

Received on (27-03-2018) Accepted on (29-04-2018)

Higher Education Students' Perceptions towards Online Class Notifications via Mobile Devices

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Abstract

This study investigates the effects of using online notifications in higher education courses. University students received weekly notifications advising them on: upcoming instruction, recommended readings, study groups, and due dates for assignments in Education and Design courses in the University of Kansas in The United States of America. The students received the notifications on their preferred media by using mobile devices, cell phones or tablets in their homes or university. The study sought to understand how students value class notifications. The study used both quantitative and qualitative techniques in collecting and analyzing data. Students in Education (N=32) and Design (N=37) courses participated in a 16-week intervention followed by an online survey. Carefully timed and designed messages were distributed throughout the semester. A 77 items survey was sent to 69 applicants. The mean values of the 6 class notifications items (M=4) was significantly above the 3 Likert scale midpoint ($p<.000$). The results showed a significant positive correlation between the value of class notifications and usage skills ($r=0.351$, $p=0.017$). Notifications assist learners significantly in meeting class expectations and supports learners in completing tasks in a timely fashion. This study shows that class notifications are beneficial when the learners are skilled in using the notifications.

Keywords: Notifications, learning notifications, e-learning, m-learning, and mobile applications.

تصورات طلاب الدراسات العليا تجاه الإشعارات الصفية عبر الإنترنت باستخدام الأجهزة النقاله

الملخص

تبحث هذه الدراسة في آثار استخدام الإشعارات الصفية من خلال الإنترنت على طلاب الدراسات العليا. فقد قام هذا البحث على إرسال إشعارات أسبوعية لطلاب الجامعة وذلك لتقديم المساعدة وتذكيرهم بالمهام المطلوبة منهم. فمثلا اشتملت الاشعارات على التعليمات والطلبات المستقبلية ، والقراءات الموصى بها وفرق الدراسة الجماعية ومواعيد تسليم الواجبات والاختبارات في كلية التصميم وكلية التربية في جامعة كانساس في الولايات المتحدة الأمريكية. وقد سعى الباحث على إرسال الإشعارات للطلاب على الوسائل المفضلة لديهم. فتم إرسال الإشعارات على الأجهزة النقاله و الهواتف المحمولة أو الأجهزة اللوحية في المنازل و الجامعة. وتحاول الدراسة فهم كيفية تقييم الطلاب للإشعارات. هذا وقد وظفت الدراسة التقنيات البحثية بنوعها الكمية والنوعية في جمع وتحليل البيانات. وقد شارك في الدراسة 32 طالباً من كلية التربية و 37 طالباً من كلية التصميم طول مدة الدراسة والتي استمرت 16 أسبوعاً حيث متبوعة باستجاب استبانة على الإنترنت. وقد تم توزيع رسائل الإشعار بعناية تامة على طول الفصل الدراسي. وقد شارك في الاستبانة 69 طالباً في استبانة من 77 فقرة. وكانت القيم المتوسطة لتقييم اشعارات الفقرات الست (N=77) أعلى بكثير من ثلاث نقاط منتصف لمقياس ليكرت (Li kert scale) حيث بلغت ($p<.000$). أظهرت النتائج وجود علاقة ارتباط طردية بين قيمة الإشعارات الصفية واستخدام الأجهزة وعلاقة ارتباط طردية بين قيمة الإشعارات الفصلية والمهارات التقنية ($r=.355$, $p=0.017$). أظهرت الدراسة أن الإشعارات الصفية أسهمت في مساعدة المتعلمين بشكل كبير في تلبية توقعاتهم للمادة الدراسية. وأضافت الدراسة أن استخدام الإشعارات يدعم الدارسين في إنجاز المهام في الوقت المناسب. وتبين هذه الدراسة أن استخدام الإشعارات لأهداف مساعدة المتعلم مفيدة بشكل خاص عندما يكون حاملي هذه الأجهزة النقاله على مهارة تقنية في استخدام الإشعارات.

