticeable involvement in spending most of their time pressing the buttons of their beloved cell phones. Surveys show that university students' interest and consumption of technology continue to increase and that are more prominent in students who achieve academic success (Chase and Herrod 2005). So, it is really time to prove that this tool caters for educational and personal empowerment. As university students need global and comprehensive information, using cell phone in the classroom will inevitably promote critical thinking and satisfy their needs.

Before even thinking of introducing cell phone to the educational process, it is necessary to survey students' attitudes. To achieve this goal, some researchers encouraged students to use short messaging service (SMS) to help students inform and ask about certain points have been already discussed by the lecturer or even as a means of study. Analyzing their surveys researchers concluded that cell phone is strongly welcomed as a valuable tool of teaching Thornton and Houser (2005), Fozdar and Lalita (2007) and Thatcher and Mooney (2008).

Many studies tackled the subject of students' attitudes towards mobile learning, yet very few researches surveyed university students' attitudes towards cell phone learning environment. The significance of this study is that it investigates undergraduate and graduate university students' attitudes towards the cell phone learning environment where cell phones are used as learning tools

in classroom. The researchers comprised two independent variables, group and gender, as covariates.

1. PURPOSE OF THE STUDY

The main purpose of this study is to investigate Jordanian university students' attitudes towards cell phone learning environment. Moreover, this study also investigates whether there are any differences in university students' attitudes based on gender and level (undergraduate and graduate). Specifically, this study aims at finding answers to the following questions:

1. Do university students appreciate using cell phone in the university learning environment?
2. Do graduate and undergraduate students share the same degree of attitudes towards using the cell phone in the learning process?
3. Does gender influence students attitudes towards cell phone in learning process?

To answer these questions, two questionnaires were distributed among the two groups of university students (undergraduates and graduates).

II. LITERATURE REVIEW

Using most recent technical communication devices to facilitate the process of learning and teaching, scholars tried to put them in the heart of the educational process. Therefore, PDA, Laptop, internet and smart phone are used in what is called mobile learning. To study the impact of these devices, researchers have surveyed students' and sometime teachers' reactions against these new intruders Sipilä (2008). Among those researchers, Al-Fahad (2009), Chase and Meghan (2007) and Barkatsas (2007) conducted studies to figure out students attitudes towards mobile learning. They found out that students favor using mobile devices in the process of learning. Their findings encourage researchers interested to extensively study methods and techniques of providing knowledge via modern technological tools.

Al-Fahad (2009) conducted a study to better understand and measure students' attitudes and effectiveness of mobile learning. The result of his study revealed that the majority of students supported the idea that the wireless networks increase the flexibility of access to resources of learning independently in any place. Therefore, students can save their time, effort and even money.

Investigating students' attitudes towards new technology involvement in the process of university learning, Chase and Meghan (2007) surveyed students at Slippery Rock University to determine their engagement with and attitude towards technology on campus. Their study indicates that the subjects of their study revealed

more and more satisfaction with the use of technological devices in the educational process.

To demonstrate the power of The Mathematics and Technology Attitudes Scale, Barkatsas (2007) surveyed 350 students from 6 schools. The study showed that the students had a wide range of attitude towards learning mathematics with technology. The researcher found out that male students showed more confidence in using technology, however, female students showed negative correlation with mathematics confidence.

To study attitudes towards cell phone in particular, Thornton and Houser (2005), Thatcher and Mooney (2008), Fozdar and Lalita (2007) and Baya'a and Daher (2009) conducted their researches on the attitude towards the use of cell phone from different perspectives. The researchers agree on the notion that students are in favor of using cell phone in the process of learning.

Thornton and Houser (2005) polled 333 Japanese university students regarding their use of mobile devices. Trying to use the cell phone as a means of study, they found out that 93% of the sample of the study believe that this is a valuable teaching method, exchanging some 200 e-mail messages each week. Sixty-six percent e-mail peers about classes; 44% e-mail for studying.

