

# Digital Literacy And Educational Contingencies In Time Of Covid-19 Pandemic Among Students And Teachers From The University Of Sucre, Sincelejo, Colombia

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## ABSTRACT

Exploring the perception of new literacy competences among teachers and students has been relevant, since the COVID-19 pandemic has transformed teaching and learning experiences. In this sense, the purpose of this research was to characterize the potentialities and limitations of new literacy levels among a group of students and teachers at the University of Sucre, Colombia. The research is based on a cross-sectional survey approach. The sample population was 188 active students. The type of sampling was simple random. The findings report that 95% of the teachers use the computer daily in contrast only 55.3% of the students use it. In relation to the creation and production of content on the web, more than half of the students and teachers do not create Web 2.0 content. With respect to ICTs more than 90% of the teachers and 87% of the students integrate them in academic and pedagogical activities. These findings suggest that both teachers and students need to make more significant effort to integrate ICTs tools and new literacies into their daily teaching and learning processes.

**Keywords:** teachers; remote education; digital mediation; digital literacy; teaching and learning; digital natives

## INTRODUCTION

In the last decade the ways of reading and producing texts have changed considerably, due to new digital mediation processes, which have been integrated in the daily interaction processes that occur in the classroom (Alvermann & Sanders, 2019). These digital interaction processes have been naturally integrated to the new generations called the generation of digital natives. In contrast, the digital immigrants have been adjusting almost compulsorily to the use of these tools. For the former, the ways of communicating and interacting fluently with a variety of

texts are normal. For the latter, they usually find it overwhelming to multitask (Vargas Franco, 2015).

These new ways of reading and writing are called digital literacies, which implies recognizing, using and creating in a combined way a great variety of multimodal discourses supported by technological tools that make possible a great variety of types of interaction. However, the concept is complex and a more functional categorization called digital residents and visitors is proposed, which is related to the frequency of use and participation of people who connect and interact using new forms of literacies (Kruse, 2010).

At the university level, exploring the levels of digital literacy are relevant, since on the one hand, they allow us to identify the digital competencies that students and teachers have and, on the other hand, to explore the way both of them integrate these new literacies for educational purposes.

Carrillo & Flores, (2020) conducted a meta-review of articles (134) related to teaching and learning practices. The most preponderant research topics of the articles were interaction among participants, followed by online communities, teacher participation and teacher knowledge. The article highlights that teachers can build an optimal social process when they create opportunities, support and leverage for students' inclusive participation. Regarding pedagogical presence, these authors highlight that teachers can enrich their pedagogical and cognitive mediation processes through concrete and abstract pedagogical mediation spaces, as well as through contextualization, conceptualization and teaching practices from a critical perspective that favor pedagogical challenges. The results of this meta-study are relevant because it offers significant pedagogical perspectives on the social and cognitive mediation processes that should be integrated into teaching practices in remote environments in these times of COVID-19.

Bruce & Casey, (2012) propose the strategy of inquiry to upgrade meaningful learning from digital mediation processes. This strategy is based on the pedagogical principles of Dewey (1991) and uses the process of inquiry to enable deep learning and expertise of the contents, which should come from various multimodal sources, reconstructed by collaborative activities such as discussions and writing tasks and allow the construction of meaning from the reflection from the evaluation.

In the current times exploring the perception of new literacy competencies among teachers and students becomes relevant as the COVID-19 pandemic has transformed traditional teaching and learning experiences into remote teaching and learning experiences. In this context, teachers rather than students have had to learn by necessity how to use technological tools to mediate the student learning process. For many teachers, the transition process has become a challenge and they have been forced to rethink their pedagogical competencies in light of what the remote context offers. In this context, digital literacy competencies play a significant role in the

process of using ICTs as pedagogical mediation (Lara et al., 2021). Rapanta et al. (2020) reported some key challenges university professors have undergone during and after COVID - 19. During this contingency, teachers have had to become designers and experts using ICTs tools to build and interact effectively in virtual environments. These authors state that institutions must support and allocate budgets for teachers' professional development.

This research serves to contextualize the challenges that many teachers are currently facing and offers relevant perspectives to capitalize on the digital experience from online interaction, to suggest some pedagogical guidelines on the use of multimodal tools as well as strategies to monitor the active participation of students and their learning process. For this reason, the purpose of this research was to characterize the potential and limitations of the levels of lateralization among a group of students and professors at the University of Sucre, Sincelejo, Colombia.

## STUDY METHODOLOGY

**Design:** A research design was used to carry out this study (Fowler 2013). We used a cross-sectional survey approach to collect the data. Several types of surveys designed for similar purposes were studied to design the survey questions (Dahlstrom et al., 2016).

**Techniques and instrument:** Initially, we proceeded to develop surveys that would allow us to answer the objective proposed in this study, in them we captured topics that involved aspects related to: technological artifacts, the frequency with which they use them, the applications they use on the Internet, either for their academic activities or for their free time, the use of web2.0 tools, the preferred types of search and the criteria they use to evaluate the information on the web.

**Population:** The population chosen corresponds to active students of the University of Sucre-Colombia, from the period 01-2021.

**Sample:** A simple random sample was used. 188 students from various semesters of the following programs participated: Business Administration, Bachelor's Degree in Basic Education with Emphasis in Mathematics, Civil Engineering and Nursing belonging to the first, third, eighth, ninth and tenth semesters. The age of the participants was between 17 and 26 years old. Regarding the professors, 210 invitations to fill out the surveys were sent by email.

**Analysis:** The information collected was analyzed using R software. For this purpose, descriptive statistical procedures were used to create cumulative frequency tables with percentage distribution and histograms to determine the level of digital literacy of the population under study.

It is important to point out that this study at no time intends to establish causal relationships between variables, even if there is a significant relationship between them. As mentioned above, it only seeks to describe the behavior of students and professors with respect to the use

of ICTs. In addition, it should be noted that this study could not be taken as a model to generalize to the entire population of the University of Sucre. However, it constitutes a window to understand this problem and try to present suggestions to overcome it.

## RESULTS

The findings report that of the total number of students who responded in physical format to the survey (188), 51.6% were male and the rest (48.4%) were female.

