Investigating the Readiness of College Students for ICT and Mobile Learning: A Case Study from King Saud University

Dalal Al-Husain[1] and Bassam H. Hammo[2]

[1]College of Computer and Information Sciences, King Saud University, Saudi Arabia
[2]King Abdullah II School for Information Technology The University of Jordan,, Jordan

Abstract *The purpose of this study was to draw an attention to the findings from a quantitative analysis of questionnaire surveys associated with the use of Information and Communication Technology (ICT) and mobile learning (m-Learning) in Education. We invited 317 undergraduate students studying at King Saud University (KSU) in Saudi Arabia then we reported on their experience for academic and personal intentions. We built on a study of undergraduate students and information technology adopted from the EDUCAUSE Center for Analysis and Research (ECAR). The results indicated that the readiness level of KSU students on using ICT and mobile learning is at a high level and there was a demand for institutional support of the mobile learning technology.*

1. Introduction

Mobile Learning (m-Learning) is an educational model emerged along with the development of mobile technologies [8 and 10]. The most important difference between m-Learning and other learning activities is that "learners are continually on the move" [13]. It refers to learning everywhere and anytime through Wi-Fi equipped mobile devices such as handheld IT devices, including Personal Digital Assistants (PDAs), mobile telephones, Smartphones, laptops and tablet PCs technologies [8 and 10].

M-Learning requires the use of Information and Communication Technology (ICT) to accomplish a learning process [7]. With respect to the widespread of application possibilities of mobile learning, investigating students' readiness towards m-Learning becomes an essential issue [15].

The use of Internet and Web 2.0 applications are growing rapidly, especially amongst younger generations. In addition, by using Web 2.0 instead of consuming static web pages, learners of today become active by sharing their opinions using different technologies on the Web [1]. The last decade has experienced an explosion of social networking services that have been widely adopted by millions of users all over the world. The social environment is changing as a result of supporting mobile technologies. People can strengthen their social relationships by sharing information anytime and anywhere [1].

The Internet accessibility and data capabilities of the mobile devices expand traditional classroom borders and move the classroom outside the sense of location and time. According to [14], "Learning needs and theories that describe learning principles and processes should be reflective of the underlying social environments".

Accordingly, a powerful trend for learning starts to emerge. An integration of ideas evolved as local learners participating in different virtual communities carry ideas back and forth between those communities and their local ones [2]. According to [3], there are fundamental factors being responsible for the "social revolution" of the Web 2.0. These factors were mentioned in [4] and they include: (1) *Accessibility*: the access to the Internet is provided everywhere at reasonable speed; (2) *Devices*: social software gets better, so more people use them to get in touch with others, and therefore, this leads to a demand of an improvement of the existing internet infrastructure, along with new generations of mobile devices such as smartphones and tablets; and (3) *Usability*: contributing to the Web needs no special skills, besides, the applications' environment become more user-friendly.

The use of social networking tools in mobile learning environments can engage learners to be active creators and consumers of learning materials [11]. Currently, social networks such as Facebook, Twitter, wikis, blogs and podcasts have turned out to be very useful tools for learning [1]. For example, several studies have stated that lecture podcasts lead to a better learning [5, 6 and 9]. Although mobile devices of all kinds have played an important role in mobile learning, educational applications offered mobile

learning a vital boost to move from concept to classrooms [1]. As mentioned in [1], early smartphones were not really well suited for traditional curriculum delivery, but rather for information delivery due to their limitations. Currently, when we think about mobile learning, we think about smartphones and tablets. The release of iPad and similar tablets is a milestone in mobile technology along with the idea of application store, and as a result, mobile learners are motivated by unlimited educational resources. The very mobility of mobile technology allows learners to roam and discover ideas freely without restriction and to manage knowledge wherever they are. Nowadays, mobile technologies have attracted the attention of researchers and educators through their potential as supportive learning tools.

In this research we aimed to make a contribution towards finding out how undergraduate students in Saudi Arabia, at large, can gain from mobile technologies and social networks in their learning experience and how to determine, in particular, mobile learning readiness of the prospective students at King Saud University. The rest of this paper is structured as follows. First, we present our problem definition. Next, the results of our survey is detailed and discussed. Finally, conclusions and further work is presented.