Thatcher and Mooney (2008) analyzed a questionnaire distributed at the end of a university course with students to use cell phone text messaging to send questions to the lecturer during classes or between classes. The results indicated that students had strongly favorable perceptions of this initiative and suggested more future uses of mobile phone in the process of education to enhance the learning experience.

At the end of a university course, where students were encouraged to use mobile phone text messaging to send questions to the lecturer during classes or between classes, Fozdar and Lalita (2007) conducted a survey to better understand and measure students' attitudes and perceptions towards the effectiveness of mobile learning. Results of this survey reveal that introducing mobile phone could be helpful in improving retention at Bachelor of Science students, by augmenting their teaching/learning and supporting the existing learning system. Fozdar and Lalita found out that more than half of the respondents surveyed highly support the introduction of mobile phone to enhance the learning experience.

Baya'a and Daher (2009) conducted a research to examine the perception of the students regarding their mathematics learning using mobile phones. The study revealed that the subjects of the study positively appreciated the great capabilities of cell phone in the process of learning/teaching mathematics.

To find out attitudes towards mobile phone conversations in public places, Love and Kewly (2005) carried out a study that revealed variety in personality influence people's attitude towards making calls in public. Besides, the researchers discovered that the nature of personality has an impact on peoples' attitudes towards being close to people making mobile phone calls in public places.

Kumiko and Downes (2003) surveyed college students' cell phone usage from a behavioral and psychological perspective. Analyzing their survey they concluded that people have various feelings and attitudes towards cell phone usage.

Waldman et al. carried out three surveys in (2002) and (2003), and then ran comparisons using the data collected from the surveys conducted. Two surveys in the same year (2002) were about cell phone ownership, payment of cell phone bills, and reasons for the purchase usage of cell phones. Another survey (2002) of Americans determined locations where they felt it was acceptable to communicate using a cell phone. The results of this study (2004) show that Organizational Systems Research Association (OSRA) attendees will gain awareness of the impact of cell phone usage on university students and their attitudes towards the use of cell phones.

Pachler and Bradley (2008) conducted a study on the use of high-end mobile phones for off-site and on-campus mobile learning. The aim of their study was to investigate how mobile devices are being integrated by learners in formal and informal contexts. In their study two dominant themes emerged from the cases: affective issues and phone usage in a learner's formal and informal practice. Moreover, the data suggest that the learner might benefit from the use of facilities of the cell phone, for example, sending messages in certain contexts, which could provide the a way of bridging the gap between formal and informal learning.

However, the researchers have found that cell phone use in the area of the university environment has not been well researched. Therefore, they decided to investigate university students' attitudes towards cell phone learning environment to help those in charge of the educational techniques to come to a decision of whether it is worthy to use cell phone as means of study or not.

III. METHODOLOGY

A. Participants

The population of this study consists of two groups of two different levels of university students (undergraduates and graduates) at the Faculty of Educational Sciences at Al-al-Bayt University. The population of the first group consists of 97 students majoring Classroom Teacher enrolled in Course 1101242 (Designing and Producing Instructional Media) during the second semester 2008-2009. The population of the second group consists of 27 Master students who work as teachers; and continue their higher studies in Educational Curricula and Instruction. The students of this group enrolled in Course 1101774 (Educational Technology) during the second semester 2008-2009. The samples of the two groups were randomly chosen as follows: group 1 includes 30 undergraduate students, 12 male and 18 female; and group 2 includes 20 graduate students, 7 male and 13 female.

B. Research Design and Method

To answer the questions of this study, two questionnaires* were distributed among the two groups (undergraduate and graduate). Each group has its own questionnaire with five degrees of expressing agreement to choose, so as to measure university students' attitude towards the cell phone environment learning. The first questionnaire was distributed to undergraduate students. It consisted of 19 questions in three areas. The first field aimed to discover students' attitudes towards the use of cell phone in the classroom environment (3 questions). The second part is to find out students attitudes towards the cell phone environment in the classroom (5 questions).