كلمات مفتاحية: إشعارات، إشعارات تعليمية، تعليم إلكتروني، تعليم نقال، وتطبيقات الهاتف النقال.

Introduction

The use of digital communication media to promote social connectedness has influenced our sociocultural lives immensely in the late twentieth and early twenty-first centuries. Mobile technology in particular is an increasingly sophisticated tool for bringing people closer together through its ability to utilize various social media, from facebook and twitter to the more intense and personal texting. It remains under debate whether or not people use these media especially texting to sustain their need for social connectedness in an exclusive approach (Mentor, 2011). Kaplan and Haenlein (2010) argue that social exchanges in interpersonal relationships were changed by the emergence of new technologies such as cell phones and online applications. Floyd (2011) explains that effective communication competency needed for successful and productive relationships remains defined as the advancement of social skills, resolving conflicts, and coping mechanisms. The field of psychology continues to be interested in these themes as integral areas of research (Griffin, 2012). Recently, social media more and more defines interpersonal communication. Large numbers of adult Americans are now cell phone owners. The age bracket with the highest percentage of cell phone owners is 18-29 years old. Approximately 83% of adults own a cell phone and use text messaging as the most frequently feature (Duggan and Rainie, 2012).

Mobile Technologies and Learning (M-Learning)

Mobile phones are more and more commonly found in the hands of students (Armatas, Holt, & Rice, 2005; Ison, Hayes, Robinson, & Jamieson, 2004). Wagner (2008) argues that among all mobile devices, mobile phones show the greatest potential as a method for delivering educational content to students. Furthermore, Wagner (2008) stresses that research needs to focus on specific applications of mobile technologies to support education. However, he added that might not be achievable due to the still developing field of m-learning. One approach to researching this area of m-learning is to focus on what the technology enables the user to do, not on the technology itself (Ison et al., 2004). A strong motivation to research is the belief that current mobile technologies have the ability to keep students engaged with material being taught.

(Ison et al. 2004) argue that mobile technologies have the ability to keep students' minds engaged with material from the classroom. Once they leave school, students can continue learning and participating in other educational activities such as assignments, tests, and quizzes. Cell phones have become a part of youth culture; therefore, interest in how mobile phones might be used to support education has increased (Ison et al., 2004).

M-learning fall under two categories of education method, distance education and e-learning (Keegan, 2005; Mellow, 2005). There are several distinctions that support an independent categorization of m-learning. Similar to e-learning, m-learning does not limit the user to a place and time. However, m-learning provides learners with the ability to remain on the move while communicating with people and accessing information and services (Trifonova & Ronchetti, 2003). There is some disagreement to what pieces of equipment constitute m-learning device. Some argue if the device is "mobile" then it is sufficient to label the type of education using the device as m-learning. At the time this study mentioned these devices include: mobile phones, smartphones, palmtops and handheld *personal digital assistant* PDAs, tablet personal computers PCs, laptop computers, and personal media players (Kukulaska-Hulme, 2005). However, Keegan (2005) argues that larger devices should be excluded, such as laptop and computers. It is argued that the device should be small enough to be carried in a pocket or handbag, be fully mobile, provide computing,

and have a high level of reachability between users (Mellow, 2005; Keegan, 2005; Kim, Mims, & Holmes, 2006).

Likewise, teachers connect with students through ways that are socially relevant to them as individuals make them feel it novel. Teachers do practice communication through technologies such as emails; therefore, they are already operating in the same realm of technology as adolescents and young adults. It is the nature of technology to evolve and advance in various ways and introduce new strategies to support learning. Development in technology is constantly happening and being tested. Often new strategies lead to a bigger workload. M-learning provides the convenience of not requiring hours of additional work in busy schedules and can easily be incorporated into daily schedules. Mass text messages to all students are permitted for teachers to group their students together and send out one piece of information to all. This function may provide extra time for teachers and students (Sorensen 2011).