Of the 210 surveys sent to teachers, only 60 responded. Fifty of the teachers surveyed were male and 10 were female. Their ages ranged from 31 to 60 years, of which almost one third were in their fifties.

The results presented below address access opportunities, web browsing and access skills, textual production skills, comprehension and decision-making skills, and the ability to create collective knowledge.

The results related to computer access opportunities (Figure 1) show that 95% of the teachers at the University of Sucre use the computer daily and only 55.3%, a little more than half of the students use it with the same frequency and a third of the students use it once a week. These results are similar to the number of students and teachers who own computers, since the former own both desktop and laptop computers and only 51.6% of the students have this tool.

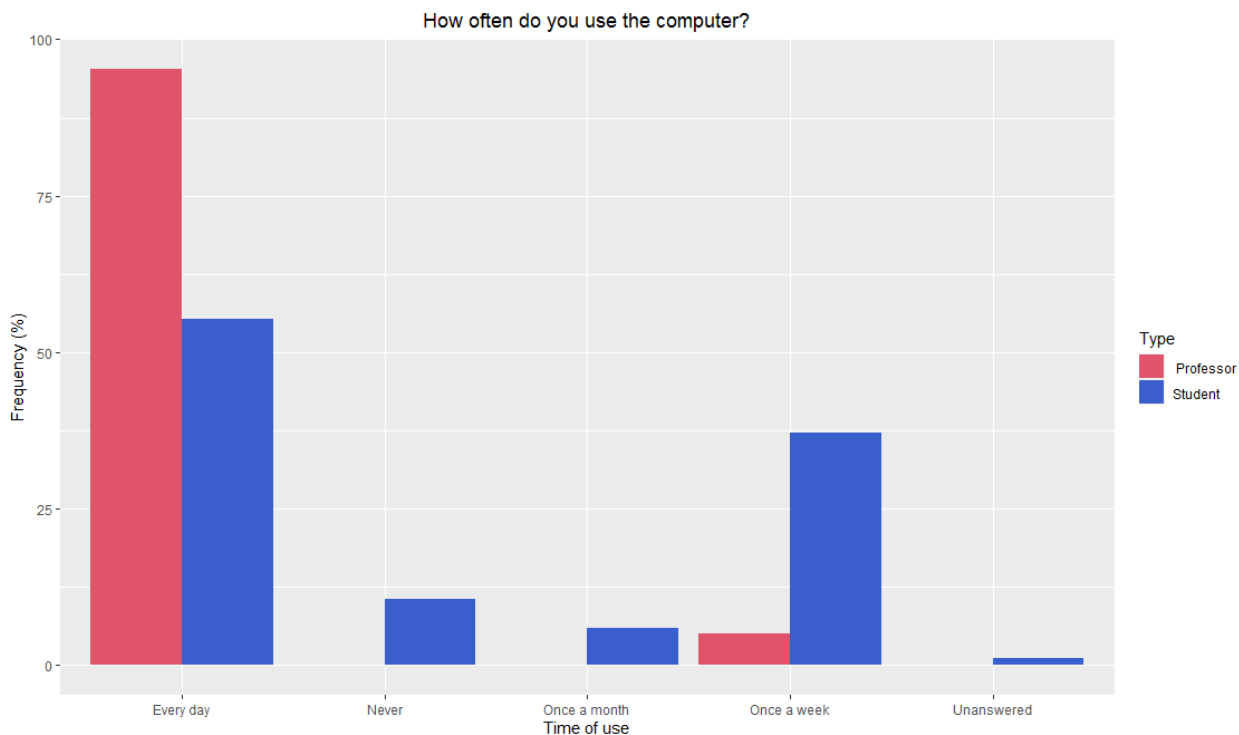


Figure 1. Computer access opportunities for students and teachers at the University of Sucre.

Figure 2 shows that the vast majority of students use the Internet between 1 and 10 hours per week. In contrast, more than half of the teachers responded that they use it between 10 and 20 hours per week. The frequency of use for both is moderate compared to the frequency of use in the rest of the country and internationally.