2. Problem Definition

In spite of the benefits of using mobile technology in appropriate contexts, the majority of higher educational institutions in Saudi Arabia have yet to include mobile technology as a fundamental part of educational curriculum. However, mobile technology is quietly gaining a place among higher education as a useful tool for bringing communities of students together on the way to empower collaborative and informal learning.

In this research, we built on a study of undergraduate students and information technology adopted from the EDUCAUSE Center for Analysis and Research (ECAR) [15]. Then we determined the reasons that influenced the students' intention to use ICT and m-Learning.

Considering that mobile devices are extensively used in Saudi Arabia and are popular among Saudi undergraduate students, we tended to investigate the students' ownership and use of mobile technology to explore their experiences, behaviors, and their readiness for mobile learning and to find out if the new learning technology facilitates their formal and informal learning.

2.1. Research Objectives

The main objective of this research was to study undergraduate students' position of change brought about by mobile technology as well as to explore undergraduate students' technology ownership, use,

activates, and perceptions. Accordingly, this study is conducted to answer the following eight research questions:

- Q1: What are students' technology adoption trends?
- Q2: How students view their own technology adoption and information capability?
- Q3: What are students doing with technology?
- Q4: How social networking websites are used by students?
- Q5: What are students' privacy preferences when using social networking websites?
- Q6: What are students' perceptions and preferences for technology within subject teaching and learning?
- Q7: How students assess the use of ICT for academic and personal purposes?
- Q8: What do university students expect from instructors in using technology?

2.2. Study Sample

The study was carried out during the academic session 2011/2012 at King Saud University (KSU). KSU is a public institution of higher education located in Riyadh, Saudi Arabia. The sample of the study consists of total of (317) prospective students covering a random sample of male and female undergraduate students from different majors, age, GPA, and class standing. In the light of this diversity, we can extrapolate our results to higher education in Saudi Arabia.

3. Methodology

We designed an anonymous survey questionnaire to collect quantitative data among undergraduate students' to study their ownership and use of information and mobile technologies. The number of participants in the questionnaire was (317) students.

The design of the survey questionnaire was closed-ended questions that required participants to choose from a limited number of predetermined responses with two basic types of questions were used: multiple-choice and five-point Likert scale.

4. Results and Discussions

4.1. What are Students' Technology Adoption Trends?

Technology adoption is now affecting many aspects of our daily life and it has become increasingly more important in higher education. In Saudi Arabia, and similarly in the rest of the world, students are becoming more and more involved in using the Internet from portable and handheld devices. M-learning tools are becoming more common and students are attending classes with great expectation to

use the mobile Internet in support of their education. This study reveals that KSU students own many different kinds of devices that are capable to be connected to the Internet. All students participating in this study owned a mobile phone of which (86%) having smartphones. Results also show that most participants owned the top-notch brands like iPhone (31%) and BlackBerry (34%) while less participants owned Android phones (18%) and Symbian phones (2%). The massive adoption of smartphones suggested that students had access to basic and advanced applications.

As predicted, the technology owned by students is moving toward mobility. The majority of our participants (96%) owned laptops, whereas (23%) owned both a laptop and a desktop, and only less than (2%) didn't own either a desktop or a laptop. Our results suggested that (23%) of our participants (i.e. students owning both a laptop and a desktop) are changing their preferences to portable devices. Furthermore, we can see that students' ownership of laptop is increased as they progress in their class standing. As it was expected, senior students were more likely to own laptops (39%) compared with freshmen or other students (12%).

It was noticeable that tablet PCs have gained popularity amongst higher education. Our study revealed that (39%) of the participants owned tablet PCs, and among them, approximately (88%) owned Apple iPads while (12%) owned tablets other than iPads. On the KSU campus, the open areas are served by Wi-Fi technology. Computer labs, classrooms and library areas are covered with a robust Wi-Fi network. The majority of our participants (66%) have full Wi-Fi coverage at their homes. Therefore, Wi-Fi connectivity is a great factor for adopting Internet capable devices. A sample of other technologies owned by students is depicted in Figure 1.

