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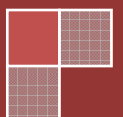
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## Bring Your Own Device To The Classroom: Uses Of The Mobile Phone For The University Training

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### Abstract

The advancement of technologies has conditioned our social behavior, specifically the introduction of mobile phones has changed the way we relate to people and how we work in our day to day. These technological social changes have been introduced in education with more incidence in universities, as the first agent of change in education. This paper analyses the use of mobile phones by university students of the Primary Education degree for their academic education. A quantitative methodology has been used with a descriptive character, using as an instrument of data collection an ad hoc questionnaire based on a Likert scale. Among the results, it is found that although the use of mobile phones a priori has a leisure character, it is also used as a resource for accessing contents and activities in university academic training. Finally, the educational conception of the students and the fact of bringing your own device to the classroom conditions the teaching dynamics, which from methodologies such as mobile learning can influence the improvement of the teaching-learning process of the students.

**Keywords:** *Bring Your Own Device, Mobile phone, Higher Education, Training, Mobile Learning.*

### Introduction

Mobile phones and specifically smartphones have revolutionized the daily use of technology. Its use has been generalized practically to the entire population in modern societies due to its small size, high performance and ubiquity (possibility of consultation at any time and place). In this sense, each person who carries a mobile device is like carrying a computer everywhere. This fact has had an impact on its habitual use as a work, academic and social tool.

Following Saussure (2016) we can consider the smartphone as a mobile digital device that presents the functionalities of a conventional telephone, while allowing connectivity to the internet and the use of mobile applications (apps). Focusing on the educational field, its application is increasingly common as a means to produce the learning, especially in higher education stage. Such is the case that the Horizon Report (a reference report on educational technology) highlights in its latest editions that the concept of "bring your own device" and "mobile learning" are presented as a technology to be implemented in short-term higher education (Johnson et al., 2015; 2016; Adams et al., 2017).

This introduction of mobile devices in the classroom for didactic purposes is specified within the mobile learning teaching methodology, which is defined as the learning that occurs from the mediation of mobile digital devices (smartphones and tablets) for the development of digital competences (Aznar, Romero, & Rodríguez-García, 2018). But really to correctly introduce this teaching methodology it is necessary to know previously the use that university students are giving to mobile phones, in order to understand their concerns, perceptions and applications they perform. Similarly, the concept "bring your own device" (BYOD), stands as a necessary ally to introduce the methodology mobile learning in the classroom, since taking into account the resources of universities it is unfeasible for the center to provide the mobile devices phones to students. Therefore, it is the students themselves who use their mobile phone in the classroom to carry out the different tasks proposed by the professor.

Attending to previous research on the use of the smartphone in the educational field, Organista, McAnally and Lavigne (2013) highlight three categories of the use of the smartphone in university students and teachers: ubiquity, internet access and personal organization. In addition, the findings highlight the possibility of using the mobile device as a pedagogical tool to help the student or teacher.

On the other hand, González and Salcines (2015) in their study on the perception of the use of the smartphone in the teaching-learning processes in the University establish as advantages the ubiquity, accessibility, increase in

motivation and ease of communication in relation to its academic use. While other studies (Saussure, 2016) specify that students use the smartphone to search for information in applications such as Google Chrome and to access social networks Facebook and YouTube. Likewise, the university students affirm that the use of the mobile device as an educational tool has facilitated the development of skills for the search of information.

Finally, in this same line is the research carried out by Gutiérrez, Santana and Pérez (2017) where it is emphasized that university students use the smartphone to listen to music, access the internet, search for information, share content with contacts, access social networks, and watch videos on YouTube, video games and check email.

In summary, if we look at the various previous studies, the use of the smartphone is varied, with a main component of leisure, although university students also make an academic use of the mobile phone. The educational conception of the smartphone is the first step to correctly apply a methodology based on mobile learning. So that being aware of its educational use decreases its incorrect use in the classroom and makes it easier for the teacher to implement different activities based on the mobile phone.

### Methodology

The purpose of this study has been to know the use made of the mobile device by students of the Faculty of Educational Sciences of the University of Granada. For this, a deductive method has been used to approach the reality observed from a solid theoretical basis, which will help us previously to understand the object of study. In this line, the methodology used to respond to the purpose is quantitative with a descriptive character (Hernández, Fernández, & Baptista, 2016), since it allows us to describe the observed reality. Therefore, an ad hoc questionnaire based on the scientific literature has been developed as an instrument for data collection, with 4 levels of responses collected on a Likert scale that refer to: none, some, enough and many.

The initial questionnaire was composed of 16 items, but for this study were analyses those items directly related to the use of mobile devices. Likewise, the statistical program SPSS version 24 has been used for the statistical analysis of the data.

