Mobile Subject: M-Learning Student Profile

Laura Krimberg[a], Anna Helena Silveira Sonego[b], Leticia Rocha Machado[c], Ketia Kellen Araújo da Silva[1][d] and Patricia Alejandra Behar[1][e]
Núcleo de Tecnologias Digitais Aplicadas à Educação (NUTED), Universidade Federal do Rio Grande do Sul, Avenida Paulo Gama 110, Porto Alegre, Brazil

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Abstract: This article aims to present the profile of M-Learning students, called *Mobile Subject*. For this, a mapping of their characteristics related to mobile learning was carried out. The study establishes a relationship between students engaged in educational activities through their mobile devices. For this purpose, questionnaires were applied to students from two undergraduate and two extension courses, characterizing research as a case study, with a qualitative-quantitative approach. The analysis consisted in the evaluation of the data, outlining the profile of the *Mobile Subject* by identifying four main characteristics: Speed, Connectivity, Immersion in Social Media and Multitasking and their respective elements. It is hoped that this research may contribute to new discussions about the profile of the *Mobile Subject* student, proposing parameters and new strategies focused on mobile learning.

1 INTRODUCTION

Currently, the use of mobile devices (smartphones and tablets) has grown considerably and, due to its democratization, M-Learning has become more important in a wide range of fields (Bates, 2017). However, the accentuated use of these devices in the pedagogical process demands from the subjects continuous learning in relation to the multiple resources employed in such devices.

In this context, it becomes significant to investigate the students profile, analyzing their characteristics and their relation with mobile devices. In addition, the integration of mobile technology, such as smartphones and tablets, collaborates with the motivation of the students through the interactions and explorations made possible by the apps.

Thus, the article initially has a section that presents "M-Learning and the new challenges". It then identifies "the subjects and mobile digital technologies". Next, the methodology of this research, the collected data, the discussion of the results and, finally, the final considerations and references used are presented.

2 M-LEARNING CHALLENGES

M-Learning emerges as a new educational possibility for the use of mobile devices. Its concept, according to UNESCO (2014, p. 8), "involves the use of mobile technologies, alone or in combination with other information and communication technologies (ICT), to enable learning anytime, anywhere "Including smartphones and tablets. Thus, it is observed that a distinct concept of learning has emerged and is now a reality. These technologies are characterized by the possibility of spontaneity and customization, due to their portability and lightness, being an informal digital environment that complements the new profile of the students of society (Behar, 2013).

According to the ICT Education research on the Use of Information and Communication Technologies in Brazilian private and public middle

[a] https://orcid.org/0000-0002-9127-5223
[b] https://orcid.org/0000-0002-9238-1327
[c] https://orcid.org/0000-0003-4102-2225
[d] https://orcid.org/0000-0003-4722-8072
[e] https://orcid.org/0000-0001-6939-5678

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and high Schools, 97% of students accessed the Internet by cell phone in 2017, highlighting their growth for educational purposes (CGIBR, 2018). In addition, the data points to an increase in teachers' access to the Internet through mobile devices, from 38% in 2013 to 97% in 2017. Therefore, a wide dissemination of the Internet through these devices is observed both in the use of resources by teachers in the classroom and by students in different school activities.

However, it is not possible to state that only the use of mobile devices in the performance of classroom activities enhances learning situations (Sonego and Behar, 2015). It is observed that "Resistance to mobile learning implementation and adoption can be minimised by providing training to the users (Chugh & Grandhi, 2012), i.e. students in this case". In this sense, the planning of the teacher, involving the curricular content, didactic materials, the use of the applications and the way that the mobile devices are used become fundamental. Therefore, exploiting the features of these devices, such as shooting, recording and playing videos and audios, downloading and annotating, editing texts, transferring data, accessing Internet pages and sending e-mail, can help in the learning process.

M-Learning can become a viable reality in the teaching process, inside and outside the educational environments (UNESCO, 2014). The profile of the student inserted in the context of M-Learning is presented below.

3 STUDENTS AND DIGITAL TECHNOLOGIES: OUTLINING A PROFILE

A systematic review was carried out with the authors who investigate students and digital technologies. It is verified that the characteristics of this profile have been developed over the years and different generations, together with the evolution of digital technologies. It was possible to observe that several characteristics of these subjects are related to the use of mobile devices and the relation of this profile with them. Table 1 highlights the evolution of these concepts according to 14 authors, used as a basis for the definition of *Mobile Subject*:

Table 1: Chronological evolution of different generations and their relationship with technologies.