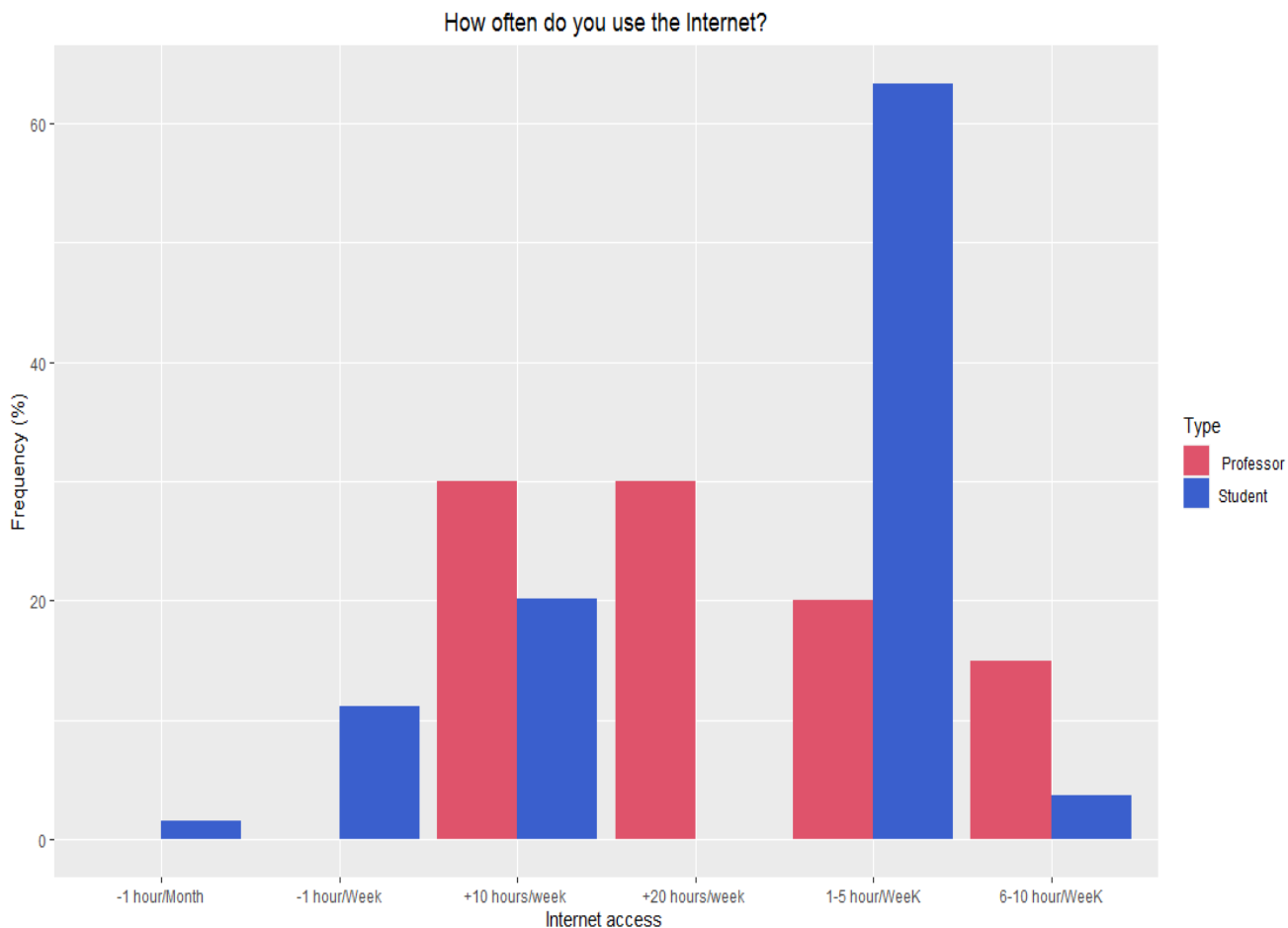


Figure 2. Frequency of Internet access for students and teachers at the University of Sucre

The perception of skill level in computer use for students and teachers at the University of Sucre can be seen in Figure 3. Only a low percentage of students and teachers said that they were excellent (7.4% and 18.3% respectively). 66.7% of the professors and 60.6% of the students consider their skill level to be good. The rest of them stated that their skill level was fair or poor.

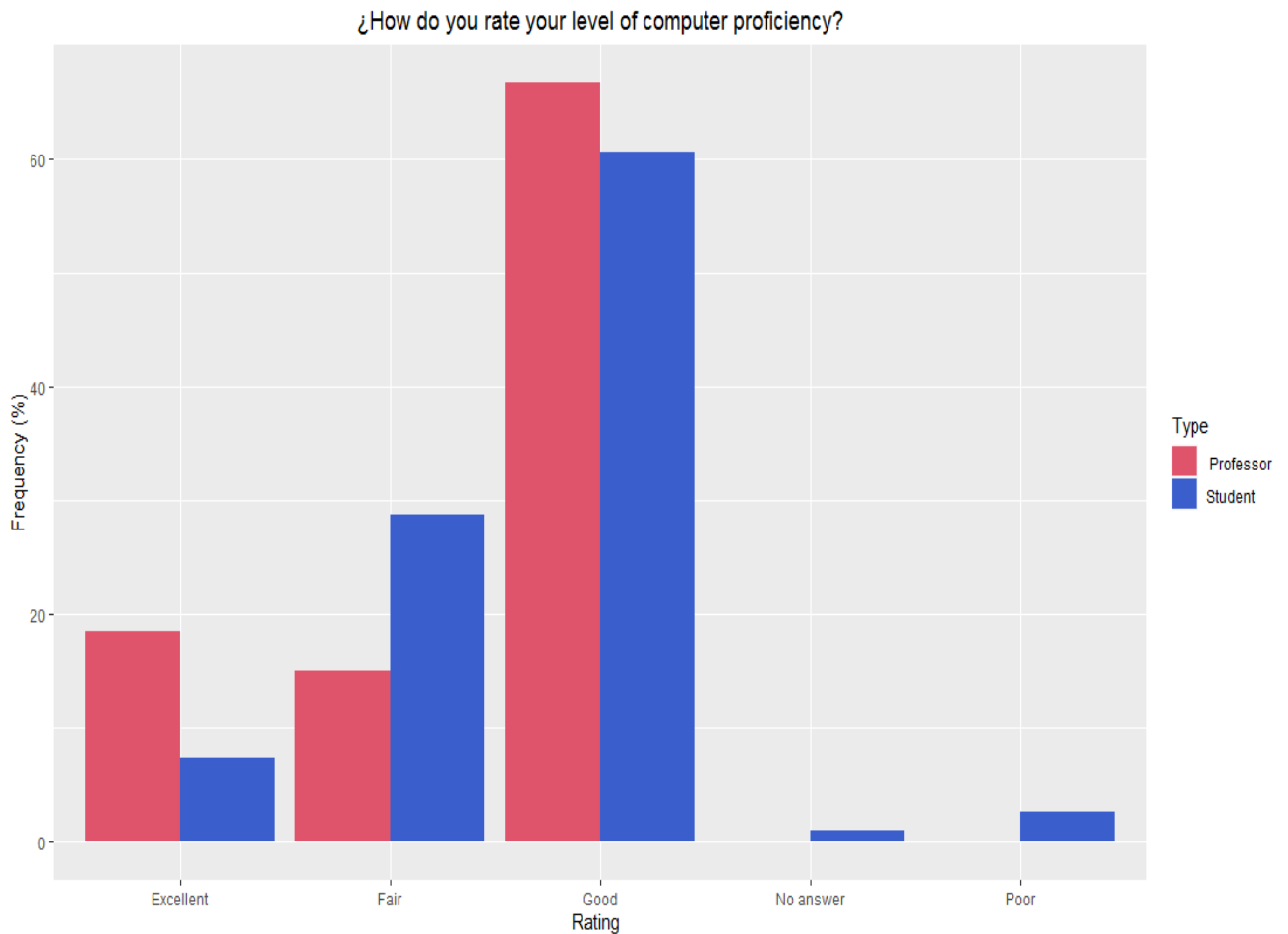


Figure 3. Rating of the level of skill in the use of the computer by students and teachers at the University of Sucre.

