

Perceptions of Undergraduate Students towards Mobile Learning: the Case of Students of the Metropolitan Technological Institute

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Abstract. The mobile devices allow a wide variety of tasks at any time and place, making it an option to strengthen the reach of virtual education processes and enabling the design of virtual environments that promote experiences according to the needs of the learners. The Mobile-Learning or M-Learning combined with a virtual learning environment are one of the tools that result of mobile technology and Web 2.0, which allows students to choose the device, place and time that best fits their lifestyle. Also it designs instructional environments that promote experiences according to the reality of the students. The purpose of this paper is to present the preliminary results of the undergraduate students' perception of the Administrative Sciences Department about M-learning. For this, it has raised an exploratory research from quantitative methodological designs (self-administered questionnaires). In conclusion, students perceive the academic use of mobile devices as an alternative to improve the quality of teaching in the Metropolitan Technological Institute. In addition, students value its usability, dynamism and interactivity.

1. Introduction

All Information and knowledge access have changed recently due to increasing of technological advances. This progress is taken into account as an important vehicle of information transfer and its growing adoption brings to the necessity to continue generating new knowledge for better access and dissemination of information [1]. However, few technological developments can boast an accelerated and massive people implementation as the observed in mobile devices [2]. According to research firm Strategy Analytics [3], the number of smartphones in use worldwide surpassed the one billion units sold for the first time in the third quarter of 2012.

These figures are of vital importance when wireless technologies are revolutionizing the education and transforming the traditional classroom learning, having a big impact in ubiquity and temporality. This is how it makes possible to advocate that the use of these mobile technologies will contribute to the improvement of the learning process of students in terms of quality and relevance through interconnection with the real world allowed by these new Information and Communication Technologies (ICT) [4]. In this context, mobile learning is emerging as one of the most useful

mechanisms in the appropriation of ICT in learning processes, looking to supply the requirements of mobility, accessibility and interactivity than traditional learning mechanisms have not covered [5], allowing to cross borders in face-to-face classes [6]. Among the variables that influence in taking decision to use it are: The improvement in performance and efficiency when is used it, the concepts and the way that mobile learning is used, and the effort done when it's incorporated between teaching and learning processes [5]

2. Theoretical Framework

The latest developments in Information and Communication Technology (ICT) allow the creation of new channels to facilitate the relationship and interaction between different groups of people. In the same context, it can observe big challenges within academia, where the immediacy and contrasting of the information students given by teachers are forcing the latter motioned to take advantage of the methodologies that are based on the use of ICT to respond appropriately to the needs of the students [7].

In recent years, mobile technologies have evolved, and creating a social impact with a big diversification which they have increased their demand and the accelerated development of market applications for these devices, and of course business when billions of dollars are moved [8], combined with their widespread use and popularity have allowed to observe a great potential for conducting various academic activities. This process has developed the Mobile Learning or M-learning, in others words, It's based on the appropriate and timely use of mobile technologies learning, mainly smart phones (smartphones) and tablets, looking to supply the demands and needs of students, where traditional methods have failed to cover [6].

Furthermore, mobile devices are able to adapt to various content and knowledge management systems looking for to have instantly and updated information. In a near future, it will allow a powerful semantic searching to have access to required information. Mobile devices provide the basic elements where students can build a mental models and to propose to learn for him-self conditions allowing to work on tasks and having access information in a way that is not limited by time and space [9].

This learning methodology corresponds to an improvement of the known e-learning allows to have access, to personalized information anywhere, and anytime. The ubiquity, portability and interactivity, are characteristics of M-learning that break with geographical barriers. Also it allows the creation of collaborative learning spaces to increase groups interaction [10] responding to the needs of students of the contemporary world, who require instantly and updated information in the development of their academic background. However, the mobile learning is a relatively new concept, which shows that in any space, place and time can generate a learning process and therefore pedagogical, organizational and technical structure is still in development [11].

Its most evident characteristics are: portability, flexibility, interactivity and full connectivity. It can be considered that is the extreme form of flexible learning because it can integrate studies that take place in school, in home or outside of the institution in a unique flexible environment, share learning and a spaces where the users can act using tools and devices that allow them to have a greater interaction [7].