Notifications Systems such as Text Messaging in Education

Several researchers (Brett, 2011; Gasaymeh & Aldalalah, 2013; Lim & Mansor, 2011) have argued that the capability of mobile phones to send and receive notifications messages and the growing worldwide popularity and availability has triggered a growing interest in how SMS (Short Message Service) technology can be used in adult education. The use of texting is receiving attention in adult education practice and research (Bull & McCormick, 2011; Kalinic, Arsovski, Stefanovic, Arsovski, & Rankovic, 2011; Ting, 2013). Many adults seek online education either entirely or partially (Means, 2010). Online education provides adults the opportunity to receive formal education while maintaining day-to-day obligations (Owston, York, & Murtha, 2013; Rubin, 2013). Distance education provides access to learning for those who are at a geographical disadvantage (Moore, Dickson-Deane, & Gaylen, 2011).

Belair (2012) and Falloon (2011) explain that transactional distance theory describes how learning via “group me”/facebook takes place given the space between learners and teacher. Transactional distance is identified as the cognitive space that emerges between instructors and learners in a distant educational setting (Moore, 1993). It is paramount to establish students’ interactions with teachers and prepare the learning mechanisms for supporting students’ persistence in their endeavors in an educational setting (Shaw & Chen, 2012; Kuh, 2009). There are strong indications that in order to formulate theoretical implications and potential applications for facilitating positive student outcomes in courses. Further research on extending the transactional distance theory model to SMS texting in learning is needed (Lee, Srinivasan, Trail, Lewis, & Lopez, 2011).

Course completion and student satisfaction are two salient student success indicators used in understanding the effectiveness of adult learning education methods (Hart, 2012; Hawkins & Barbour, 2010). Kovalik & Hosler (2010) argue that text notifications technology presents opportunities for inquiry into the facilitation of student satisfaction (Kovalik & Hosler 2010) and online course completion (Atchley et al., 2013).

Educators may be able to make a substantial use of texting as a learning mechanism as it is already established as a part of adolescent culture. The “educational text messages” would be smoothly incorporated into the lives of adolescents without disruption. They may be motivated to receive, read and sometimes respond to messages connected to their classes (Grinter, Palen, & Eldridge, 2006).

Texting in school rules may also support a student's individual transition to university life by maintaining relationships that relate to their everyday life (Harley, Pemberton, Wilcox, & Winn, 2007). School-to-student text communication provides students access to networks of social support and facilitates learning among academic systems at new institutions. Students can receive text messages giving them information about upcoming events at their school such as games, meetings, and emergency notifications (Harley et al., 2007).

The Important of the Study

The idea behind this study was to determine how can educators extend learning and engage students outside classroom circumstances using technology that they already possess and frequently use. Mobile devices have built-in notifications system. These mobile devices play an active role in transferring information among people in higher education. Specifically, students and faculty members find that mobile devices can be very helpful to support education and to facilitate communication among students and teachers in higher education.

The ubiquity of notifications via mobile devices amongst students in higher education creates an opportunity to expand learning beyond the walls of the classroom. Mobile devices have the potential to keep students engaged in learning even outside the classroom. This study contributes to increase the literature on messages and notifications through m-learning and expanding its base within the host of tools available to educators. It measured the effectiveness of class notifications through experimentation and utilized data analysis to generate new ideas both for future research and application of notifications system in higher education classrooms.

The Purpose of the Study

The purpose of this study is to examine the usage of a notifications feature on mobile devices within a higher education context in support of the class learning goals. This study showed how mobile devices as a new notifications model in academic environments that can extend the boundaries of traditional ways of notifying beyond email. It also demonstrated benefits and barriers to utilize notifications in the classroom.

Social applications distribute an enormous number of notifications in cell phone users' social life. For that reason, this study investigates the effects of alerting students about new activity or due dates of assignments via popular applications in their mobile devices. Utilizing these platforms and approaching students where they are present online is argued by this study to increase awareness by notifying users about activity in the learning environment. As will be shown, activity notifications system can serve throughout social media in students' mobile devices.