4.2. How Students View their Own Technology Adoption and Information Capability?

In our study, participants were given five statements about technology adoption. They have been asked to choose the one that best described them. Next we mapped their responses into an adapted Rogers Technology Adoption Model [12] as shown in Table 1. Students' responses regarding technology adoption were often associated with their use and experiences with IT both generally and academically. About (46%) of all participants identified themselves as innovator adopters, while the percentages dropped off for late adopters and laggard categories as depicted in Table 2.

However, by a persistent gender difference as shown in Table 2, about (27%) of the male respondents described themselves as early adaptors, while only just (15%) of the females picked this category. Furthermore, females described themselves

as typical adopters (26%) more than male students (14%).
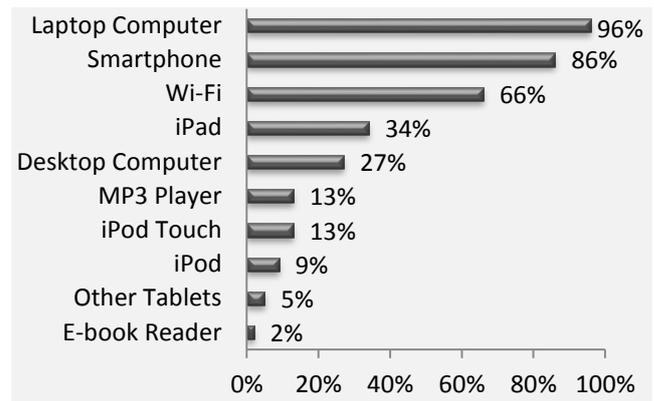
Figure1. Student's Technology Ownership.

Table 1. Technology Adoption Statements Mapped to Adapted Rogers Technology Adoption Model.

Which best describes you?	Description
I love new technologies and I am among the first to tryout and use them.	Innovator
I like new technologies and I like to use them before the majority of people I know.	Early adopter
I typically use new technologies when most people I know do.	Typical adopter
I am generally one of the last people whom I know to use new technologies.	Late adopter
I am doubtful of new technologies and I use them only when I have to.	Laggard

Table 2. Students Technology Adoption Categories.

Description	Male		Female		Overall	
	n=129	%	*n=188*	%	*n=317*	%
Innovator	59	46%	88	47%	147	46%
Early adopter	35	27%	28	15%	63	20%
Typical adopter	18	14%	49	26%	67	21%
Late adopter	10	8%	16	8%	26	8%
Laggard	7	5%	7	4%	14	4%

Percentages may not add up to 100% because of rounding.

4.3. What are the Students Doing with Technology?

4.3.1. Frequency of Using the Internet

The widespread availability of Wi-Fi coverage adds an outstanding value to portable devices. We asked our participants about how many hours per day they spent doing activities on the Internet for school work or for entertainments. The results revealed that the majority (46%) spent from 3 to 5 hours, while (10%) of the participants spent more than 10 hours every day, and few participants (2%) spent less than one hour a day (see Figure 2). Moreover, female students tend to spend much more time on the Internet than the male students. Results showed that (17%) of the female students may spend more than 10 hours per day on the Internet compared with (8%) of the male students.
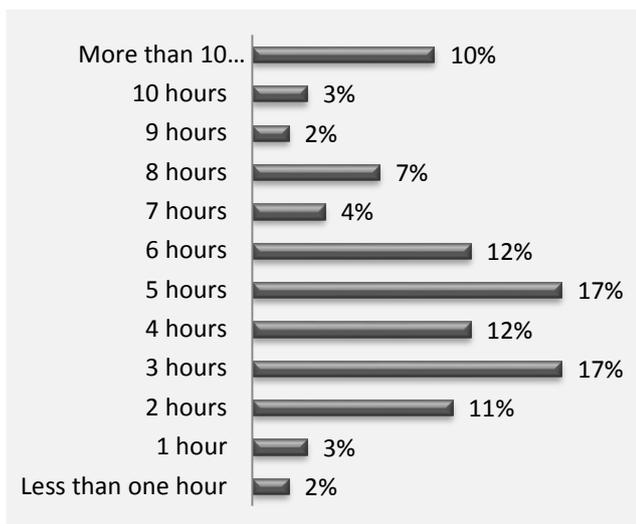
Figure 2**.** Frequency of Using the Internet (Hours/Day).

