

Design and Development to Catalyze a Transformation in Teaching and Learning at Universities

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Abstract: *The incorporation of mobile technology into teaching and learning environments has the potential to be transformative - to alter the ways in which we engage our students and prepare them to be life-long learners. This research paper outlines a plan that will engage the campus in innovative strategies for supporting student learning at Universities and will lay a foundation for us to become a leader in implementation and assessment of mobile-learning environments in higher education.*

Keywords - *Universities mobile devices, mobile device ownership and use, surveys.*

I. INTRODUCTION

Nowadays, Universities have touched the pilot phase in implementation and assessment of mobile learning environments. These environments are characterized by anytime, anywhere teaching and learning opportunities, robust innovative content, and ground-breaking delivery. The universities are exploring options to enhance the experience of students, faculty, and staff using mobile devices to access online campus resources. As part of this exploration, the College of Business Administration and Financial Sciences, Taif University collaborated to design and delivers a survey of mobile device ownership. The research is focused on content creation and delivery via mobile devices and innovative pedagogy at both the program and course level. As, mobile technology is evolving at a rapid rate and innovations based on any single technology or device may be obsolete very quickly, the use of a broad range of technology is envisioned. It is also realized that laptops and even desktops are still part of the blend of technology used by students and faculty. Thus, mobile technology is not a replacement but an increasingly important set of tools available for use in teaching and learning environments. Mobile technology will reshape the way faculty and students teach, learn, interact, and live .Our approach facilitates new levels of engagement, student success, collaboration, innovation, and evidence of impact.

The results of this survey is to be used to help university students make informed decisions about how best to allocate limited resources to maximize the impact of its mobile initiatives. The discussion of methodology and strengths and weaknesses of the survey instrument will be of significant benefit to institutions looking to elicit user input into mobile-device initiatives and IT services generally.

II. OBJECTIVE

To successfully adopt mobile technologies across Universities, however, more information is needed about the student population's mobile access and use. Our study is to focus on students' access and use of mobile technologies, paying particular attention to their use of mobile devices and applications, their learning practices. This research sought to answer the following questions:

1. What mobile devices do college students have for accessing and engaging with digital content?
2. How do college students use mobile technologies (devices and apps) for academic purposes?

Our goal is to provide a baseline of mobile technology ownership and usage on which to build future research. It is expected that the results will guide potential initiatives to help students and instructors in adopting more effective learning and teaching practices across content areas. The implication for student training and skill development and for instructor support is specifically addressed.

III.A SHORT LITERATURE SURVEY

Learning from other developers of online courses and the researchers provides a good insight into what makes a successful online higher education. The success of an online course can be measured in many ways. Retention rates were originally considered a key indicator of the success of an online course, while other researchers have investigated the depth of learning or its quality, or they have focused on the need for online courses to be relevant to the

needs of participants and the level of learning required. Below is some of the learning we have gathered.

Web-enabled mobile devices have been around for many decades; however, the era of the handheld device really began in 1973, when Motorola employees were granted a patent for portable cellular telephony.[1] Ten years later the Motorola DynaTAC 8000X was launched as the first commercially available cellular portable telephone.[2] Widespread use of mobile cellular devices did not emerge until the 1990s,[3] with the invention of “second generation” digital cellular technologies combined with the rapid decrease in size of the mobile devices themselves.[4] Although mobile phones had been able to connect data networks such as the Internet for many years, it took the widespread availability of good-quality 3G coverage in the mid-2000s to enable the mobile Internet, at which point mobile devices and use began to proliferate.[5] As a result, it is estimated that more than two-thirds of the world's population now have mobile phones, and mobile phones are rapidly being replaced by Internet-enabled “smartphones.” [6]

The convergence of mobile devices and wireless technologies is also critical for the success of mobile devices. Not only can mobile phones access services over cellular networks, but wireless networks have proliferated such that mobile phones have become portable computing devices that leverage digital signals to access the Internet anywhere there is a signal to which they can connect. This is arguably the most important issue for higher education as faculty, staff, and students increasingly use mobile devices to access online services, driving institutions to continually expand wireless coverage and capacity. [7]

The trend toward smart and mobile is emerging as a dominant market driver. According to Gartner, by 2014 more than 3 billion people will be able to engage in electronic transactions using traditional computers and Internet-enabled mobile devices, and the shift to a “bring your own device” world is being driven by consumer markets rather than by business technology adoption.[8] Furthermore, Gartner predicts that in 2013 combined smart phone and web-enabled phones will surpass traditional computers as the dominant devices to access the Internet — a trend they suggest will continue. But these trends will not just affect how people access the Internet; they will affect the content of the web as well: “Websites not optimized for the smaller-screen formats will become a market barrier for their owners — much content and many sites will need to be reformatted / rebuilt.”[9][10]

Having designed and implemented the “Wizard” project to involve cross generational communication for community problem solving, Cole

(2010) summarized ...it is important to recognize that we provide the kinds of education our social ecologies permit and promote, failures and all. It is changes in the modes of human life, including the role of education in promoting human adaptation, that will ultimately shape the forms that educational activity takes... [12]

Of course, many colleges and universities are aware of these trends and are seeking to engage the mobile Internet in effective ways such as converting web content to fit mobile devices and developing smart phone applications.[11] Acknowledging these trends, a taskforce to research mobile trends was commissioned; investigate current mobile use at the university; identify existing client groups and desired services for mobile access; evaluate and predict trends related to infrastructure, systems and services, data sources and support; and investigate other issues necessary for a successful mobile initiative This research and subsequent recommendations were to lay the groundwork for mobile development at Universities that would be carefully targeted to needs and therefore deliver the most cost-effective solution.