The third is to reveal students' aspirations towards the environment of the cell phone, after they have covered two units on mobile learning, and reviewed the relevant literature on using the mobile in the classroom (11 questions). The second questionnaire was distributed to graduate students (15 questions), to find graduate students' attitudes towards cell phone learning environment. The subjects of the study, have also access to some studies via the net where they watched the environment of learning via the cell phone. The data was collected and statistical analysis was carried out.

C. Results

To evaluate university students' attitudes towards cell phone learning environment, the researchers statistically analyzed the collected data. Three tables have been designed to outline the findings of the analysis. Table 1 reveals statistical analysis of undergraduates and graduates in term of level. A statistically significance was found between the undergraduates and graduates attitudes. A mean difference of 0.058 was found between the two groups in favor of undergraduate students with an overall average 3.378 of undergraduates and 3.320 of graduates. The standard deviation for the undergraduate (0.243 compared to 0.182) was higher than that of the graduates. This indicates that undergraduate students have positive attitudes towards the learning environment of the cell phone, whereas the graduates are not happy as much with the cell phone environment.

TABLE I.
AVERAGES AND STANDARD DEVIATIONS FOR UNDERGRADUATES AND GRADUATES

Group	N	Mean	Std. Deviation
Undergraduate	30	3.378	0.243
Graduate	20	3.320	0.182

Tables 2 and 3 show the findings concerning gender in each group. Table 2 points out that undergraduates male who prefer using cell phone in the university learning environment have an average of 3.63 and undergraduate female who are in favor have an overall average of 3.378 ($t=3.320, p<.004$).

TABLE II.
AVERAGES AND STANDARD DEVIATIONS AND T GENDER TEST FOR UNDERGRADUATES

Gender	Quantity	Average	Standard Deviation	T Rate	Free Degree	Statistic Significance
Male	12	3.63	.139	3.320	18	.004
Female	18	3.21	.314			

Table 3 views that graduates male who prefer using cell phone in the university learning environment have an average of 3.58 and undergraduate female who are in favor have an overall average of 3.18 ($t=4.945, p<.00$).

TABLE III.
AVERAGES AND STANDARD DEVIATIONS AND T GENDER TEST GRADUATES

Gender	Quantity	Average	Standard Deviation	T Rate	Free Degree	Statistic Significance
Male	7	3.58	.148	4.945	19	.000
Female	13	3.18	.201			

Table 4 reveals students' attitudes towards cell phone in environment learning. Male students show more interest (average 3.61) in using cell phone than females (average 3.20).

TABLE IV.
AVERAGE AND STANDARD DEVIATIONS FOR GENDER

Gender	Quantity	Average
Male	19	3.61
Female	31	3.20

- Written in Arabic but translated into English (Appendix A)

D. Discussion

The main aim of this study is to investigate university students' attitudes towards cell phone in university learning environment. To accomplish this goal two surveys were conducted, one for undergraduates and another for graduates. Analyzing the data collected, the findings indicate that university students positively appreciate using cell phone in learning environment. However, female students are less enthusiastic.

The results of this study are consistent with Al-Fahad (2009), Dr. Mark E. Chase & Meghan (2007) and Barkatsas (2007) attitudes towards mobile devices in learning. Specifically, this came up with the same results of Thorton and Houser (2005), Fozdar and Lalita (2007) and Baya'a and Daher (2009). However, none of them tackled the influence of gender on the attitudes towards cell phone, though this study is inconsistent with Barkatsas (2007) findings that girls' relationship was negative to technology.

It should be noted that this is not meant to be a definitive study. There are some important limitations of this study; for example, students who live far from the university campus are more likely to favor distance devices for teaching.

E. Conclusion

It is found that this study supports the notion that the use of cell phone in the university learning environment is highly appreciated by both graduate and undergraduate university students, both male and female. Moreover, this study indicates that male students are more interested in using cell phones in their university environment.