Analysis of Student Perceptions on Online Notifications

This study is focused on in-class notifications by using mobile devices as an efficient method to improve the student learning experience. It investigates sending reminder messages from faculty to students at a university education level.

This study also addresses the overall challenges and benefits of providing regular class notifications about upcoming assignments and events with mobile technology such as cell phones.

The study pursues its evaluation of electronic notifications system through two main methods. The first is the experiment's research design, where notifications are used in some classes in a higher education setting. The second is a survey to measure the result of applying course notifications in classrooms. These two methods complemented each other and provide an opportunity to investigate the challenges that may hinder using class notifications through mobile

devices.

This study is designed to uncover the impact of class notifications by using mobile devices as an efficient information delivery method. To handle this issue, the study addressed the following questions:

1. Do university students value class notifications?
2. What skills do students have in using class notifications?
3. Is proficiency in using mobile devices associated with perceived value of class notifications?
4. What are the advantages and disadvantages of using class notifications?

Methodology

Data were generated based on the results of the survey distributed to students at the end of the spring semester in 2016 at The University of Kansas (KU) in The United States. The total number of participants amounted to 69 students, 53 were undergraduate students and 16 were graduates, 37 participants were students of the School of Design; 32 undergraduate students and 5 graduate students, and 32 participants were from the School of Education; 21 undergraduate students and 11 graduate students.

Table (1): Level and Affiliation of Participants

#	College	Class Name	Class		Students Level
1	Design	Design Strategies and Methods	ADS712	5	Gradate
		Methods in Design	INDD512	32	Undergraduate
2	Education	Design of Educational Technology	ELPS812	11	Gradate
		Ed. Tech. in Middle & Secondary Education	ELPS302	21	Undergraduate
	Total			69	

The experience of participants was collected in the form of a questionnaire after conducting the carefully designed procedure of sending regular class notifications via text through “Group Me” application and email. Students’ perception toward class notifications through their mobile devices data was the main target for the survey. The benefits of class notifications via mobile were measured.

The researcher contacted the professors of the classes. Prior to the beginning of the semester, a meeting was set to discuss and create a table of the most important reminder messages. These messages were designed to target important items in the syllabus. The experiment design originally set a schedule of sending one notification a week; however, at certain times the professor would ask for additional information to be forwarded to students. The notifications content included reminders and alerts about class content-related items such as upcoming class readings, assignments, exams, presentations, clarifications of course expectations, and additional class materials, clarifications of course expectations, and additional class materials synthesis to important previous reading. In most cases, this was just-in-time reminder information already in the course syllabus. For example, the notifications might read “By now you should have the following items posted to your portfolio course page: 01: Information Searches; 03: Educational Imagery; 04: Please let us know if you need assistance in posting any of these activities. In the next class we will work

on the educational data activity. Please read the instruction page on this activity in advance.”

The researcher collected information about students' experience of applying notifications through mobile devices in learning and their views toward that learning delivery mechanism. The researcher used an accurate design methodology to set up and document sending weekly notifications. At the end of the semester, the researcher used electronic surveys and some open-ended questions. The digital survey was sent by email to all students in the classes. The aim of this study is to present an understanding of the effectiveness on student learning of sending notifications by mobile technology.

Results and Discussion

Results of the First Question: *Do students value class notifications?*

Students' perception of the degree of helpfulness of each item indicates the degree of effectiveness of this study carefully designed a long- semester course notifications plan, as shown in table (2).