IV. THE RESEARCH METHODOLOGY

To guide the university mobile initiative a short survey is designed to:

- Identify which Internet-capable mobile devices were in use on campus
- Gauge the extent to which Internet-enabled devices were being used at Universities
- Identify the kinds of devices in use
- Elicit recommendations about what campus services would be most desired for access from a mobile device

The draft questions for the survey were reviewed by a subcommittee of the University Council, and the survey was tested with a small sample of self-selected student volunteers. The survey was delivered using the web-based survey system. The survey was deliberately short to maximize participation and was optimized for smart phone display. Ultimately, ten questions were identified, including an informed consent indicator. Participants were required to agree to participate in the survey, after which they self-identified as undergraduate student, graduate student, faculty or instructor, or staff. They were then asked if they owned a web-enabled mobile device, even if they did not use it to access the web. Participants who indicated that they did access the Internet with a mobile device continued the survey; those who did not use the Internet were finished with the survey.

1. Demographic of survey respondents

Are you

- Undergraduate
- Postgraduate
- Graduate student
- Faculty
- Instructor
- Staff
- Other

2. Type of mobile device

- iPhone
- iPod touch
- Android/Google device
- BlackBerry
- Treo
- Palm
- Other

3. Do you own a mobile device that can access the Internet even if you don't use it for that purpose?

- Yes
- No

4. How many applications have you downloaded to your mobile device?

- 0
- 1-3
- 4-6
- 7-9
- 10-12
- 13+

5. Frequency of mobile device use to access the Internet

Please include the time spent on apps that use the Internet like NPR, CNN News, Facebook, etc., but do not include time spent checking e-mail."

- 1 to 15 minutes
- 16 to 30 minutes
- 31 minutes to 1 hour
- More than an hour

6. Frequency of mobile device use for email

How often do you use your mobile device Please include the time spent on apps that use the Internet like NPR, CNN News, Facebook, etc., .Include time spent checking e-mail."

- I do not use the Internet on my mobile device
- 1 to 15 minutes
- 16 to 30 minutes
- 31 minutes to 1 hour
- More than an hour

7. Tools desired in a campus mobile app.In an Official TU mobile web application, what tool would you use the most?

- Campus map
- Sports information
- News feeds
- Dining guide
- News/alerts/emergency information
- Campus directory
- Course information
- Other

8. To what degree do you use your Internet-enabled mobile device for the following activities?

<u>Topics</u>	1	2	3	4	5
Social Networking					
Reading Content (Eg..Books,Articles)					
Getting News alerts					
Accessing Email					
Text Messaging					
Searching for Information					
Getting Directions					
Uploading Content					
Playing Games					
Listening to Music or watching videos					
Completing Coursework or Participating in lectures					

1: Always 2: Frequently
3: Occasionally 4: Rarely 5:Never

9. Please name the program(s) or application(s) you use to do the following

<u>Topics</u>	
Social networking	
Reading content (e.g., e-books, articles, etc.)	
Accessing email	
Searching for information	
Text messaging	
Getting directions	
Getting news alerts	
Uploading content	
Playing games	
Listening to music or watching videos	
Completing coursework or participating in lectures	

10. Do you encounter any barriers (e.g., authentication/password requests) when trying to access library items (e.g., articles) on your mobile device? If so, how would you describe your experience?

- I am able to get to the items easily.
- I am able to get to the items, but it's a somewhat frustrating/annoying process.
- I am able to get to the items, but I avoid having to do this because the process is so painful.
- I have tried, but I have not been able to get to the items.
- I have not tried to access library items from my mobile device.
- I don't know./I don't remember

V. CONCLUSIONS

The Universities can use this data to help guide its mobile initiatives, particularly in terms of building capabilities into its mobile applications as well as investing in the infrastructure to support the increasingly mobile future. This survey reinforces department's commitment to this mobile Project for mobile course management system access and use. Furthermore, Universities abroad are investing heavily in its wireless and cellular infrastructure. Finally, the IT organization is also developing annual surveys related to IT services, including mobile capacities, to provide ongoing and potentially longitudinal user feedback.

More broadly, salient features of these survey results suggest some important trends for mobile initiatives in higher education:

The survey reinforces the common understanding that mobile devices are proliferating and demand for mobile-enabled services is increasing. As a result, more institutions are launching mobile initiatives, and schools without them are experiencing pressure to do so. This survey provides some useful guidance to institutions considering the development of mobile apps and mobilized services by identifying numerous desired functions that are common across many higher education institutions including access to academic services and course activities on mobile devices.

Finally, future mobile surveys must reflect changing technology. The obvious issue here is device type, but new and emerging technologies will also change the landscape of necessary and desirable apps and mobile functions. This change will have a potential negative impact on longitudinal studies, but again, shifting more toward attitudes and experiences will mitigate that problem, continue to draw valuable input, and enable valuable conclusions for the foreseeable future. As our own knowledge, skills, confidence and professional competencies with digital technology grow, so too will the range of digital learning strategies.

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