In relation to the sample, it was composed by students of the Faculty of Educational Sciences of the University of Granada (n = 318). The application of the questionnaire took place during two academic years 2015-2016 and 2016-2017, framed within a teaching innovation project. It is important to highlight the importance of the sample, since it is about students of the Primary Education degree, who in the future will be teachers who will be able to implement the mobile learning methodology in their classrooms.

### Results

Attending to the responses in the different items related to the use of mobile devices by the 318 university students, the first question "What for do you mainly use the mobile device?" is divided into 7 indicators with a response rate of 100%: talking on phone with average usage (58.18% - sum of enough and many), messaging and chat has regular use very high (98.11%), surfing the internet has a regular use high (88.68%), listen to music has regular use medium-high (65.41%), take photos or videos, regular use high (73.27%), alarms and calendar management, regular use high (80.5%) and play games, regular use very low (9.12%) [Table 1]. In this way, it stands out as the main use "messaging and chat" with present the highest percentage.

**Table 1:** Indicators associated with the question "what for do you mainly use the mobile device?"

Indicators	%			
	None	Some	Enough	Many
Talking on phone	2.83	38.99	36.48	21.70
Messaging and chat	0.00	1.89	17.92	80.19
Surfing the Internet	0.00	11.32	34.28	54.40
Listen to music	9.43	25.16	28.93	36.48
Take photos or videos	1.57	25.16	40.25	33.02
Alarms and calendar management	1.26	18.24	38.05	42.45
Play video games	60.38	30.50	4.40	4.72

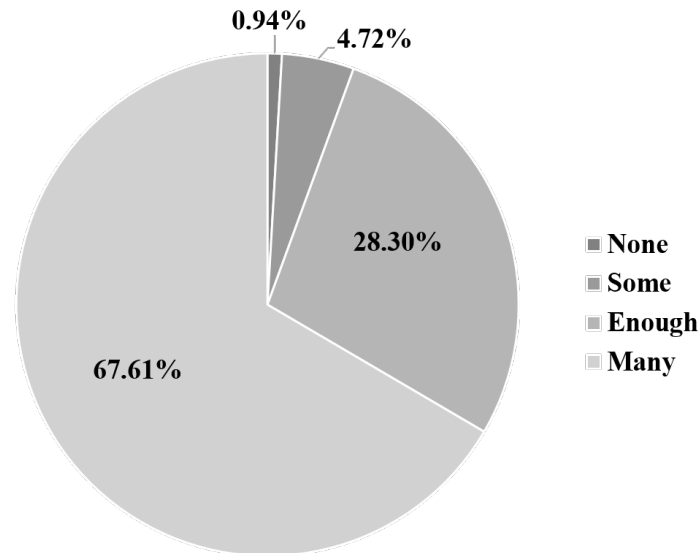
Regarding the question "with what purpose do you connect to the internet on your mobile?" it is divided into 8 indicators which indicate the most frequent uses of the internet with mobile: information search has regular use high (88.99%), participation in social networks regular use high (86.48%), communication, regular use very high (98.11%) coinciding with the previous item "messaging and chat" as main use of mobile phone in the first question, audiovisual entertainment has a regular use high (70.13%), check the email has a regular use very high (90.49%),

collaboration has a regular use medium-low (48.74%), shopping has a regular use low (19.49%) and games has a regular use very low (10.37%) [Table 2].

**Table 2:** Indicators associated with the question “with what purpose do you connect to the internet on your mobile?”

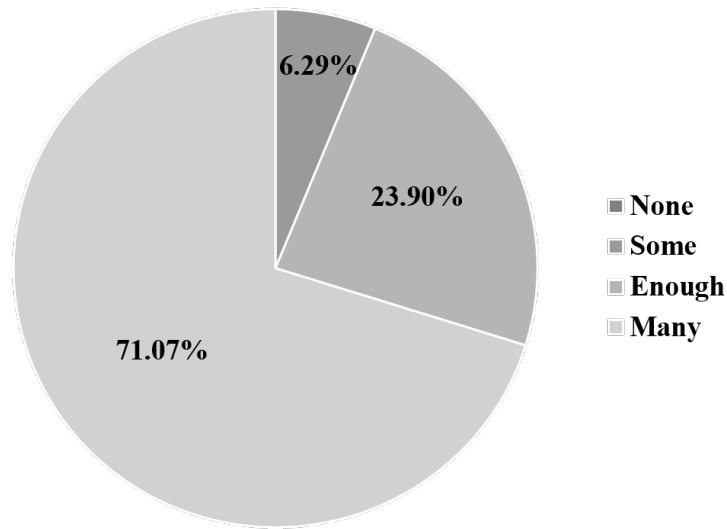
Indicators	%			
	None	Some	Enough	Many
Information search	0.31	10.69	45.91	43.08
Participation in social networks (Facebook, Instagram, Twitter, LinkeIn)	3.46	10.06	22.01	64.47
Communication (SMS, WhatsApp)	0.00	1.89	16.98	81.13
Audiovisual entertainment (YouTube, Spotify)	6.29	23.58	32.08	38.05
Check the email	0.63	8.81	40.88	49.69
Collaboration	12.58	38.68	38.36	10.38
Shopping	49.69	30.82	12.89	6.60
Games	60.38	29.25	6.60	3.77