Table (2): Responses to First Question (value of class notifications)

Rank	Item	Mean ¹	Standard Deviation	p ^{2*}
1	Help me complete assignments by the due date.	4.33	1.06	< .001
2	Help me remember class activities.	4.26	1.06	< .001
3	Help me interact with others about class activities.	3.87	1.26	< .001
4	Improve my learning.	3.72	1.11	< .001
5	It is private communications for students & teacher (High Privacy).	3.67	1.12	< .001
6	Give me a greater sense of belonging to the class.	3.54	1.31	< .001
	AVERAGE	3.90	0.90	< .001

¹ The scale was (Strongly Agree 5-4-3-2-1 Strongly Disagree).

² Significant at the 0.01 levels if p* < .01.

Six survey items were designed to garner information from students on different facets of the study question. The high average that the data reveals is a strong indication of how students value notifications.

*P-value is probability value or asymptotic significance is the probability for a given statistical model that, when the null hypothesis is true, the statistical summary (such as the sample mean difference between two compared groups) would be the same as or of greater magnitude than the actual observed results.

All hypothesis tests ultimately use a p-value to weigh the strength of the evidence (what the data are telling you about the population). The p-value is a number between 0 and 1 and interpreted in the following way:

A small p-value (typically ≤ 0.05 , or typically ≤ 0.01) indicates strong evidence against the null hypothesis, so you reject the null hypothesis.

A large p-value (> 0.05) indicates weak evidence against the null hypothesis, so you fail to reject the null hypothesis (*Biau, D.J.; Jolles, B.M.; Porcher, R. 2010*).

The overall of student value of class notifications is positive. These results of strong agreement show that students value all six items. More specifically, they strongly value item 1 "help me complete assignments by the due date". The implications to this item are serious. Students indicate that receiving a notification keeps them from falling behind on due dates. As most classes revolve around assignments scattered over the semester, student find this feature to be very beneficial. Submitting assignments on time may be one of the important elements that support learning and improvement. This punctuality provide a systematic way of keeping progress moving forward and ensuring that students are moving at the planned pace. Incorporating notifications in a class may very well be the most practical and stress free method to keeping students on track and maintaining their ability to respect assignment due dates.

Moreover, students' responses to item 2 "help me remember class activities" scored a highly positive degree. Students inherently strive to perform their best in classes. Notifications reminding students of class activities assist them in maintaining their goal of learning. This item mainly targets expectations of what students need to prepare for coming to classes and students value this item very much. Therefore, students realize that meeting assignment deadlines is important to prepare for future class activities. Notifications have advanced to keep students engaged before and after classes.

Item 3, "help me interact with others about class activities," scored $M=3.87$. This result is consistent with an earlier study by Kim et al. (2014). Notifications made it possible for students to utilize a platform for interaction. Students highly value peer interaction and realize its importance in learning. This value is realized in interactions among group applications such as facebook and "Group Me" where a question or a comment is shared among students and more than a single response occurs.

Item 4, "improve my learning," averaged $M=3.72$. The finding in this item is consistent with earlier studies such as Thornton and Houser (2005), Horstmannshof (2004), Peters (2007), (Rau et al., 2008), Cavus and Ibrahim (2009), and Gasaymeh and Qablan (2013). Higher scores occurred for the group that received text messages than the one that did not receive text messages. This statistics support that the hypothesis that notifications facilitated learning. Notifications synthesized

important information that students need during a class. This information includes due dates, important aspects of classes and future activities. This facilitation gave students the ability to stay on track and achieve class aims.

Moreover, the survey raised item 5, “it is private communications for students & teacher,” which scored a high average of $M=3.67$. This finding is consistent with an earlier study by Mellow (2005). The privacy issue is paramount to the success of any application. As long as privacy is maintained, students are encouraged to use applications. Thus, the researcher made efforts to suggest creating a private group on “Group Me”. This means that sharing information between students was extremely restricted to user names. The implication of this item’s data resides in the nature of applications used by students. Users prefer programs that guarantee their privacy. Educational institutions must take this issue into consideration to ensure a safe and comfortable environment for learning.