4.3.2. Smartphones and Online Activities

Due to the growth in the ownership of smartphones and other Internet capable devices, it is naturally that students will use them as academic tools. We asked our participants about what academic activities they perform through their smartphones. This task included 11 academic activities that students usually do from their smartphones. The results showed that (93%) of the smartphones owners have used them to text other students about coursework. And as we expected, the majority of the students (87%) use their smartphones to access social networking websites. Furthermore, (85%) of the smartphones owners have used them to lookup information on the Internet during classes. Table 3 shows how the students use their smartphones in academic activities.

Table 3**.** Academic Activities Performed over Students' Smartphones (n = 275).

Internet Activities Performed from Smartphone Device	Percentage
Texting other students about coursework	93%
Use social networking websites	87%
Looking up information on the Internet in class	84%
Checking grades	83%
E-mailing colleagues	70%
E-mailing professors	60%
Course registration	32%
Download content of courses	30%
Access digital libraries	29%
Purchase or download e-books	27%
Texting professors	22%

4.3.3. Computers and Online Activities

Through this study, we sought to identify to what extent the students of KSU, who have grown up with high-speed Internet and cloud-based applications, were utilizing these services, as well as, how they might integrated them into their college experiences. For this task, we asked our respondents about several web activates and services along with some examples describing these tools. Respondents pointed out their responses on a five-point Likert scales (see Table 4).

Table 4. Students' Computer and Internet Activities by Frequency of Use.

Activity	Frequency of use (*n* = 317)				
	Frequently	Very Often	Some-times	Rarely	Never
Used by Many Students					
Email	67%	20%	7%	5%	0%
Download or stream videos	74%	17%	5%	2%	1%
Twitter	63%	11%	6%	6%	13%
Online chatting	47%	16%	14%	9%	13%
Facebook	35%	15%	13%	14%	21%
Read Wikis	33%	28%	11%	10%	18%
Download music	29%	32%	19%	13%	6%
Watch or listen to podcasts	27%	15%	17%	17%	24%
Used by Few Students					
voice over Internet	18%	18%	13%	18%	32%
Online documents	17%	17%	15%	12%	38%
e-books	16%	22%	18%	18%	26%
Read blogs	16%	20%	16%	20%	26%
Free course content	14%	18%	14%	13%	40%
Email groups	13%	14%	15%	20%	38%
Learning Management System	13%	14%	12%	10%	51%
Storage cloud service	13%	12%	9%	12%	53%
Upload a video	9%	7%	8%	17%	58%
Play educational games	6%	13%	23%	28%	30%
Digital library	6%	12%	14%	14%	52%
Contribute to blogs	6%	8%	8%	10%	67%
Contribute to Wikis	2%	5%	4%	11%	77%

*Percentages may not add up to 100% because of rounding.

Obviously from the results, a large majority of our participants are using their technology devices for personal and/or academic purposes. E-mail is among the most used application (67%). Most participants were downloading web-based videos (98%) and music files (93%). Social networking are very widely used as we found nearly (63%) of participants are using Twitter frequently whereas (23%) are using it less frequently. Only (13%) of participants have never use Twitter at all.

Wikis are very widely used as a source of information for most students. Our results have shown that more than one-third of the students are reading wikis frequently while half of students are less often. On the other hand, (77%) of the students had never contributed to wikis whereas only (2%) did.

Although KSU has provided a Learning Management System (LMS) for all departments and students of the university, it has not yet becoming an essential part of the students' life as more than half of our participants (51%) had never used the LMS at all. In addition, (52%) of participants had never used the KSU digital library. In addition, (52%) of participants had never used the KSU digital library. In fact, the weak utilization of LMS and KSU digital library need further investigation. We believe faculty bear some of the responsibility since the course material should be available in the LMS and also they should refer student to read from digital library.

5. Social Networking

Higher education students are the most important consumers of Social Networking Services (SNS). Our investigation revealed that (95%) of our sample (*n*=302) have active account in one or more SNSs. The majority of the students (84%) have an account in Twitter, (73%) have an account in Facebook, and (60%) have accounts in both Facebook and Twitter.