Regarding the use of the Internet for study activities or class preparation, a little more than 40% of the teachers and students evaluated responded that they used it from three to five hours a week. And less than 15% of the students said they used the Internet between six and 10 hours, while 28% of the teachers said they used it between six and ten hours a week. This information indicates that both students and teachers regularly use this tool for their academic activities.

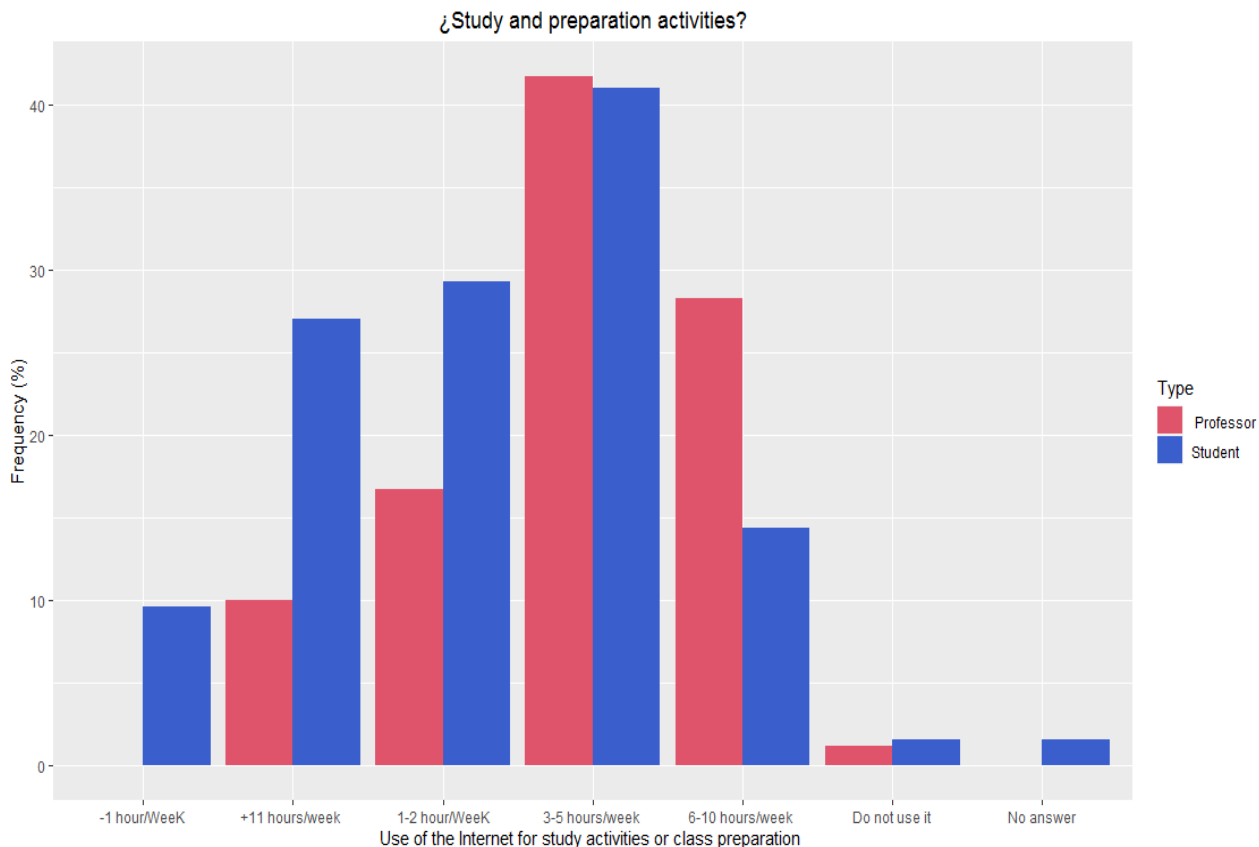


Figure 4. Use of the Internet for study activities or class preparation for students and teachers at the University of Sucre.

Regarding the creation of PowerPoint presentations (Figure 5), 76.6% of the teachers responded that they used the tool from one to five hours a week. In contrast, almost half of the students responded that they do not use it or use it once a week and a third of the students said that they use this tool between one and three hours.

