

## The use of mobile telephony among university students: a case study in Colombia

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### ABSTRACT

This article addresses the evolution and impact of mobile telephony in today's society, especially in the university educational environment. It highlights that 78% of the world's population over 10 years old owns a cell phone according to United Nations data for 2023. Similarly, it raises the importance of educating university students in Colombia on the appropriate use of mobile devices, taking advantage of digital strategies to improve education, while also recognizing the potential problems that excessive use of technology can generate, such as relationship issues, disconnection from the real world, and changes in behavior. Therefore, the research question of this project is: What is the impact of mobile telephony on the students of Data Systematization Technology at the Politécnico Colombiano Jaime Isaza Cadavid?

**Keywords** – Education, Mobile telephony, University student,

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### I. INTRODUCTION

The use of mobile telephony has grown exponentially in recent years, especially during and after the COVID-19 pandemic. Young people, particularly university students, are the demographic group most engaged with the various applications of these devices. This study aims to investigate the use of mobile devices among Colombian university students, as previous literature suggests that excessive use has affected social relationships with family and friends, as well as behavioral patterns. Some researchers even propose that evolutionary changes in neck and hand structures may occur due to prolonged device use.

Although mobile devices provide unprecedented access to information, which can enhance knowledge acquisition and theory

validation, it is crucial to understand how this technology is used in the academic realm. This article seeks to address the gap in current research by examining the specific patterns of mobile device use among Colombian university students and their potential impacts on social and academic life.

The study employs a mixed-method approach, including a comprehensive literature review and a survey of university students, to gather data on their mobile device usage patterns and perceived effects. In doing so, this research contributes to the growing body of literature on the impact of mobile technology in higher education, with a specific focus on the Colombian context.

## II. LITERATURE REVIEW

In Colombia, mobile telephony arrived around 1994. Its costs were high, so only a few people had access to this technology. However, this has changed over time. Today, "mobile telephony is an indispensable technological tool in modern society, as it allows us to have instant access to information about what's happening in the world and additionally has a social, economic, educational, and cultural impact" [1]. On the other hand, the use of cell phones [2], "has become established as a necessity for the general population, as this device is used to schedule meetings, facilitate communication with close ones or work colleagues, and also create social life."

In recent years, telephony has grown exponentially, as stated by the United Nations: "78% of the world's population aged ten and over has a cell phone, although not all of these people have internet access, according to 2023 data" [3]. This is why there is interest in understanding the use of mobile telephony among university students in Colombia, as undoubtedly the evolution of telecommunications

is at the forefront of the greatest technological advances of recent times worldwide, this field encompasses all structures of society, businesses, states, and companies, and without a doubt, information technology and telecommunications will guide the future development of the world [4].

For all the above reasons, it is important to understand how Colombian university students use their mobile devices because their daily and inseparable use can generate some psychological, social, psychosocial, and cultural changes that could generate or influence student behavior.

Over time, humans have changed their way of thinking and behavior towards society. With the advent of new technologies, one of the biggest problems that can arise is disconnection from the real world, excessive screen time, or relating to family and friends. Even scientific research suggests changes in the body, generating some pathologies associated with excessive use, as proposed by [5]:

The change in thumb activity and use, especially among young people, could cause the

appearance of pathologies and pain at the base of the thumb that were not typical at such early ages. This could be related, among other things, to the continued use of mobile phones, video games, or touch screens and the lack of manipulation and dexterity activities at early ages. All of this, added to the fact that we reduce the hours we dedicate to handwriting, means that we use our thumb less frequently or that we change the way we use it and recruit the musculature.

The above will not be analyzed, which is why this research is limited to validating the behavior of university students while using it and the interference it may cause in their environment.

Today's students use their mobile phones as a basic necessity, which is why students should be educated to enable "the management of content in real environments connected with the students' surroundings in order to optimize and facilitate access to quality and relevant content" [6]. Implementing "various strategies from the digital realm can elevate the quality of education by helping to overcome certain limitations imposed by traditional teaching and learning strategies." Paradoxically, new technologies have invaded the population, bringing countless advantages of all kinds, but they also create some problems such as behavior changes and social differentiation. It has been observed that in the university environment, students are in class, but they receive a call or a WhatsApp message and focus their attention on responding, temporarily neglecting the activity they were developing. Given the above, the following research question arises: What is the impact of mobile telephony on the students of Data Systematization Technology at the Politécnico Colombiano Jaime Isaza Cadavid?