5.1. How Social Networking Websites are Used by Students?

In order to understand main reasons for using the social networking websites by KSU students, we compiled a checklist of 14 predefined reasons and asked them to check all items applied (see Table 5). The top selected one was "*stay in touch with friends*" (83%). The second most popular activity was "*as a medium to communicate my opinions and views*" with (73%). While the third selection was "*find out more about people whether have met or not*" as (66%) of our participants selecting this activity.

    For the academic activities, around (56%) of our participants use SNSs to communicate with colleagues about course-related topics. However, only (28%) use SNSs to communicate with professors about course-related topics. In addition, (63%) of our participants use SNSs to follow colleges' or universities' extracurricular activities (clubs, sports, etc.). For administrative services, (20%) of the participants were using SNSs to communicate with administrative offices. The common students' interests like sharing photos, music, videos, and other material were utilized by (57%) of the participants. More than half of the participants (53%) were using social networks for participating in special-interest groups. About half of the participants (48%) used SNSs to make new friends had never met before (see Table 5).

    Many students preferred to keep their social and academic lives a part. Our study revealed that not more than (46%) of our participants who used SNSs accepted some of their current or previous instructors as friends on their social networks. Many participants who used SNSs (54%) believed that SNSs have a positive impact on their learning experiences, however, nearly (22%) of the participants didn't agree, while (18%) were not certain about this matter. It was also remarkable that 78% of our participants, whether they use SNSs or not, are positive towards increased use of social networking in their future courses. On the other hand, (12%) of the participants do not think this matter is a positive sign while (9%) were not certain.

Table 5. How Social Networking Sites are Used by Students (*n*=302).

Activity	%
Stay in touch with friends	83%
As a medium to communicate my opinions and views	73%
Find out more about people whether have met or not	66%
Follow my college's or universities' extracurricular activities (clubs, sports, etc.)	63%
Share photos, music, videos, or other materials	57%
Communicate with colleagues about course-related topics	56%
Participate in groups of special interest	53%
Make new friends I have never met in person	48%
For professional activities or find a job	28%
Communicate with professors about course-related topics	28%
Arrangement of events and/or invite people	22%
Use administrative services of the university or communicate with administrative offices.	20%
Play games	16%
Other	5%

5.2. What are Students' Privacy Preferences When Using Social Networking Websites?

Since several personal data can be shared through social networks, SNSs allow users to change their preferences regarding privacy and to apply restrictions to shared information that can be viewed by other people such profiles, contacts and other information.

    In our research we were interested to know if the students restricted or limited people from accessing their profiles on SNSs. We found that (29%) of our participants not applying any restrictions while nearly (31%) are applying "*some restrictions*" and (31%) are applying "*a lot of restrictions*" on accessing their profiles. Furthermore, we found that male respondents were applied "*a lot of restrictions*" (36%) compared to females (30%) (see Figure 3).

5.3. What are Students' Perceptions and Preferences for Technology within Subject Teaching and Learning?

The major academic benefits of technology can be expressed in four aspects: (1) ease of access to a lot of resources, (2) connectivity, (3) productivity and (4) enjoyment of learning. In our study, we provided 14 statements on this matter and we asked the participants to declare their level of agreement to each statement. Participants indicated their answers to statements on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree).
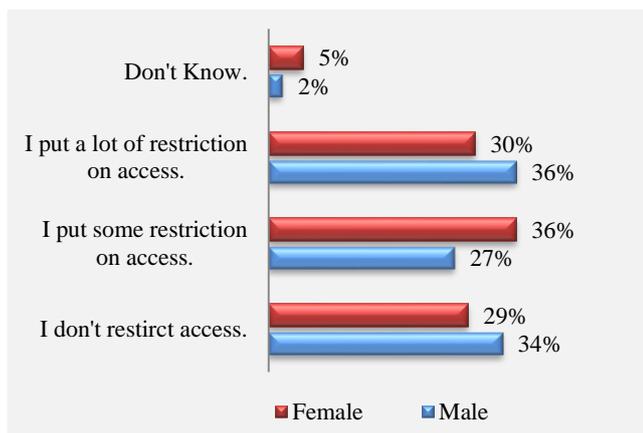
Figure 3. Students Privacy Preferences on Accessing their SNSs Profiles.