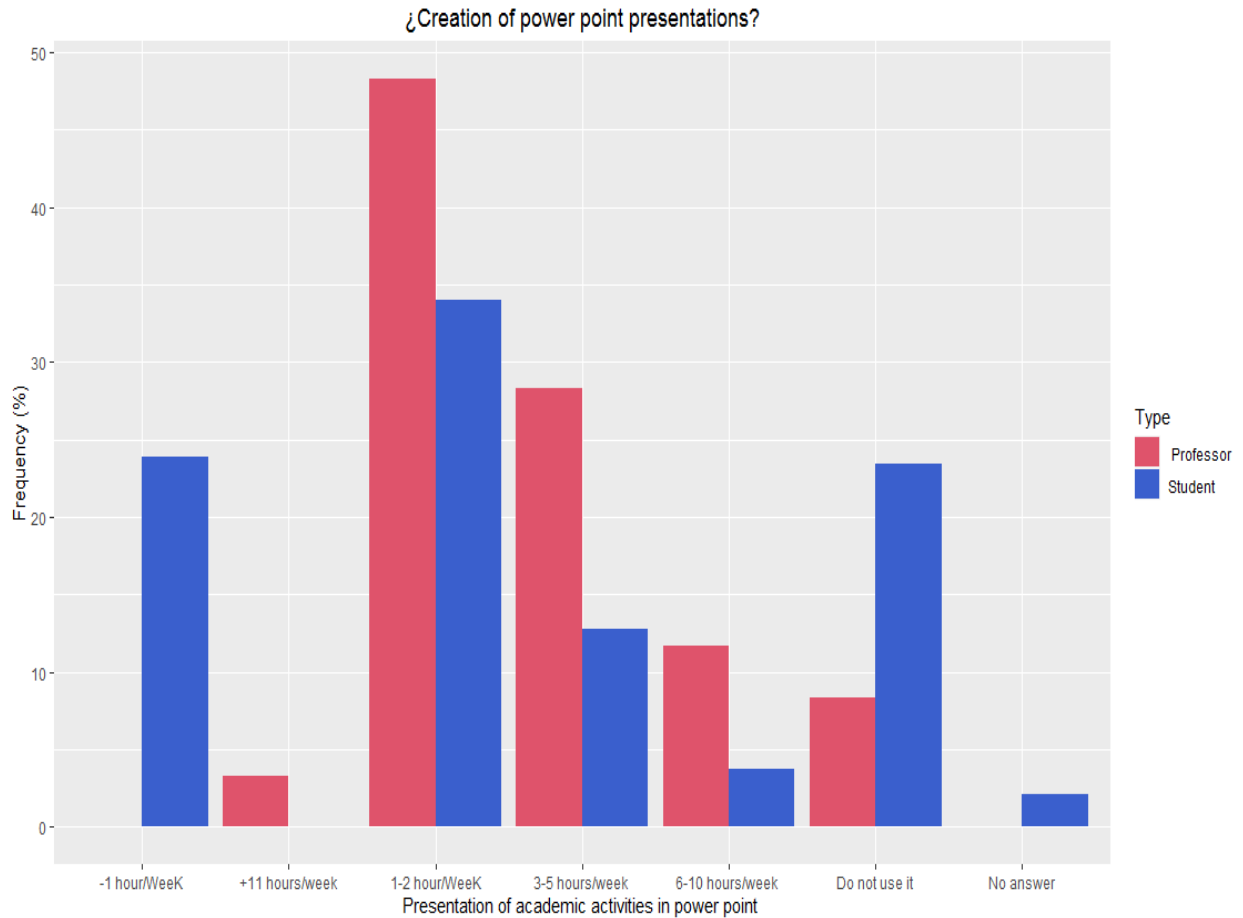


Figure 5. Presentation of academic activities in powerpoint by students and teachers at the University of Sucre.

Regarding the use of spreadsheets, 31.7% of the professors said they do not use them, 38.3% said they use them between one and two hours per week and 23.3% said they use them more than three hours per week. On the other hand, more than 50% of the students said they do not use spreadsheets, and only 21.3% use them between 1 and 6 hours.



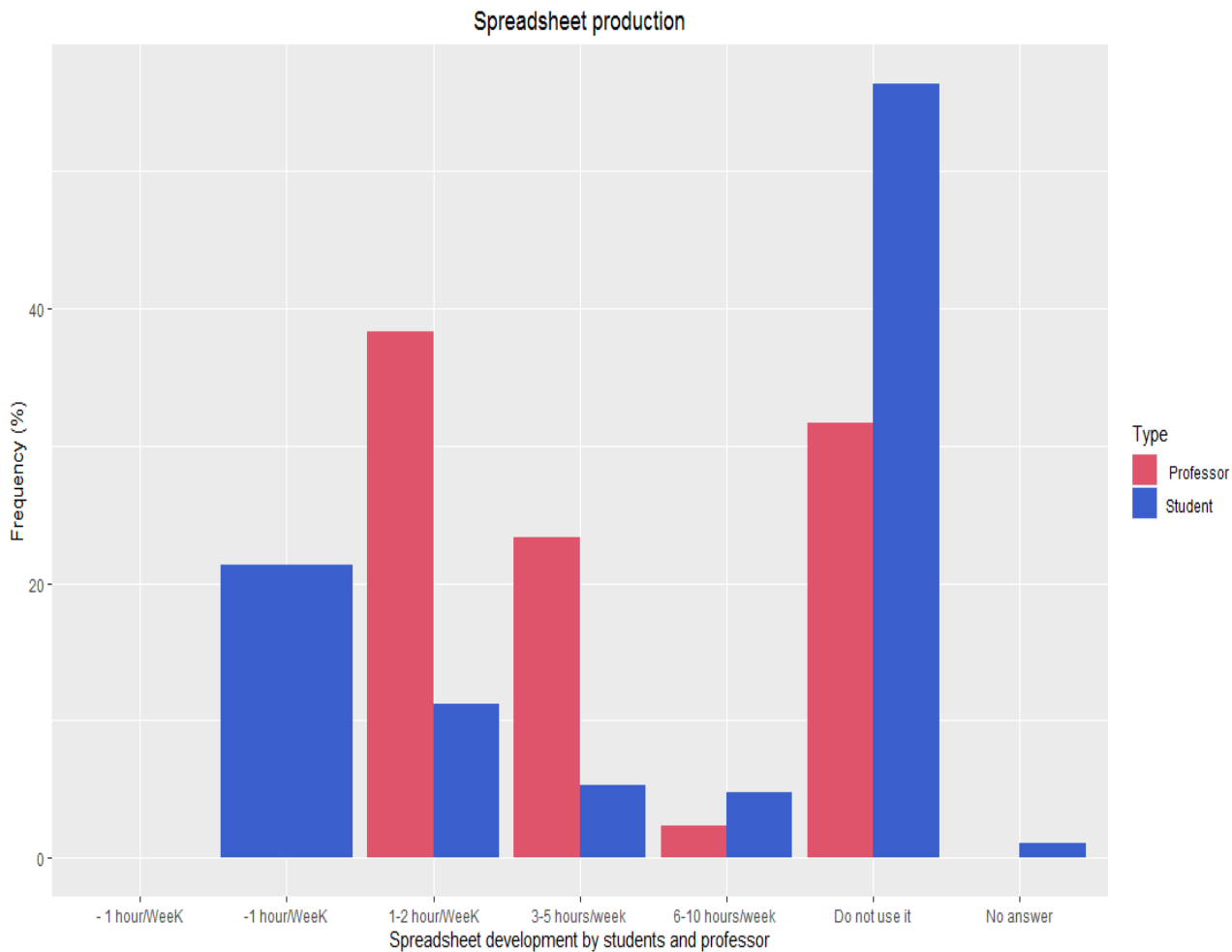


Figure 6. Creation of spreadsheets by students and teachers at the University of Sucre.

In relation to access to databases, Figure 7 shows that students access them infrequently. A little more than 26% of them access them from one to two hours a week and only 5.3% access them six or more hours a week. As for the teachers, a little more than 80% of the teachers use it between one and eleven hours a week, as shown in Figure 7.