According Korucu & Alkan [12], the most important advantage that comes from mobile learning about e-learning is that the mobile learning is independent of a specific location and it's based on dynamical services created to facilitate communication with others. Moreover, while the rapid advancement in the capabilities of mobile technology have allowed to users to do a variety of tasks on a mobile device at any time and place. The decrease in the cost of these devices makes them more accessible to different users [13]. Despite this, Pollara [14] argues that the shift to these technologies has occurred so quickly that researchers have not had enough time to understand how these devices can be used to make the mobile learning an advantage.

In contrast, Serbanescu [15] argues that mobile learning decreases the direct interaction and feedback between students and teachers, in addition increasing the rate of failures and dropouts in the students. On the other hand, the construction of identity from the interactions present in the mobile learning becomes more complex than in a traditional social environment.

In spite of what has been indicated previously. The use of mobile learning offers a range of advantages in education from mobile learning. For example; mobile technologies can provide better access for students normally excluded from the educational process by location, social or technological infrastructure [15]. Further, social relationships that provide portable computing devices offer a simple and direct environment learning [16].

Although the M-learning is spreading in the world, the theoretical basis found in the current literature with regarding to the factors of adoption and the proper use of these technologies is limited. Therefore, taking into account the different views that have emerged on the topic of mobile learning as the importance to know the opinion of those who have become users, especially students, to this effect, studies like Gong & Wallace [16], which revealed a number of deficiencies in the academic context, one of these deficiencies is that more than half of respondents felt that mobile devices are more used for entertainment than education, and emphasized on the distraction caused by use of these devices when is used in learning processes, becoming in one of the challenges of mobile learning topic [16].

3. Methodology

The research that was conducted to identify which is the main use that is given by students in their mobile devices, this is exploratory research, because it allows an approach to the problem, in order to increase the degree of familiarity and to redirect more extensive and rigorous post researches [17].

The sampling method was implemented in research is a non-probability sampling judgment. The population chosen for conducting the research consists of students of Metropolitan Technological Institute of Medellín (ITM by its abbreviation in Spanish). The quantitative method that was implemented was the physical self-administered survey realized from September and October 2013 in the premises of the ITM Campus Fellowship. This methodological instrument was chosen because it allows generalizing the result of the population of interest and is appropriate to collect opinions, perceptions and beliefs of respondents in order to develop a second phase of the project to devise strategies to analyze the implementation and appropriation of mobile technologies in the students of Metropolitan Technological Institute.

4. Analysis of results

The section headings are in boldface capital and lowercase letters. Second level headings are typed as part of the succeeding paragraph (like the subsection heading of this paragraph). Initially, it shows a characterization of the students surveyed (Table 1), observing the differences found in the surveyed population according to educational level. It is observed that 55% of respondents are female and 45% are men. Furthermore, 61% of respondents prefer educational apps over other applications. On the other hand, 73.5% of respondents mentioned that they have used mobile applications for learning.

Table 1. Profile of students surveyed.

Educational level	Gender		Preference by educational apps		Usage of apps for learning	
	Female	Male	YES	NO	YES	NO
Beginner	15,0%	16,0%	19,0%	12,0%	23,5%	8,2%
Intermediate	19,0%	16,0%	26,0%	9,0%	25,5%	10,2%
Advanced	21,0%	13,0%	16,0%	18,0%	24,5%	8,2%
Total	55,0%	45,0%	61,0%	39,0%	73,5%	26,5%

Furthermore, it is important to highlight that at the intermediate level of study where a preference for the use of educational apps and more use of apps for learning are notorious. Additionally, the 73% of respondents have a mobile high-tech device that allows to download various mobile applications. The 85% of respondents claim to have the knowledge to download an application from their mobile phones. The 34% of students use the mobile learning applications for 10 to 30 minutes per day, the 19% between 30 and 60 minutes, the 18% between 5 and 10 minutes, the 18% within 5 minutes and the 11% 60 minutes. This shows that although most students use apps for learning (73.5%), the daily frequency of use is low so it is necessary to develop strategies to achieve greater integration of these tools in the teaching and learning processes.

Furthermore, the figure 1 shows the most important needs met covered by mobile applications. It is observed that the time saving (65%), to obtain knowledge (53%) and new experiences (23%) are the most common needs looked for by respondents accessing mobile applications. It is observed that the second option (to obtain knowledge) is emerging as one of the great interest by college students, which represents a high potential to encourage more mobile learning among students of ITM.