Characteristics of the generation and its relation with technologies.	**Author**	**Year of publication**
Speed in Internet searches; multitasking; linked to digital social networks; need for constant recognition.	Prensky	2001
Flexibility; individuality; critical relationship with the information found; integrity; collaborative; speed; creativity; need for entertainment.	Tapscott	2010
Connected for most of their lives; development of social relationships through mobile devices; interact with information from the Internet; multitasking.	Palfrey and Gasser	2011
Multitasking; speed, both in handling of the devices and in access to information; need to feel challenged or stimulated; blind trust in digital tools; smartphone addiction; technological tutors.	Bortolazzo	2015
Familiar with new technologies; smartphones as additional members of the bodies; difficulty in solving problems without the technologies; need to be connected all the time.	Vidal and Dantas	2016
Difficulty in systematizing information; questioners; anxious; constant need for recognition; impatient; individuality; range of online relationships; they can not conceive of a world without the devices.	Oliveira	2016
Invest in your own image on the internet; need for speed; competes with others; impatient	Citelli	2016
Need to always be online; difficulties in communicating face to face; user of online information.	Patrão	2016

Table 1: Chronological evolution of different generations and their relationship with technologies (cont.).

Characteristics of the generation and its relation with technologies.	Author	Year of publication
Able to participate in learning experiences in which they act in an active way; view M-Learning as the successor to DE.	Ligi e Raja	2017
Immersed in social networks; want to use technologies on anything.	Bates	2017
They reject the traditional rules of society; insecure; extension of childhood to adolescence.	Twenge	2017
Personal entrepreneurship; building your own knowledge; autonomous access to technologies.	Loureiro and Klein	2017
They have learned to use privacy in technology; Will to change the world; Mentality centered on the good of all; preference for learning that they can apply in their real lives; observers; they learn by visualizing examples; autonomous; learning at their own pace; see educators as resources; need for jobs that bring personal fulfillment and happiness.	Seemiler and Grace	2017
Accustomed to the use of digital media; need to learn to use technology to enrich education; open to different teaching methods and technologies; use their mobile devices both to pursue knowledge and to build virtual learning environments; participate actively and responsibly on the Internet, reflecting on their studies and qualification.	Witt and Gloerfield	2018

Different approaches to the definition of these subjects can be observed in the Table 1, and constituting attributes related to their relation with digital technologies. It is verified that elements such as impatience, ability to use mobile devices, use of media and social networks and their connection to M-Learning are presented by the great majority of authors. The description of the profiles identified by them can contribute as a basis for the mapping and comparison of data of the characteristics of *Mobile Subject*. The methodology of the study is presented below.

4 METHOD

This section presents the methodology of this research, characterized as a case study, with a qualitative-quantitative approach, having as main strategies: theoretical survey, questionnaire application and content analysis. The case study was set up in two unique cases, using replication, that is, the use of the same pattern of classroom activities and applied questionnaires. The analysis was performed from the triangulation of data. The research involved students as subjects from undergraduate courses of universities of Porto Alegre, city located in the state of Rio Grande do Sul, Brazil.

In total, 92 students participated in the research, among those enrolled in the subjects and courses offered[6]. The students' ages where between 18 and 49 years, being 78.1% female. During these classes, several topics related to the use of digital technologies in education were presented. The content of these classes was mobile learning and the creation of educational applications for mobile devices. Initially, it was discussed the use of these technologies in education and the relation of the students with them, to later apply a questionnaire related to mapping the characteristics of these individuals. The steps outlined in this study are detailed below:

1. Development of the theoretical basis: includes a review of the literature on the subject of students' profile and their relationship with technologies, mainly considering their performance in distance education and mobile learning.
2. Multiple case study: application of four cases, using, for data collection, a questionnaire with open and closed questions. This step aimed to map

[6] The extension courses were *Mobile Learning: mobile devices use possibilities in the classroom* and *Construction of Educational Applications: a focus on mobile learning*, conducted from April to July 2018 and from September to November 2018, respectively.

characteristics related to the profile of the students. The cases were as follows:

a. Case 1: Media, Technologies and Education subject, held in 2018/1, of the pedagogy course of a university from Porto Alegre, Brazil;
b. Case 2: Media, Technologies and Education subject, held in 2018/2, of the pedagogy course of a university from Porto Alegre, Brazil;
c. Case 3: Extension course open to the academic community in 2018/1, at a university in Porto Alegre, Brazil;
d. Case 4: Extension course open to the academic community in 2018/2, at a university in Porto Alegre, Brazil;

3. Construction of the *Mobile Subject* profile: from the analysis of the data collected in the cases through content analysis (Moraes, 1999), with the objective of identifying characteristics of the *Mobile Subject* profile.