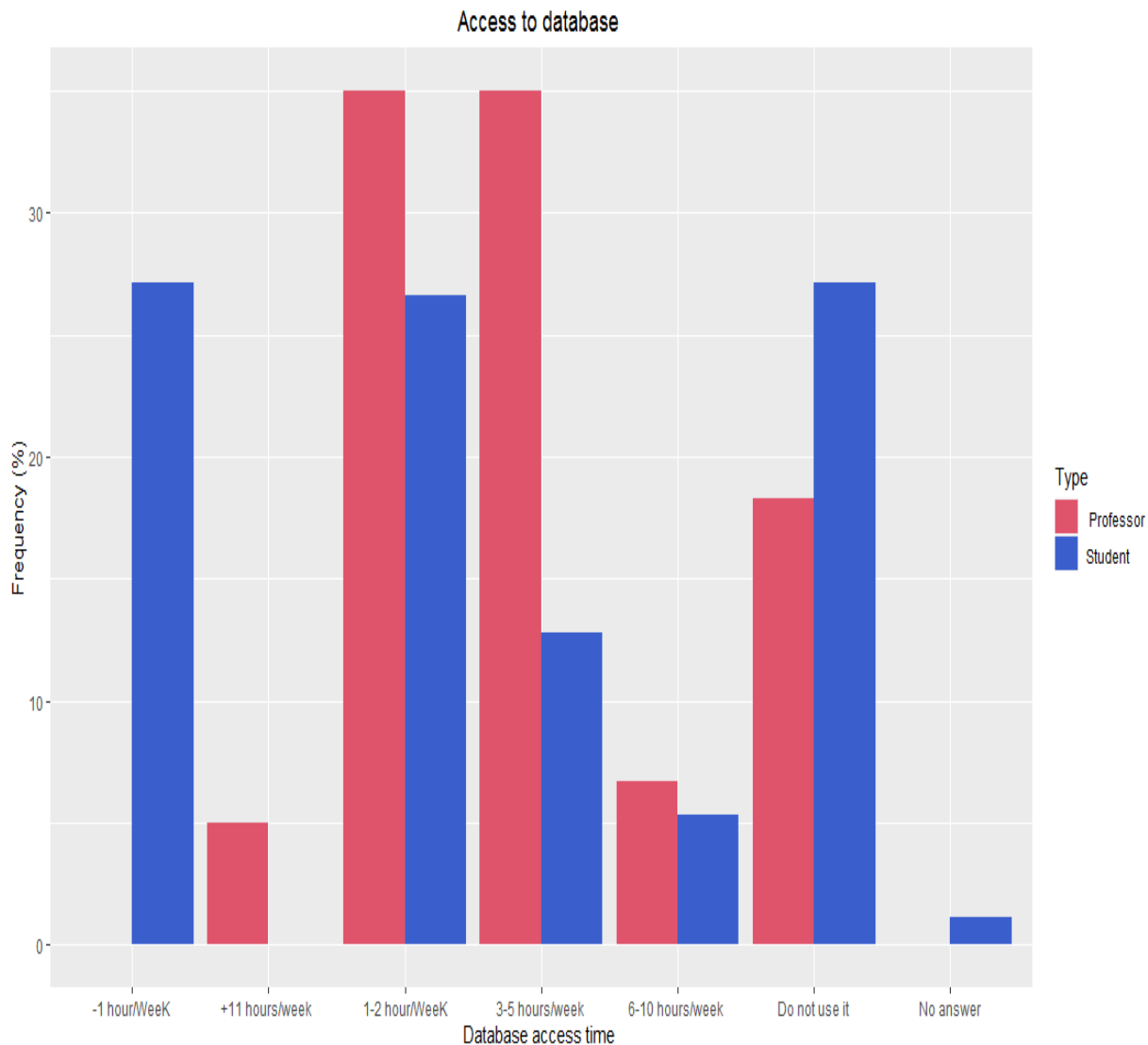


Figure 7. Access to databases by students and professors at the University of Sucre

Regarding the use of tools that enable the creation and production of web content, Figure 8 shows that more than half of the students and teachers do not use Web 2.0 tools in academic activities. Only a small percentage of teachers (15.4%) use them as pedagogical tools. However, 31.5% of students use them for the production of academic content.

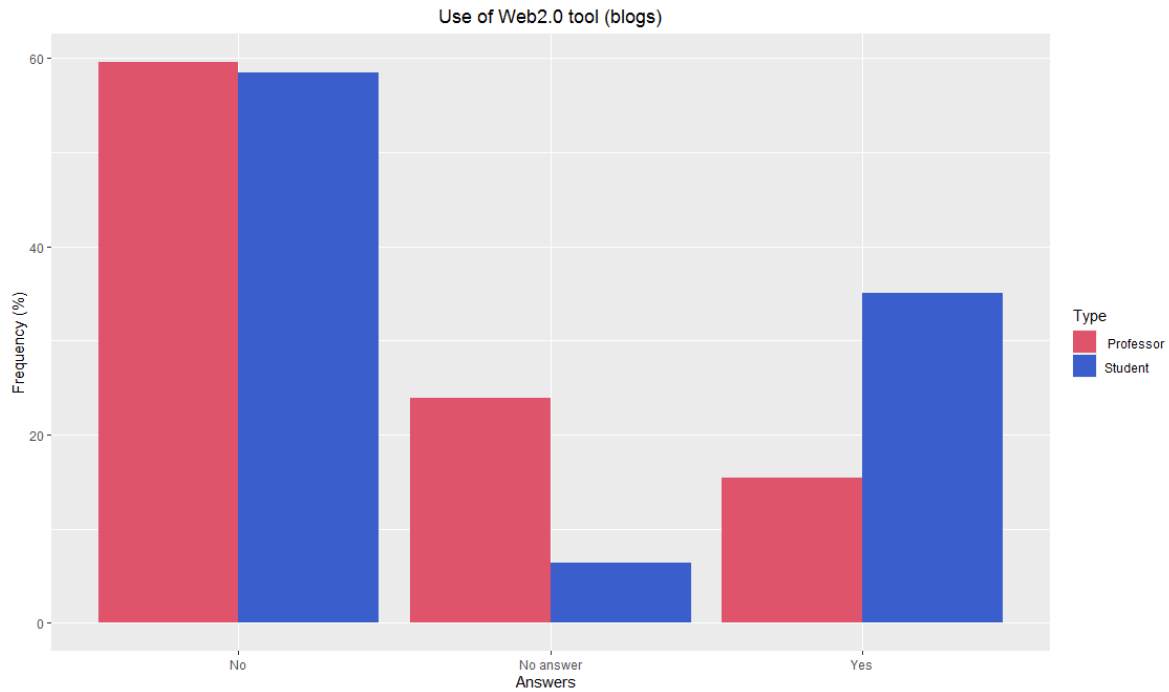


Figure 8. Use of Web2.0 tools (blogs) by students and teachers at the University of Sucre.