The results have shown that the majority of our participants recorded positive agreement (agreed or strongly agreed) with each and every one of the 14 statements (see Figure 4). The highest agreements were for the statements stating that technology gives students an easy access to resources (89% agreed or strongly agreed). Students also strongly agreed that technology makes it easier to get help when needed and give also access to experts. Many respondents (88%) strongly agreed or agreed with the statement "*technology helps students feel connected*". Also among high scores, 86% of the votes went to the clause "*feel more connected to what's going on at the university*".

In addition, our participants positively agreed with many statements about the productivity and efficiency of using technology. The majority of the students strongly agreed/agreed that technology helped them "*to do work faster*", "*produce higher quality work*", "*control their own learning*" and "*can make college easier*".

Moreover, technology can make learning a better experience and more engaging. Nearly (56%) of our participants "strongly agree" with the statements regarding statements such as "*technology makes learning more fun*" and "*makes learning more creative and applicable to real life*" as well as "*promotes the level of teaching*" (see Figure 4 for details).

5.4. What are Students' Assessments of the Use of ICT for Academic & Personal Purposes?

Technologies used by students have different values based on how much they are valuable to their academic success. Generally speaking, students tend to find a number of web-based applications, communication and social networking tools more valuable than others when it comes to their academic success.
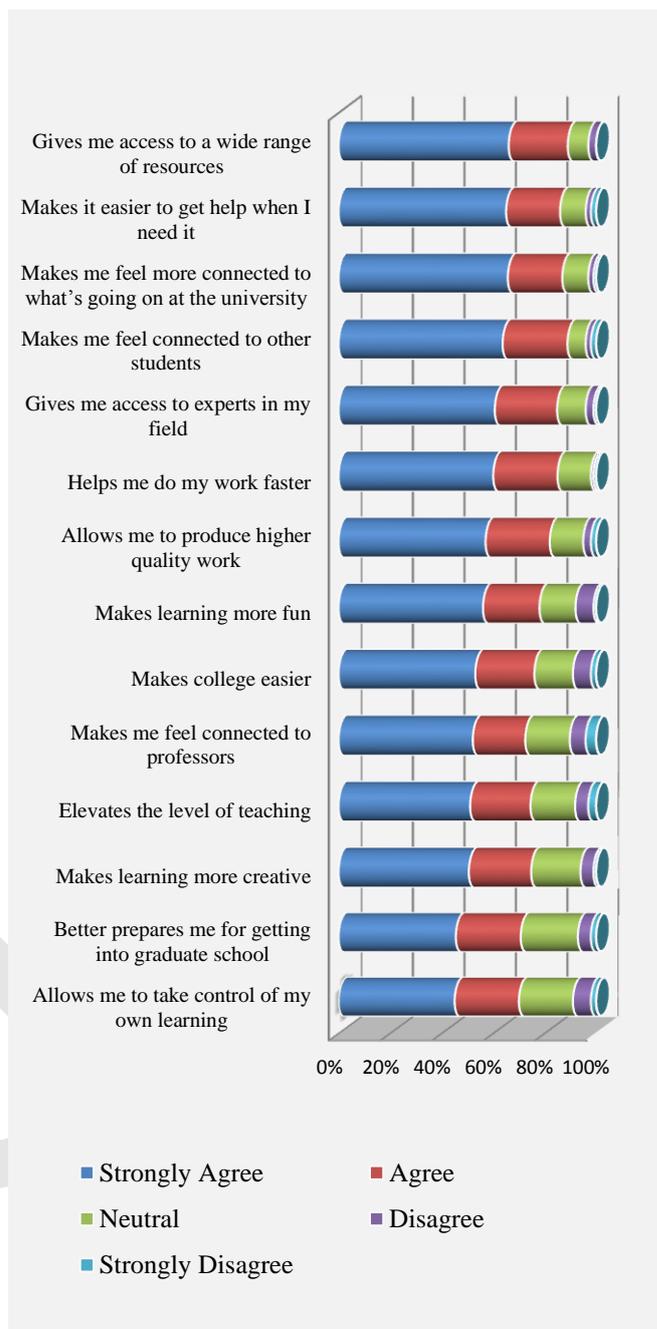
Figure 4. Students Responses to Statements Relating Technology to College Experiences.