The next section details the results of each step.

5 ANALYSIS AND DISCUSSION OF RESULTS

As it was presented, the study was based on the theoretical survey of 14 authors that point out the characteristics of the generations with respect to the evolution and use of mobile digital technologies. Afterwards, these concepts were compared to the result of a characteristics' mapping of the *Mobile Subject* profile with undergraduate students, based on the methodology of Yin (2015) and Moraes (1999). Four categories were defined, among them Speed, Multitasking, Connectivity and Immersion in Social Media. Figure 1 shows the description of each feature and the complete profile of the *Mobile Subject*.

Thus, it was possible to observe different characteristics of the *Mobile Subject*. *Connectivity* is related to the difficulty in accomplishing problems without access to the Internet and / or personal mobile devices, depending on the task that the subjects perform. Likewise, it is characterized by the ability to know how to select information in a critical way, mainly distrusting news spread by social networks and registering on reliable news sites. As a result, they become skilled in the search of sources cited in portals of newspapers, magazines, academic articles, etc. In addition, this element shows that the use of smartphones and tablets in classrooms can contribute to a greater attention and enthusiasm of this profile in relation to the contents that are being presented. However, it should be noted that educational applications should be used as a complement to the traditional classes for this profile, not neglecting the importance of the teacher and his pedagogical practices.

As for the *Speed* element, it is characterized by the ease of this profile in operating his smartphone with agile, performing functions quickly by the device. In the same way, virtual search for educational activities becomes much easier because of this feature, available collection and the possibility of easily finding keywords in a text. The learning of the *Mobile Subject* is also influenced by this element, since it is indicated a preference for activities and shorter classes, that require less time. This demonstrates that these individuals exhibit a need for minor activities due to their lack of patience for very long tasks. Thus, the use of technologies for learning is seen positively for this type of student, since they show the need to act with speed.

The concept of *Multitasking*, in this context, is related to the subjects who can perform several activities at the same time and / or alternate between different functions. Related to this characteristic, it was possible to observe that this profile, in addition to being identified as multitasking, has the necessary attributes to do multiple activities at the same time, both virtually and in person. In addition, most students visualize the potential of M-Learning mobility because they can quickly switch between different applications with different functions, whether for study and research or for communication and socialization.

Regarding the *Immersion in Social Media* characteristic, this profile uses smartphones, mainly to dialogue with others, either through e-mails or social networks, reading class materials, access to VLE, quick searches and entertainment. Moreover, relationships built with other individuals through these forms of conversation are not necessarily superficial, and may be solid friendships, even with the question of the time and space of the virtual world.

Regarding this element, it is also observed the use of social networks to facilitate contact with people closer to them and also individuals who live far from their homes. In addition, it is verified the frequent update of digital profiles through posting of different media in these networks, with the objective of contributing to the learning of other subjects. It stands out mainly the possibility of developing collective knowledge by conducting research, posting videos and podcasts, exchanging ideas, reading and writing.

The final considerations are presented below.