Regarding the use of social networking tools such as "Facebook", "instagram" and "twitter" (Figure 9), 91% of the students stated that they belong and participate frequently in this social network. Only a low percentage of professors said they use it (8%).

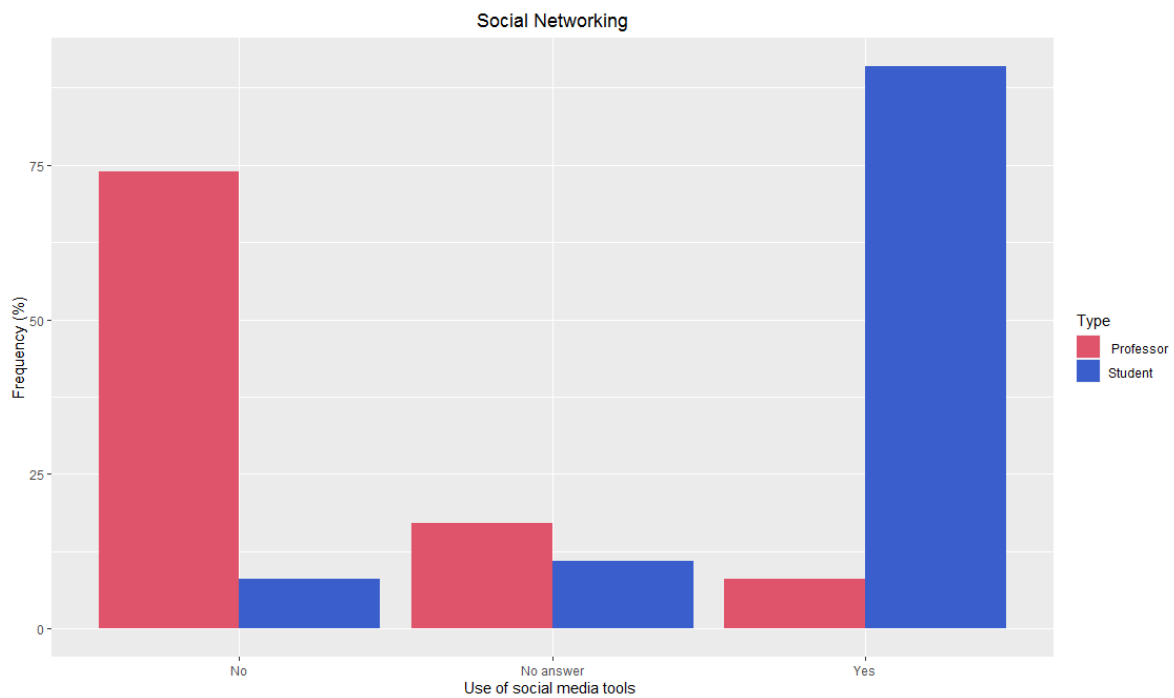


Figure 9. Use of social networking tools such as "Facebook", "instagram", "twitter" by students and teachers at the University of Sucre.

Regarding the integration of ICTs to pedagogical activities, a little more than 90% and 87% of teachers and students respectively, considered that they prefer to make moderate use of them in academic activities (Figure 10). A 'blended learning' approach, which combines face-to-face classes and virtual activities, is highlighted.