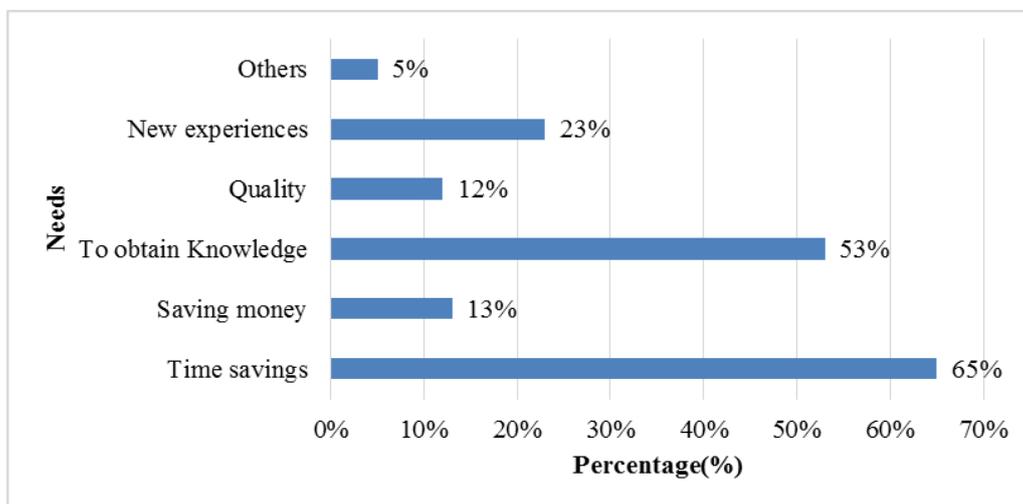


Fig. 1. Most Important needs met covered by mobile applications. Source: Own elaboration. Values do not sum 100% because it was a multiple response question.

Through an exploratory analysis based on categorical variables it was identified four criteria in the sample to develop the typologies: (1) Educational level, (2) Preference by educational mobile applications and (3) Sex.

The typology "Educational level" categorized the surveyed students according to semester ongoing in the moment of survey. Three subcategories of level were detected: Beginner (31% of respondents 1 to 4 semesters), Intermediate (34% of respondents from 5 to 7 semesters) and Advanced (35% of respondents from 8 to 10 semesters). The typology "Preference by educational mobile applications" categorized the surveyed students if they have a preference for educational mobile applications (Yes - 61%) or other types of mobile applications (No-39%). The typology of "sex" categorized the surveyed students in men (45%) and women (55%). The following tables show the favorability of responses to each question in the tables according to 3 typologies defined above.

Table 2. Favorabilidad de las respuestas según educational level

Questions	Educational level		
	Beginner	Intermediate	Advanced
Preference by educational applications for mobile device	31,1%	42,6%	26,2%
Have you knowledge to download an application since your mobile device?	32,1%	32,1%	35,7%

Would you recommend the educational mobile applications to others users?	35,4%	32,9%	31,7%
Do you use mobile applications for your academic development?	31,9%	34,7%	33,3%
Are you interested to use mobile applications in administrative sciences?	31,4%	41,2%	27,5%

In most questions in Table 2, the favorability observed in the respondents according to the semester level is similar in the 3 defined levels, suggesting the no existence of significant differences according to the semester level face to perception and use of virtual learning tools. However, it is important to denote that respondents with an intermediate level have a greater interest to use mobile applications in administrative sciences (41.2%) and greater preference by educational applications for mobile device (42.6%). This may be occurs because students in this semester level have a greater understanding of the utility of educational apps and therefore have a higher propensity to use them, while students who are finishing their studies (advance typology) are in the process completion of their careers and professional practices where the use of tools for learning is lower.

Table 3. Favorability of responses according to preference by educational mobile applications

Questions	Preference by educational mobile applications	
	Yes	No
Have you knowledge to download an application since your mobile device?	60,7%	39,3%
Would you recommend the educational mobile applications to others users?	67,1%	32,9%
Do you use mobile applications for your academic development?	65,3%	34,7%
Are you interested to use mobile applications in administrative sciences?	68,6%	31,4%

In most questions in Table 3, the observed favorability of respondents according to the preference by mobile applications is higher in those who show greater acceptance by the educational mobile applications. It is important to denote that although 34.7% of respondents manifested a preference by educational mobile applications but if used for academic development. Moreover, it should pay attention to the fact that 39.3% of respondents do not know to download an application since their mobile device.