Technological advances in the last decade have increased, which is why young people have acquired dependence, as Toledo and Sánchez state: "Technological changes are exerting a strong impact on all areas of society, considerably influencing our lives at a personal, social, and professional level. The advantages and conveniences that the Internet offers us are integrated into our way of life as something normal and everyday" [7]. Having the

latest technology cell phones with internet access is not only positive because it provides real-time access to information, but it also has negative effects, as Ardila and Barrios state:

The addictive use of social networks by young people of school age can bring about effects on their academic performance, in such a way that awareness is generated in the school environment to take advantage of the benefits that these media offer for learning and reduce the risks of distractions and loss of time with respect to assigned tasks. [8]

In addition, cell phone use is considered a social problem of current relevance and increased with the COVID-19 pandemic, as young people do not share with their families even during family meal times, what they do is eat while checking their cell phones, which is why it is mentioned that social relationships have decreased, and this is reaffirmed by [9]:

Problematic or excessive cell phone use has increased during confinement due to the Covid-19 pandemic, especially in young men and adolescents. In turn, this has modified eating behavior, as people use their cell phones even during mealtimes, which has consequences on intake regulation. To avoid adverse health consequences due to excessive cell phone use, it is necessary to implement education strategies aimed especially at young people and adolescents to modify this behavior and reduce the habit of using cell phones during meals.

But it has always been a matter of debate whether the negative impacts of Internet use outweigh its benefits. The Internet offers a wide variety of educational resources that can help improve their education and therefore their academic performance. However, there are many other resources on the network that lack educational character and cause students the opposite, such as distraction from their school obligations. In this sense, the informative use of the Internet has traditionally been considered positive, while its recreational use has been considered negative [7].

### III. METHODOLOGY

The research project is framed in descriptive research as it "aims to describe some fundamental characteristics of homogeneous sets of phenomena, using systematic criteria that allow to establish the structure or behavior of the phenomena under study, providing systematic and comparable information with that of other sources." [10]

This type of research is used because its purpose is to describe, it is in accordance with the objective of the project, exemplify, demonstrate the services that can be provided on mobile technology for which it is necessary to make a description of the technologies involved and the software that composes it, it represents a practical way to demonstrate the utilities of mobile telephony in both business, commercial and personal applications. The research paradigm to be used is qualitative, since it is characterized using specific information and, therefore, does not refer to isolated variables of the object of study, but to its totality.

#### 2.1 Population and sample

The study population consists of students from the Data Systematization Technology program at the Institución Universitaria Politécnico Colombiano Jaime Isaza Cadavid, whose behavior will be analyzed and evaluated through the instrument.

To develop the research, a general plan was carried out to obtain answers to all the questions posed.

To determine the sample, the following [11] statistical formula for finite populations was used with a 95% confidence interval and a 5% estimation error:

$$n = \frac{N * (Z)^2 * pq}{E^2 (N-1) + Z^2 * pq}$$

Where:

n = Sample size

N = Population size

E = Research error (Taken as 6.4% = 0.064)

Z = Confidence level (Taken as 1.96)

p = Probability of success (50% = 0.5)

q = Probability of failure (50% = 0.5)

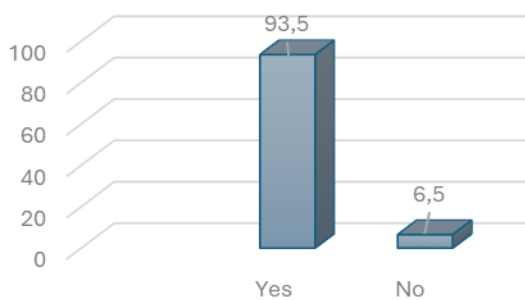
p = q

The instrument used to collect information is a Google Forms questionnaire intended for a group of people, which must be identical for all, containing a series of questions that are answered online.

The population was approximately 405 students of Data Systematization Technology from the Politécnico Colombiano Jaime Isaza Cadavid, in which the confidence level was 95% with a margin of error of 5%. Therefore, the sample size corresponds to 197 students. It is important to clarify that for the project, multiple-choice and completion questions will be used.

#### IV. DISCUSSION AND RESULTS

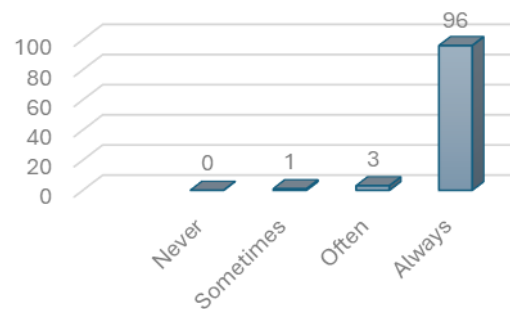
For the question "Do you consider it essential to have a cell phone while taking classes?"