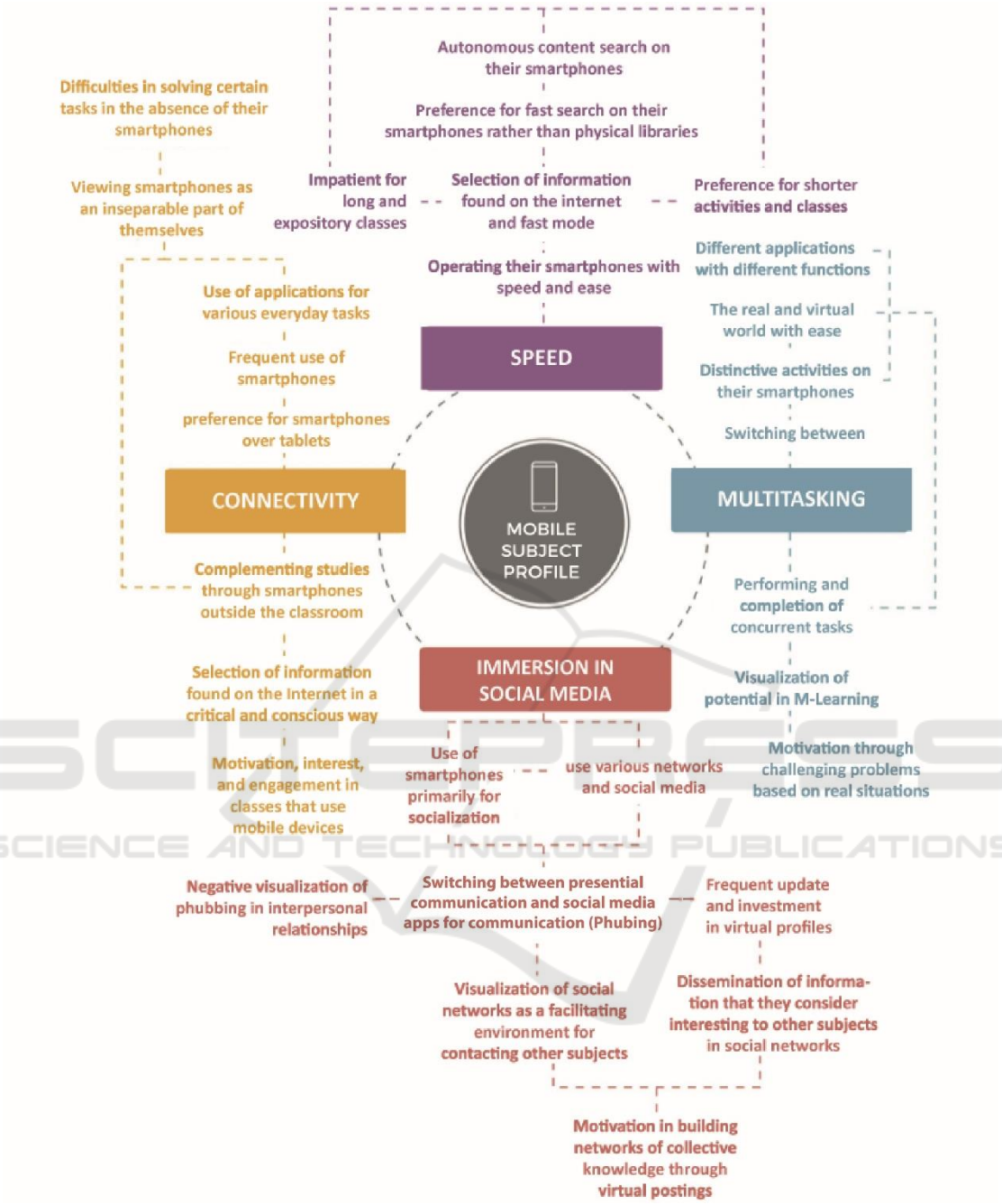

Figure 1: Profile of the Mobile Subject.

6 CONCLUSIONS

The main objective of this article was to define the profile of the *Mobile Subject*, defining the characteristics of these students. The data showed that the students demonstrate attributes in common with the theoretical reference, related to the profile of the *Mobile Subject* and M-Learning. It is observed that the demand for the development of knowledge for the accomplishment of educational tasks through mobile devices increases more and more, for the different scopes of life. However, in M-Learning it is necessary to develop didactic-pedagogical activities together with the constant updating of the new applications

and resources of mobile devices, in order to build meaningful teaching-learning processes.

Based on these perspectives, *Mobile Subject* is understood as a connected individual, fast, immersed in social media and multitasking. In addition, it is a profile that uses the mobile devices in their teaching and learning process and that knows and relates to M-Learning in a natural way.

It is understood that the knowledge of the *Mobile Subject*'s profile characteristics can contribute mainly on the planning by teachers, identifying the behavior of their students and enabling the development of activities that use mobile devices focused on them. In addition, it's noted the importance of this type of study in the academic world, especially in what concerns the Brazilian society, since several international works related to the subject were identified, but a small amount of national research in this area.

In the same way, this study can help in the qualification of professionals from different areas, from the use of this profile as a basis for the creation of educational applications for this public, identifying parameters for the construction of these technologies. These can include pedagogical aspects, such as the division of content into modules and the availability of videos, texts and animations of short duration, to meet the difficulty of the profile in focusing on very long activities. This way, it can be seen that the teaching planning aligned to the use of the applications, focusing on this profile, can contribute to an engaging learning.

It is understood that motivation, interest, and engagement in classes that use mobile devices, for example, may be related to learning objectives, target audience, and activities related to students' personal interests.

This article noted the need for an investigation about the relationship between students and M-Learning, especially regarding the importance of identifying the characteristics of this profile. It is verified that observing their preferences and needs in the use of educational applications for mobile devices, such as smartphones and tablets, enables teachers to develop motivational activities through the construction of this type of technology. It should be highlighted that the mapped indicators, in their majority, have similarity to those that were pointed out by several authors. However, those validated in this research prioritized the importance of meeting the specificities of the contemporary student profile.