Table 4. Favorability of responses by sex

Questions	Gender	
	Female	Male
Preference by educational applications for mobile device	63,9%	36,1%
Have you knowledge to download an application since your mobile device?	53,6%	46,4%
Would you recommend the educational mobile applications to others users?	54,9%	45,1%
Do you use mobile applications for your academic development?	51,4%	48,6%
Are you interested to use mobile applications in administrative sciences?	66,7%	33,3%

Table 4 shows a strong preference of women compared to men in terms of educational applications for preference by mobile device (27.8% higher in women) and also an higher interest to use mobile applications in administrative sciences (33, 4% higher in women). It is important to denote that the sample of respondents is composed of 55% women and 45% men so that the figures cannot be interpreted in a form textual.

On the other hand, when preferences in applications for mobile devices of students are asked (Fig. 2), it found that 61% prefer education apps, followed by 60% who prefer entertainment apps, 55% prefer information apps, among other options selected (Commercial, Banking, Geographic). The above numbers show the potential for the creation and implementation of educational apps in the Metropolitan Technological Institute, which by its technological vocation should lead development processes and strategies to promote the wider adoption of mobile learning in educational context in the institution.

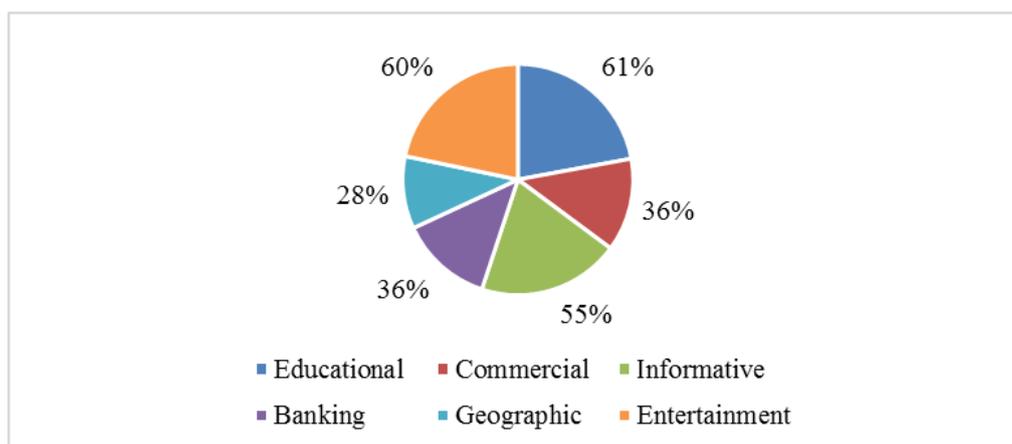


Fig 2. Preferences in applications for mobile devices. Source: Own elaboration. Values do not sum 100% because it was a multiple response question.

5. Conclusions

The most important advantage of incorporating mobile learning into pedagogical processes is the possibility of interaction student with classmates, schoolmates and teachers, regardless of their timing and location. Moreover, the mobile learning encourages and promotes the development of basic competencies, skills and knowledge involve in the new digital age of information and communication.

This exploratory study shows the potential of student users of mobile applications for learning, because the 73% of respondents have smartphones and 72% use mobile applications to support their academic processes, so it becomes a challenge for Metropolitan Technological Institute for his technological and pedagogical talent to encourage and develop a greater number of mobile learning tools aimed to undergraduate students.

Further, it's observed that although the majority of students use apps for learning (73.5%), the daily frequency of use is low (10-30 minutes), so it is necessary to develop strategies to achieve greater inclusion, acceptance and use of these tools in the teaching and learning of students from the Metropolitan Technological Institute.

As future work, it is important to conduct researches with a larger sample of students from the Metropolitan Technological Institute and the longitudinal character to analyze the acceptance of mobile learning in all university community and to compare how the use of students depends on the academic programs study and how it is the behavior in the use mobile learning over time.

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