**Figure 1. Statistics result question 1**

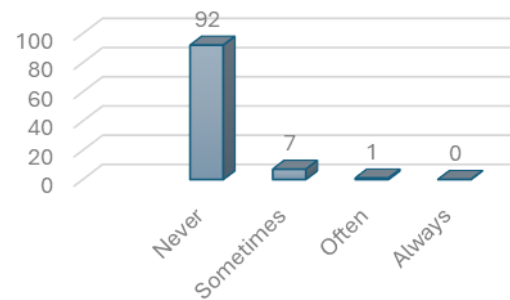
Figure 1 shows that 93.5% of the students answered that it is absolutely indispensable to have their cell phone while they are receiving classes, justifying that they need it to make consultations related to the subject, to be in contact with their family and friends; while 6.5% consider that they can receive classes without having their phone, even stating that they would not have any distractions.

Figure 2 asked the question: if you forget your cell phone at home, do you go back for it? The response of university students is surprising because 96% of them return it if they forget it, leading to the conclusion that this device is an indispensable element in their lives. In addition, none of them said they would not return it.



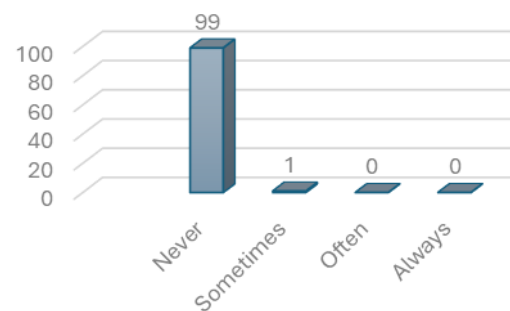
**Figure 2. Statistics result question 2**

Figure 3 shows the students' responses to the question, "Have you had problems receiving phone calls in class?", to which 92% responded that none of them have had problems, 7% indicated that sometimes, and 1% indicated that they have had problems frequently. This indicates that the students answer phone calls and interrupt their school activities, in the same way it can be interpreted that the teachers do not have a problem with them leaving the classroom.



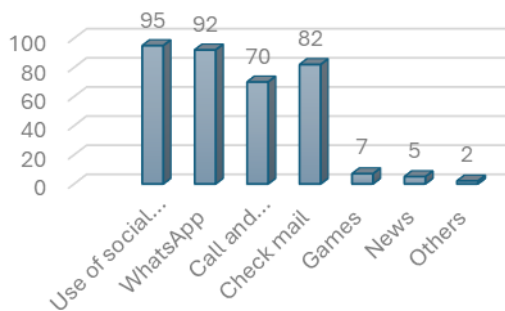
**Figure 3. Statistics result question 3**

On the other hand, the students were asked, "Do you turn off your cell phone during class hours?" to which most of the students answered that they do not turn it off, obtaining a result of 99% and only 1% do turn it off, but do not specify why they turn it off. Figure 4 shows this result.



**Figure 4. Statistics result question 4**

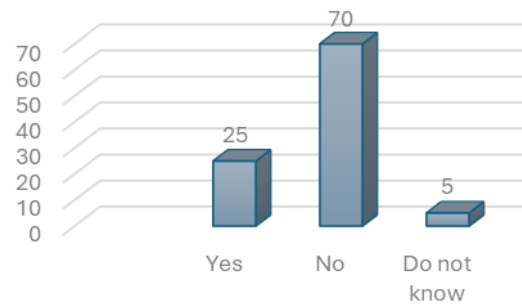
In this research we were interested in knowing what university students mainly use their mobile devices for, so we asked them the following question: What do you mainly use your cell phone for? giving the option to select several alternatives among them; Use of social networks, WhatsApp, Call and receive calls, Check mail, Games, News, Others (Which ones?). The results obtained can be visualized in Figure 5.



**Figure 5. Statistics result question 5**

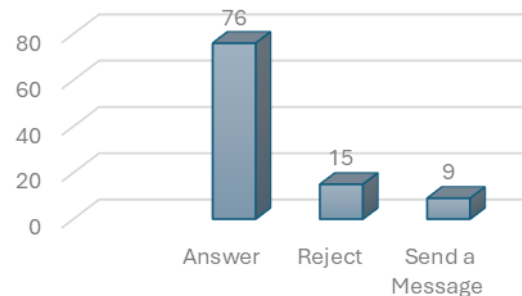
Based on Figure 5 it can be visualized that young university students mainly use their cell phone for the use of social networks, WhatsApp, Call and receive calls, Check mail, in less intensity are games and visualize news, but the latter can be classified in social networks. Particularly another use they give to the device is to keep a daily agenda, watch movies, listen to music and banking transactions.

The results obtained can be seen in Figure 6, in which it can be seen that 25% of the respondents say that they have noticed a change in their behavior, taking into account the comments of their parents, close friends and romantic partners, who describe that they do not relate socially with other people because they are always checking their cell phone notifications. Others say they do not sleep well and lack of concentration. However, 70% say they have not noticed any changes and 5% do not know or do not answer.