The following item "the mobile phone allows you to search for information wherever you are", it has been obtained the response based on the Likert scale: none (0.94%), some (4.72%), enough (28.30%) and many (67.61%) [Figure 1]. Concentrating the majority of responses in positive values (95.91%).



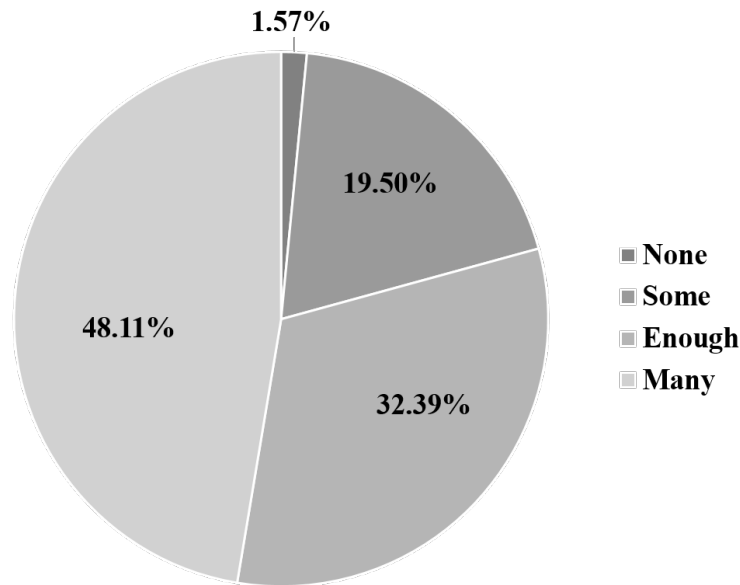
**Figure 1:** Percentage of responses to the item “the mobile phone allows you to search for information wherever you are”.

On the other hand, the item "the mobile phone allows you to always be connected with your surroundings", is specified in none (0.00%), some (6.29%), enough (23.90%) and many (71.07%) [Figure 2]. Obtaining a positive value of 94.97% with respect to this sentence.



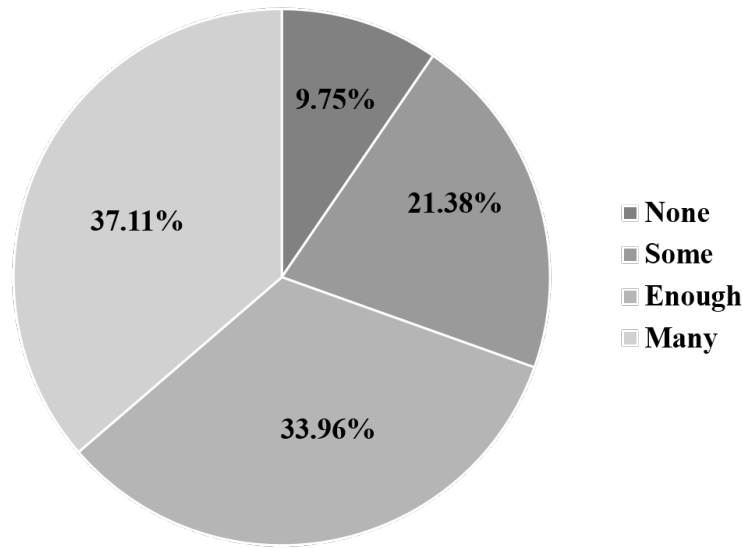
**Figure 2:** Percentage of responses to the item “the mobile phone allows you to always be connected with your surroundings”.

The results in the item "the mobile phone allows you to work from anywhere", the answers are none (1.57%), some (19.50%), enough (32.90%) and many (48.11%) [Figure 3]. Like the previous ones, the majority continues concentrating on positive values (80.5%) with respect to the item.