In our research, we were interested to know the differences in attitude towards each technology value. We presented several types of web-based activates with examples to describe the type of tools or services then we asked the participants about how valuable each of these activates to their academic success. Respondents indicated their answers to statements on a five-point Likert scales (1 = *not valuable at all*; 5 = *extremely valuable*). We presented the results in percentage of students to represent how they appreciated each technology (see Table 6).

Table 6. Computer and Internet Activities by Students' Value.

Technology	How Technology is Valuable (*n*=317)				
	Extremely valuable	Valuable	Neutral	Not valuable	Not valuable at all
Free course content	47%	18%	21%	9%	4%
e-books	43%	25%	12%	14%	5%
Digital Library	38%	22%	23%	12%	5%
Email groups	34%	25%	17%	15%	7%
LMS	34%	18%	29%	13%	6%
Wikis	33%	21%	23%	16%	7%
Podcasts	31%	23%	22%	15%	9%
Educational games	28%	21%	16%	21%	13%
Online documents	25%	18%	35%	16%	5%
Cloud service	24%	17%	37%	14%	8%
Blogs	16%	25%	24%	22%	12%
Voice over Internet	16%	17%	23%	22%	21%

The reported results, as depicted in Table 6, indicated that the majority of our participants recorded positive thoughts with the 12 suggested technologies under study. Among the technologies that participants marked as "*extremely valuable*" or "*valuable*" were: *e-books* (68%), *freely available course content* (65%), and *university digital library* (60%), *email groups* (59%), *wikis* (54%), *podcast* (54%) and *learning management system* (LMS) (52%).

Although some course-related tools were used frequently by only few participants, they were being rated extremely valuable or valuable by the majority of our participants. For example, while more than half (51%) of our participants claimed that they had never used Learning Management System (LMS), only (19%) thought it is not valuable or not valuable at all. Similarly, (52%) of the participants said that they had never used the university digital library while no more than (17%) thought it is not valuable or not valuable at all. Furthermore, we found that wikis were widely used as a source of information for the majority of participants since more than (82%) of them read wikis. However, only (33%) thought it was extremely valuable, (21%) thought it is valuable and (23%) were neutral.

5.5. What do University Students Except from Teachers using Technology?

Many of the web-based applications and activities discussed in our study and rated as "*extremely valuable/valuable*" by our participants were among those they wish their instructors start using them more often in the academic life. These include social networks, email groups, learning management system, blogs, wikis, online documents, video sharing website, voice-over Internet, educational application, free course content, and podcasts.

We asked participants about technologies they wish their instructors to use more often by choosing the applicable ones from a list of 12 academic activities offered by information technology. We presented the results in percentage of participants to represent their conformity with each technology.

On the top of their wish list, we found that (75%) of our participants wish their instructors start using social networks more frequently. Nearly (70%) of participants were looking forward to their instructors to recommend appropriate websites and (65%) wish their instructors to start using video-sharing website more often. Actually, we found a high positive correlation (r=0.705) between technologies that students rated "*extremely valuable*" and technologies that they wish their instructor adopt more often.

Other technologies also gain a lot of interest in the wish list. Among those we had: "the willing to recommend free course content" (54%), "recommend educational applications" (50%), "use email groups" (49%), "use learning management system (LMS)" (33%), "recommend or produce podcasts" (32%) and "use blogs" (29%). At the bottom of our participants wish list, we found "wikis" (28%), "online documents" (24%) and "voice-over Internet" (21%).

6. Conclusions and Future Work

The results of this study have shown that mobile technologies were perceived as an effective tool in informal learning and communication as well. Most of the respondents to our study fall into what is frequently described as the Digital Natives or Net Generation.

They were comfortable with many of the technologies we asked about, including social networks that have moved through the adoption cycle and have become ubiquitous. Despite their general comfort with technologies, our respondents have been surprisingly advanced in both technology adoption and desire for technology in the classroom. They were more likely to describe themselves as innovators adopter or early adopters of technology. In addition, most respondents appear to be very often to access the Internet. The most effective technology that instructors use is strongly correlated to the technology respondents described "*valuable*". This high level of use makes the demands for technical support and development of new learning environments to meet students' preferences in learning.