Finally, item 6, “give me a greater sense of belonging to the class,” comes last with an average of $M=3.54$. Students also expressed this point in the open-ended questions. Class notifications managed to boost students’ morale and go beyond being a tool to remind students of academic requirement. This information shows that students felt that notifications help them to develop a sense of comradely. This shows that they felt that they belong to a specific group that is connected with the class. Achieving such feeling will no doubt create an appetite to learn and engage in the class.

The strong positive overall ($M=3.90$) indicate that student value notifications. All 6 items show that students liked notifications and they felt notifications assist their academic learning and improve their sense of engagement in classes.

Results of the Second Question: *What skills do students have in using class notifications?*

Table (3) Responses to Second Question (skills in using class notifications)

Rank	Item	Mean ¹	Standard Deviation	Percent ²
1	I know how to turn notifications ON or OFF.	4.89	0.38	91.3%
2	I know how download or delete applications (apps).	4.89	0.43	93.5%
3	It is easy to me to read notifications or messages using my mobile.	4.61	0.80	76.1%
4	It is easy to me to type messages on my mobile.	4.54	0.89	71.4%
	AVERAGE	4.73	0.63	

¹ The scale was (Strongly Agree 5-4-3-2-1 Strongly Disagree).

² Percent =(%) of those choosing (Strongly Agree).

Table (3) provides a list of skills in using class notifications ordered from highest to lowest mean score. The results showed the skills of using features of mobile devices with mean of 4.73 and standard deviation of 0.63. That means, most students have high skills of using mobiles such as knowing turn on and off the notifications, knowing download and delete applications, easy to read class notifications, and easy to type messages using their mobiles.

Results of the Third Question: *Is proficiency in using mobile devices associated with perceived value of class notifications?*

Table (4): Correlation of the value of class notifications and using cell phone

	Average of Value of Class Notifications M=3.90 (See Table (2))
Average of Skills in Using Class Notifications M=4.73 (See Table (3))	$r=0.4^*$, $p=0.017$

*Correlation is significant at the 0.05 level.

In addition, the relationship between value class notifications (table 2) and the skills in using class notifications (table 3) was analyzed. It is clear through the results that there is a significant relationship between the value students place on class notifications and the skills in using class notifications ($p=0.017$ and $r=0.351$). That means that students who know a lot of skills and practices in using mobile technologies and notifications features are more likely to value course notifications.

Results of the Fourth Question: *What are the advantages and disadvantages of using class notifications?*

Open-ended question: What are the advantages and disadvantages of using class notifications? —have prompted the following categories under the benefits component of the study's hypotheses: expectations, punctuality, convenience, communication, reduce mental load, engagement, and general. As for the second part of the question, all responses were grouped under the general category of interferes. The justification for assigning responses to categories is addressed under the explanation of each category in the following sections.

Table (5): Class notifications advantages

Advantages				
#	Categories	Frequencies.	(%) Within Advantages	(%) Overall Advantages+Disadvantages
1	Expectations	18	36	33
2	Punctuality	14	28	25
3	Convenience & Comfort	8	16	14
4	Communication	3	6	5
5	Reduce Mental Load	2	4	4

Advantages				
#	Categories	Frequencies.	(%) Within Advantages	(%) Overall Advantages+Disadvantages
6	Engagement	4	8	7
7	General	1	2	2
	Total	50	100	91

Table (6): Class notifications disadvantages

Disadvantages			
Categories	Frequencies	% Within disadvantages	% Overall Advantages+Disadvantages
General	5	100	9
Total	5		9

The survey included open-ended question (What advantages and/ or disadvantages do you see in using class notifications?). Information presented in table (5) and table (6) is analyzed as well as data from the open-ended question the advantages and disadvantages of class notifications. The advantages generated a wide array of responses that were captured by creating multiple groups (expectations, punctuality, convenience, communication, reduce mental load, engagement, and general). Multiple groups were also created to capture responses for the disadvantages (accessibility, time saver and fast, mobile features, general, distraction, prevent social interaction, lack of resources, and other).