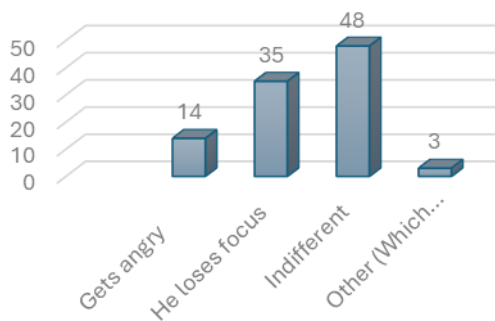
**Figure 6. Statistics result question 6**

Regarding the question "If a call comes in while you're in the classroom, do you...? (justify your answer)," 76% of students responded that they answer the call, 15% reject it, and 9% send a message. From this, we can analyze that they answer the phone for urgent work or family matters, although they state that it depends on the class and the professor. On the other hand, 15% reject the call because it's not important, and 9% send a message informing that they are in an important class or that they will return the call later.



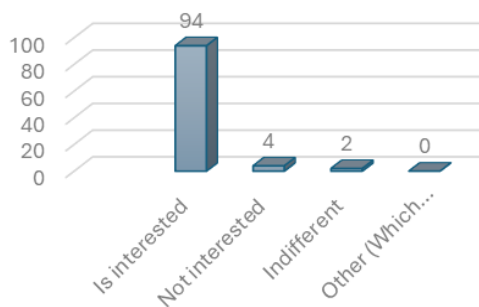
**Figure 7. Statistics result question 7**

In the question, if in the classroom the call goes to another person, do you? 48% respond that they are indifferent, but also 35% lose focus and that causes 14% to get upset. An important aspect to highlight is that 3% state that they are interested in the other's call, to be informed or that they take advantage of that moment to leave class. Therefore, the results obtained can be seen in Figure 8.



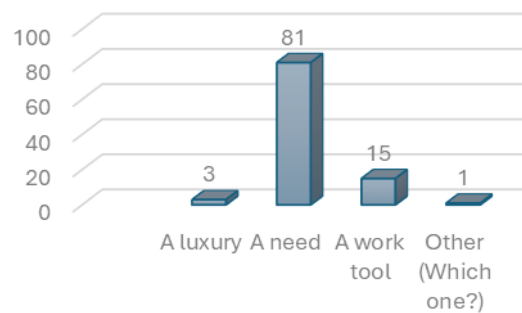
**Figure 8. Statistics result question 8**

Regarding the question, when more advanced technology arrives in mobile telephony, will you? University students respond that 94% are interested and very low percentages say that they are not interested or are indifferent. For which it is analyzed that young university students are very interested in the new technological trends offered by the market. See results in the figure 9.



**Figure 9. Statistics result question 9**

The students were asked how they consider the cell phone with respect to whether it is a luxury, a necessity, a work tool or to write another option for which in figure 10 it can be seen that 3% stated that it is a luxury. For 81% it is a necessity for some emergency, to be informed or to entertain themselves, the student workers stated that it is a work tool while they are on an appointment or in the transportation system, they advance in their work responsibilities and 1% state that the Cell phone is a technological device that is used to entertain yourself.



**Figure 9. Statistics result question 9**

Based on the results obtained, in general terms, it can be analyzed that most university students consider the cell phone as an essential element, taking into account that its use has had a great influence on behavior, leading to consider it as a very useful device in modern life. This is why Martínez proposes that some ways to minimize negative effects on student behavior can be reflected in regulations; for example, establishing schedules for: cell phone use, studying, going to class, creating WhatsApp groups, types of consultations, schedules, etc. Establishing the types of content that should be handled in these groups [12]

However, it is important to keep in mind that technology surprises us more every day, and therefore people are exposed to technological development. The important thing is to make good use of the devices.

This leads to the thought that this situation changes the way of living in terms of behavior; some will think that it has improved the quality of life, others will think that it minimizes social relationships by being attentive to the device and its respective applications all the time.

According to the previous analysis, the most important aspects of the evolution of mobile telephony make society consider it important to acquire a cell phone, for this reason they need to stay updated regarding changes in mobile technology.

## V. CONCLUSION

The research demonstrates that mobile phones have transitioned from being a luxury item to an essential necessity in the lives of university students. This change reflects the growing importance of constant connectivity in modern society, especially in academic and social spheres.

The widespread use of mobile phones has had a significant impact on both the psychological and social behavior of students. This influence manifests in the way they interact, communicate, and manage their daily activities, suggesting a profound transformation in social and personal dynamics.

The research reveals a growing dependence of society, particularly university students, on mobile technology. This dependence presents both opportunities and challenges, including the need to develop strategies for a balanced and conscious use of these devices in academic and social contexts.

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