The main result of this mapping was to investigate the profile of the *Mobile Subject* and to understand their needs regarding M-Learning. It is assumed that this research can contribute to teaching practices in relation to the development of students involved in mobile learning. Finally, it is intended to conduct future studies based on the profile of the *Mobile Subject* in order to build pedagogical strategies for the use of educational applications.

REFERENCES

Bates, T., 2017. *Educar na Era Digital.* Artesanato Educacional. São Paulo. E-book. Viewed 20 November 2018, http://abed.org.br/arquivos/Educar_na_Era_Digital.pdf

Behar, P. A., 2013. *Competências em Educação a Distância.* Penso. Porto Alegre.

Bortolazzo, S. F., 2015. *Narrativas acadêmicas e midiáticas produzindo uma geração digital.* Doctoral thesis. Universidade Federal do Rio Grande do Sul.

Citelli, A. 2016. Educomunicação: Temporalidades e Sujeitos. In: *XXXIX Congresso Brasileiro de Ciências da Comunicação, september.* Intercom- Sociedade Brasileira de Estudos Interdisciplinares da Comunicação. São Paulo.

Comitê Gestor da Internet no Brasil (CGIBR), 2018. *TIC Educação: Pesquisa Sobre o Uso das Tecnologias de Informação e Comunicação nas Escolas Brasileiras.* Núcleo de Informação e Coordenação do Ponto BR. São Paulo. E-book. Viewed 27 december 2018, https://www.cgi.br/media/docs/publicacoes/2/tic_edu_2017_livro_eletronico.pdf

Grandhi, S., Chugh, R. 2012. Strategic Value of Mobile CRM Applications: A Review of Mobile CRM at Dow Corning and DirecTV. Artesanato Educacional. In: *International Conference on Innovation and Information Management (ICIIM 2012)*, IPCSIT, v. 36, LACSIT Press, Singapore.

Ligi, B., Raja, W. D. 2017. Mobile Learning in higher education. In: *International Journal of Research, 5(4)SE, 1-6*, Granthaalayah, India.

Loureiro, C. B., Klein, R. R. 2017. *Inclusão e aprendizagem: contribuições para pensar práticas pedagógicas.* Appris. Curitiba.

Moraes, R, 1999. Análise de conteúdo. In: *Revista Educação, v. 22, n. 37, p. 7-32.* Porto Alegre.

Oliveira, S. 2016. *Gerações: encontros, desencontros e novas perspectivas.* Integrare. São Paulo.

Organização das Nações Unidas para a Educação (UNESCO), 2014. *Diretrizes políticas para a aprendizagem móvel.* Unesco. Brasília.

Palfrey, J. Gasser, U. 2011. *Nascidos na Era Digital, entendendo a primeira geração de nativos digitais.* Artmed. Porto Alegre.

Patrão, I. *#Geração Cordão: A geração que não desliga!*, 2016. Pactor. Lisboa.

Prensky, M. 2001. Digital natives, digital immigrants. In: *Lincoln, On The Horizon, v. 9, n. 5, oct.* NCB University Press.

Seemiler, C., Grace, M. 2017. Generation Z: Educating and Engaging the Next Generation of Students. In: *About Campus, InPractice, Wilet Library, p. 21-28, jul-aug.* American College Personnel Association and Wiley Periodicals.

Sonego, A. H. S., Behar, P. A. 2015. M-Learning: Reflexões e Perspectivas com o uso de aplicativos educacionais. In: *Anais do XX Congreso Internacional de Informática Educativa (TISE), 2015, Santiago. Nuevas Ideas en Informática Educativa TISE 2015. Santiago, 2015. v. 11. p. 521-526.*

Tapscott, D. 2010. *A hora da geração digital: Como os jovens que cresceram usando a internet estão mudando tudo, das empresas aos governos.* Agir Negócios. Rio de Janeiro.

Twenge, J. M. 2017. *Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy--and Completely Unprepared for Adulthood--and What That Means for the Rest of Us.* Atria Books. New York.

Vidal, P. V. C., Dantas, E. B. 2016. Dependência mobile: a relação da nova geração com os gadgets móveis digitais. In: *Signos do consumo, v.8, n. 2, p. 67-84, jul/dec.* São Paulo.

Witt, C., Gloerfield, C. 2018. Mobile learning and Higher education, In: *Kergel, D. The Digital Turn in Higher Education.* Spring Fachmedien Wiesbaden GmbH, p. 61-79.

Yin, R. K. 2015. *Estudo de caso: planejamento e métodos.* Bookman. Porto Alegre.