There was a high amount of survey participation among students (82.6%). This rate is a strong indication that participants seriously engaged in the study throughout the semester the study ran. It is also a positive indication of student' willingness to provide feedback. Table(5) and table(6) provide all relevant information from the open-ended question.

It is true that students found that receiving class notifications could interfere with their learning. However, this interference is extremely limited and it is wide ranged to an extent it could only be captured by a general group. Out of the (82.6 %) of students' participation in the open-ended questions only five (9%) responses were recorded as interference. On the other hand, the majority of responses (91%) believed that receiving class notifications are beneficial. Responses could in fact be grouped to better understanding how these benefits were realized. (33%) of responses considered receiving notifications helpful in setting their expectations of what is required of them for following class expectations and assignments and other aspects of the course they needed to meet. Moreover, (25%) of responses supported the belief that notification was a positive factor in their punctuality. They perceived receiving class notifications as a beneficial to learning. Assertions that literally highlighted that the fact that class notifications about due dates helped them to deliver assignments on time are clear indication of the level of the impact that notifications have on learning. Other responses of the importance of notifications in learning are captured under other categories such as: convenience and comfort, communication, reduce mental load and engagement. Students' responses are testimonies of how participants in the study viewed the benefits of

notifications in their learning. They were explicit in stating that they felt that a better communication was achieved. Moreover, they believed that it helped them to engage more in the course. Also, (4%) of responses have indicated that the mental load had been lessened due to incorporating notifications in this experiment.

Participants in this study demonstrated that receiving class notifications benefits learning in various ways. Most notably, class notifications enable learners to meet class expectations, it also supports learners to perform tasks in a timely fashion in accordance with class due dates. Addressing this question shows that class notifications benefits go beyond learning and academic assistance. This study shows that the class notifications system has the potential to reduce social retreatment by encouraging engagement with teachers as well as peers. There is also evidence that incorporating class notifications can reduce mental load as a few of the participants expressed.

The study also shed light on other areas of interference. The reason behind these student perceptions of interference as explained before is the various nature of responses, scarcity, and wide range of interest. For example, one response stated that the means of the mobile notifications is better for personal use, not school. Though this may be true in this participant's instance, the benefit of class notifications itself was not contested. This means that this particular student felt that notifications are beneficial but was not mean in using facebook for notification. Another felt that notifications were beneficial in reminding him/her of due dates, but added it might be redundant due to the information availability in the syllabus.

Conclusions

This study is designed to address the effectiveness of notifications via mobile device in learning. To sum up, an overwhelming number of responses poured into this study from participants in favor of effectiveness of class notifications. The study identified several positive academic and social aspects to use class notifications in learning. This investigation in notifications effectiveness via mobile device indicates that the correct use of learning tools, may increase the productivity and learnability of students. In this study students expressed their positive opinions regarding class. This could be seen in their belief that notifications effectively helped them meet expectations and be punctual. It also shows that other social aspects of students in a learning environment may be improved when class notifications are used accurately. This study showed that students felt notifications increased their confidence and engagement in learning. On the other hand, there are few interferences that were recorded such as distracting. However, this interferences related to technology in general not specific to the interest of this investigation of class notifications. This study found that most of students could handle interferences by displaying the skills needed for using technology and control.

The findings also showed that notifications help students cognitive state and potentially reduce overload. No doubt that extensive research is needed to fully understand that kind of effect of learning notifications on students; nevertheless the evidence that is brought up by this study cannot be overlooked. Another unique contribution is highlighted by the finding that skilled cell phone users are better equipped to effectively integrate class notifications into their learning process.

The researcher believes that this study is a step in offering a new way of supporting learning for students in higher education based on digital class notifications via mobile device which allows also sending and receiving of emails. However, emails are often full of important and non-important messages. The class notifications messages used especially with the inclusion of mobile for pictures provides a highly efficient manner in which to support learning.

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