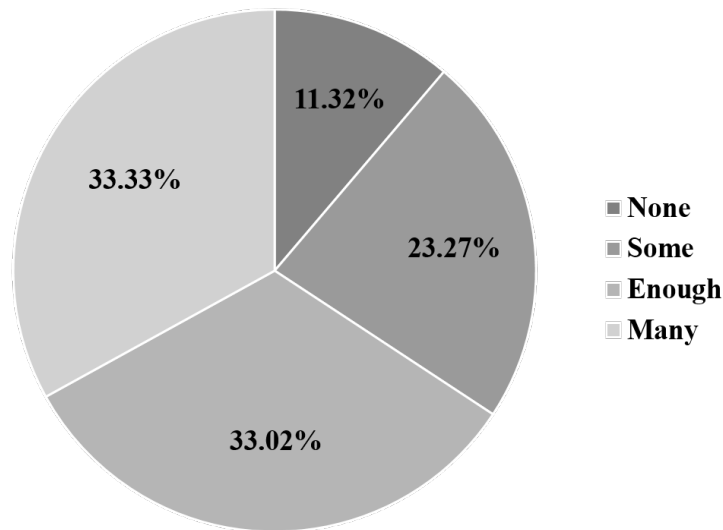
**Figure 3:** Percentage of responses to the item “the mobile phone allows you to work from anywhere”.

Focusing on the most specific items in relation to the use of mobile phones in university training, in the question "have you used your mobile device to access class contents?", Most of the answers are related to its frequent use (71.07%) in the University training, the answer are collected in: none (9.75%), some (21.38%), enough (33.96%) and many (37.11%) [Figure 4].



**Figure 4:** Percentage of responses to the item “have you used your mobile device to access class contents?”

Finally, in relation to the item "have you used your mobile device to access class activities?" The answers are similar to the access to the contents through the mobile phone, being exposed in the following way: none (11.32%), some (23.27%), enough (33.02%) and many (33.33%) [Figure 5]. The percentage of frequent use is 66.35%.



**Figure 5:** Percentage of responses to the item “have you used your mobile device to access class activities?”

**Discussion**

In relation to the results obtained, "messaging and chat" and "communication" (SMS and WhatsApp) are the most common uses of the smartphone with a very high percentage (98.11%), data similar to those obtained by Gutiérrez, Santana and Pérez (2017) where the 93% of young people consider contact through the mobile phone very important.

On the other hand, it is worth mentioning that talking on phone has an average use (58.18%) when the main function of a mobile phone in its origin has been the talking on phone, which denotes that smartphones have changed the use of the mobile device. Likewise, it highlight surfing the internet (88.68%) and take photo or videos (73.27%) as frequent uses, coinciding with the studies of Saussure (2016) and Gutiérrez, Santana and Pérez (2017).

These functions together with communication from apps like WhatsApp and participation in social networks (86.48%) are the main uses of the smartphone today (Saussure, 2016; Gómez, 2017).

In contrast, in this sample of students the use of mobile phones to play video games is very low (9.12%) in relation to other studies (Gutiérrez, Santana, & Pérez, 2017).

Regarding the intrinsic characteristic of mobile devices: ubiquity (Rodríguez-García, Aznar, & Alonso, 2016), students consider with a 95.91% that mobile devices allow you to search for information wherever you are, always being in touch with your environment (94.97%) and work from anywhere (80.5%), in the same way Organist, McAnally and Lavigne (2013) highlight it as one of the 3 characteristics associated with the use of the smartphone by students and university professors. Likewise, González and Salcines (2015) conclude in their study that ubiquity is one of the advantages of mobile devices.

Considering its use for university training, the smartphones are used by students to access content (71.07%) and activities (66.35%), so we could say that most of them have an educational conception of the use of the mobile device. In this same line González and Salcines (2015) highlight the ease of communication in university education that allows the mobile device. In agreement with this results, we found "check the email" has a regular use very high (90.49%) for communication from the institutional email. In turn, if we look at the use to search for information made by university students through the mobile phone, this function is associated with the development of digital skills in the management of information on the Internet (Aznar, Romero, & Rodríguez-García, 2018).

In summary, coinciding with the considerations of Organist, McAnally and Lavigne (2013) the mobile device acts as a pedagogical tool at the service of students.

### Conclusions

Mobile devices allow new ways of teaching and learning through technology, its controlled and timely use can bring great benefits for learning and the development of digital competences. In this research we have analysed the uses that the students of the Faculty of Educational Sciences of the University of Granada perform of the mobile phone, thus fulfilling the stated objective.

As seen, the main functions of the mobile phone have evolved from a purely communicative use through the telephone call to a use related to Internet browsing, participation in social networks and communication via apps. Although first the uses of the smartphone are related to leisure, it is also observed its application as a resource for university training from access to content and activities. This fact awakens in the students an educational conception of the mobile phone, making it known as an educational tool for the improvement of the teaching-learning process.

Thus, the concept "bring your own device" is beginning to gain strength in the university classrooms, having overcome the previous step on the educational conception of smartphones by students. However there is still a long way to go for the mobile learning methodology is implemented as a natural part of the curriculum at the University.

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