It is recommended for future research to conduct additional studies to more accurately reveal technology usage. Future studies could also consider engaging further dimensions of actual practice of mobile technology and social network in academic life. Such studies should also include focus groups of students to provide qualitative data to investigate how students use technology on their own to support their learning experience and identify instructors' experimentations with technologies they bring into the classroom.

Acknowledgment

References

[1] Al-Husain D., and Hammo B., "The role of mobile technology and social media in mobile learning: A literature review," *in Proceedings of The 11th International Conference on e-Learning, e-Business, Enterprise Information Systems, and e-Government, EEE'12,* Las Vegas Nivada, USA, pp. 204-211, 2012,

[2] Brown J. S., New Learning Environments for the 21st Century. Available: https://net.educause.edu/ir/library/pdf/ffp0605.pdf. [Accessed November 2014]

[3] Downes S., "Feature: E-learning 2.0," *Elearn magazine*, vol. 10, no. 1, 2005.

[4] Ebner M., "Interactive lecturing by integrating mobile devices and micro-blogging in higher education," *Journal of Computing and Information Technology*, vol. 17, no. 4, pp. 371-381, 2009.

[5] Fietze S., "Podcast in Higher Education: Students' Experience and Assessment," *in proceedings of e-Education, e-Business, e-Management, and e-Learning International Conference on IEEE.* pp. 12-16, 2010.

[6] Franklin T., and Peng L. W., "Mobile math: Math educators and students engage in mobile learning," *Journal of Computing in Higher Education*, vol. 20, no. 2, pp. 69-80, 2008.

[7] Hammo B., and Saraireh B., "Integrating ICT in Education: Impact on Teachers 'Beliefs and Practices," *Ict Acceptance, Investment and Organization: Cultural Practices and Values in the Arab World*, pp. 52-66, 2010.

[8] Liaw S. S., Hatala M., and Huang H. M., "Investigating acceptance toward mobile learning to assist individual knowledge management: Based on activity theory approach," *Computers & Education*, vol. 54, no. 2, pp. 446-454, 2010.

[9] McKinney D., Dyck J. L., and Luber E. S., "iTunes University and the classroom: Can podcasts replace Professors?," *Computers & Education*, vol. 52, no. 3, pp. 617-623, 2009.

[10] Motiwalla L. F., "Mobile learning: A framework and evaluation," *Computers & Education*, vol. 49, no. 3, pp. 581-596, 2007.

[11] Munoz C., and Towner T., "Opening Facebook: How to use Facebook in the college classroom," *in proceedings of Society for Information Technology & Teacher Education International Conference*, no. 1, pp. 2623-2627, 2009.

[12] Rogers E. M., *Diffusion of innovations*. Simon and Schuster, 2010.

[13] Sharples M., Taylor J., and Vavoula G., "Towards a theory of mobile learning," *in Proceedings of mLearn*, vol. 1, no. 1, pp. 1-9, 2005.

[14] Siemens G., "Connectivism: A learning theory for a digital age," *International Journal of Instructional Technology and Distance Learning,* vol. 2, no. 1, pp. 3-10, 2005.

[15] Smith S. D., and Borreson Caruso, J., "The ECAR Study of Undergraduate Students and Information Technology, Research Study," Boulder, CO: EDUCAUSE Center for Applied Research, vol. 6, 2010.

Dalal A. Al-Husain is a Ph.D. student in the College of Computer and Information Science, King Saud University. She has MSc in information systems from King Saud University. Her B.S. in computer science was received from King Saud University. Her research interests include data mining, machine learning, e-learning and e-business.

Bassam Hammo received his B.Sc. in Computer Science from the University of Jordan, Amman, Jordan in (1987). He has M.Sc. in Computer Science from Northeastern University and Ph.D. in Computer Science from DePaul University, Chicago, IL, USA (2002). He is an associate professor of NLP at the Department of Computer Information Systems and has been with the University of Jordan since 2003. His research interest is Arabic Natural Language Processing and its applications, databases and e-learning. He leads the ANLP research group at the University of Jordan.