The results revealed that the undergraduate students have positive attitudes towards the learning environment of the cell phone, whereas graduates (the teachers) are not happy with the cell phone environment. This stems from the fact that young people are more attached to the most modern gadgets, contrary to older people who are more conservative. No doubt that the effects of the constant use of this tool are reflected in students' tendency towards independent learning and new technology and the teachers' reluctant adopting of the learner-centered approach in the classroom environment.

It is really about time to prove that this tool caters for educational and personal empowerment. As university students need global and comprehensive information, using cell phone in class will inevitably promote critical thinking and satisfy their needs. Therefore, this study

might serve as a foundation on which future studies will be built.

F. Recommendations

Experiencing cell phone in the university learning environment, the researchers strongly believe that a lot of opportunities and potentials are to be realized. In spite of the inconvenient met in using these devices in class, we believe that forbidding them is not the right choice to be followed. Therefore, the researchers of this study recommend more studies on cell phones use and other techniques integration to utilize in university learning environment.

Therefore, it is a great mistake to overlook this device as a means of study. The researchers recommend that introducing university courses utilize mobile phone would be worthy, specially when the materials and knowledge required for an instructor to begin taking part in using the cell phone a device of learning are available.

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IV. APPENDIX A:

A. Questionnaire I

Attitudes towards Classroom learning Environment via Cell Phone

Please, read the following paragraphs. Draw X on the most appropriate alternative that suits your attitude as a student (undergraduate). The questionnaire consists of 19 paragraphs distributed into three fields.

First: Your attitudes towards using cell phone in the classroom.

No	Paragraph	Completely Disagree	Disagree	Normal	Agree	Absolutely Agree
1	Cell phone encourages me to learn in class					
2	Using cell phone is amusing because it easy to use.					
3	I prefer using cell phone to feel independent.					

Second: Attitudes towards cell phone environment in class.

4	Cell phone does not need cables which hinders movement.					
5	Cell phone little size facilitate its use in class.					
6	I concentrate a lot when using cell phone in comparison with other visual educational multimedia available in class.					
7	I feel learning via cell phone increases isolation in educational environment					
8	Cell phone environment is quiet and comfortable					

Thirdly: Your aspirations to cell phone environment in class:

9	Cell phone environments need large space in class.					
10	Class room with cell phone teaching needs special seats arrangement.					
11	Teaching via cell phone needs a base for each cell phone in the classroom.					
12	Charging the cell phone upsets me while learning via cell phone.					
13	Cell phone does not hinder student's movement in the class room.					
14	Teaching via cell phone encourages using independent learning strategy.					
15	Designing educational cell phone for educational environment is a necessity.					
16	Cell phone use in class saves time and effort.					
17	I prefer using the cell phone on the test in the classroom.					
18	I feel confused when the teacher walks in the classroom.					
19	No need for a teacher in classrooms of teaching via cell phone.					

B. Questionnaire 2

Attitudes towards Class Environment for Teaching via Cell Phone

Read the following paragraph. Draw X on the choice that suits your trend as a teacher (graduate).

No	Paragraph	Completely Disagree	Disagree	Normal	Agree	Absolutely Agree
1	It is difficult to administer the class while teaching via cell phone.					
2	Teacher's presence is necessary in the classroom of teaching via cell phone.					
3	Teacher's presence in teaching via cell phone confuses students.					
4	It is difficult to control teaching websites when students access via cell phone.					
5	The teacher allows students to communicate via cell phone among them in class.					
6	No verbal communication is allowed in class via the cell phone.					
7	The teacher feels bored because he has no control in the classroom.					
8	The teacher doesn't allow verbal communication via the cell phone.					
9	I prefer using computer lab to using classroom with cell phone.					
10	Learning via cell phone encourages class interaction.					
11	Learning environment via cell phone is the same in all educational subjects.					
12	The best, easiest and fastest learning technique is the cell phone.					
13	As a teacher, learning via cell phone is boring.					
14	Learning environment via cell phone is without problems.					
15	Any student can be accepted in the class room via cell phone.					