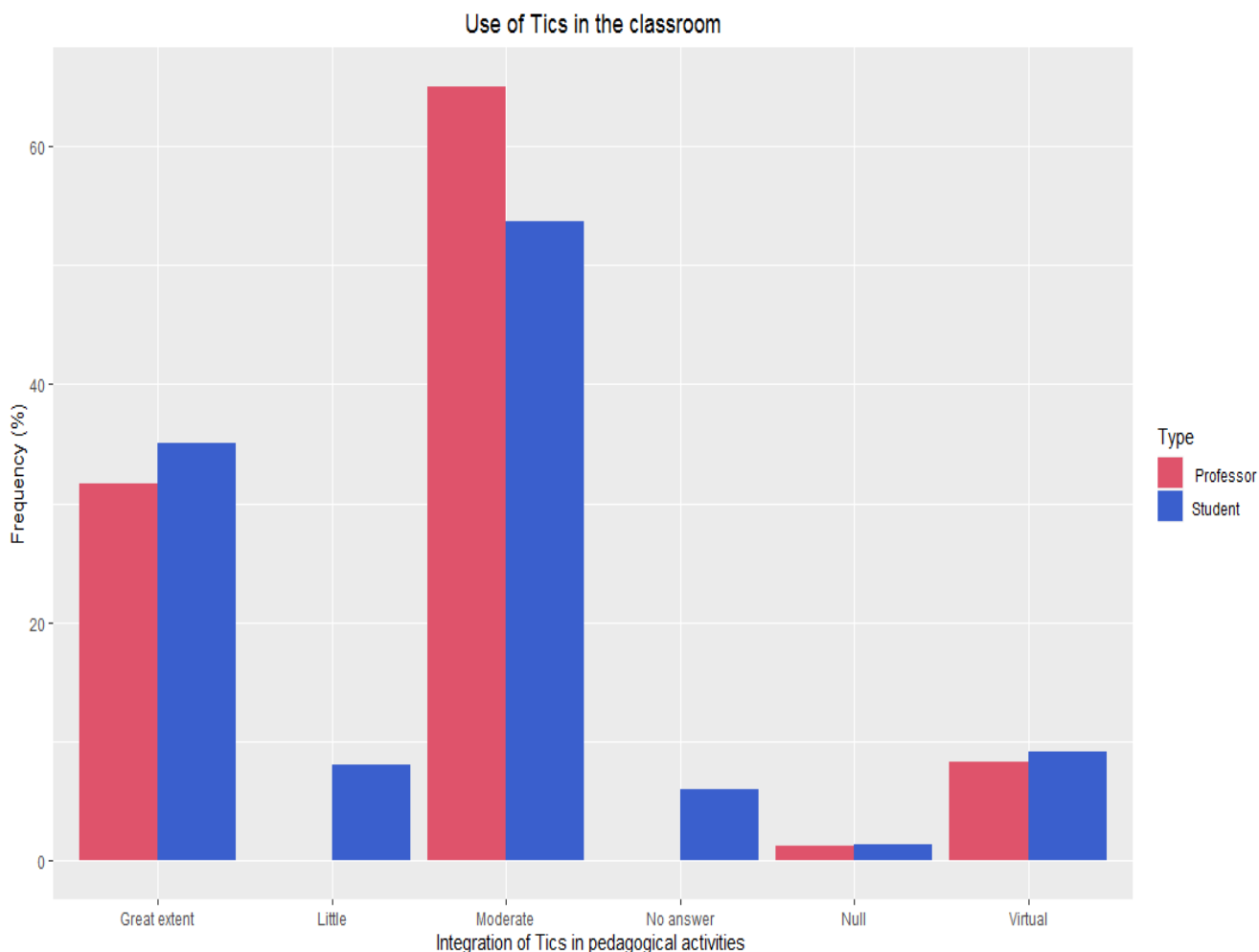


Figure 10. Integration of TICs to pedagogical activities by students and teachers at the University of Sucre.

## DISCUSSION AND ANALYSIS

Regarding computer use we can observe that both teachers and students use the computer, but slightly more than 50% of the students use it every day compared to the vast majority of teachers who use it for their academic activities. We can observe that there is a significant gap that can be explained by the fact that many students do not have computers at home, which can

be evidenced by the answer given by the third of the respondents who state that they only use it once a week. In this sense, the existing digital gap between students and teachers is largely due to the lack of personal computers on the part of students to manage academic processes. Likewise, the social stratum of the students can be said to be a fundamental element that has meant that this gap is not closing at the University. This aspect prevents the empowerment of the technological competences and appropriation of multimodal literacies in the classrooms.

In relation to the use of the Internet, it is evident in the survey that students significantly outnumber professors. This suggests that students have more capacity to navigate, access and explore cyberspace. Perhaps one explanation for this contrast between students and teachers is that students are digital natives who have developed in a digital culture that has allowed them to consume and produce personal digital content, while teachers are digital immigrants who have been developing their digital skills by the prevailing need (Kruse, 2010). This is corroborated in the survey between the significant differences between the use ICTs skills shown by students compared to teachers.

From the academic point of view, teachers and students use the Internet regularly throughout the week to prepare classes. Students show a higher frequency of use for study than teachers for class preparation. This situation could be due to the digital appropriation they have been developing throughout their lives to navigate and make academic consultations on the web. It is evident that teachers have been increasing the use of the web as a pedagogical resource to prepare their classes, which is favorable for the construction of an academic culture mediated by TICs.

Regarding the use of the different office tools, it can be noted that both teachers and students show more skill in the use of "powerpoint". This suggests in part that the use of this technological tool is the one that most frequently mediates the learning processes. In contrast, most students make little use of spreadsheets such as Excel, which is a fundamental tool in university contexts since all degree programs require handling numerical data. In contrast, teachers tend to use this type of tool more frequently for their pedagogical and research activities.

A significant number of teachers indicated that their competence in digital literacy was more focused on the use of conventional tools of the Microsoft office package. In this sense, they stated that their competence in digital literacy did not transcend to a multimodal use of these tools. This situation has generated stress and at the same time opportunities to face the challenges demanded by the pedagogical contingencies due to COVID-19 (Rapanta et al., 2020; Pokhrel & Chhetri, 2021). The teachers surveyed stated that although they have been adapting to the situation, they show concern about feeling short of using pedagogical strategies that allow them to engage students in more meaningful interaction processes. They also stated that it is also necessary to encourage critical thinking to prevent technologies from being used in an instrumental way and to develop deeper thought processes. The teachers surveyed stated

that they lacked pedagogical resources related to the use of strategies that foster critical thinking.

The teachers and students also pointed out that there is a need to strengthen institutional policies for blended learning and remote education. In addition, they pointed out that although the university has been making efforts to improve the capitation processes due to the COVID contingency, more robust policies are still needed in terms of integration of ICTs to the curricular processes, in the acquisition of a more robust technological infrastructure that can respond to the demands of the University's student population. In this sense, they stated that most of the tools used at this juncture are free versions that present limitations to carry out more interactive class processes in contrast to the paid versions that have more resources and are more technologically robust. They also stated that training has been more focused on the use of technological tools than on their pedagogical use.

If we put into perspective the results of this study in the light of the digital literacy models presented above, we can point out that both teachers and students state that the university still needs to make more significant efforts in terms of distribution of Internet access, technological infrastructure and more robust servers, since there is a significant gap between teachers and students with respect to Internet accessibility. However, the current circumstances have demanded them to develop and improve their digital competencies (Pokhrel & Chhetri, 2021). This has led them to adopt practices of using multimodal tools that have allowed them to perform technological mediation processes through platforms such as Meet, Moodle, and Zoom. It is important to highlight that the use of these tools has been oriented more to the transmission of content than to the creation of multimodal content and interaction processes oriented to problem solving and decision making from a creative and critical perspective. In this sense, it is necessary to assume a multimodal pedagogy that favors the use, interpretation and production of multimodal texts and a collective co-construction of knowledge from intersubjective interaction processes that enhance the digital identity of both teachers and students.

Considering that the results of this study not only point out to the processes of digital literacy but also to the perceptions that teachers have of their pedagogical competences and pedagogical mediation processes, it is essential that teachers transcend the scope of the technological instrumental competence. In this regard, Carrillo and Flores (2020) state that social presence becomes a key element to emotionally support students and build spaces of empathy and affection that enhance the sense of belonging and the processes of teacher-student interaction. In the same sense, they state that teachers should model their personal experience and tasks using resources such as short pedagogical videos with authentic situations and spaces where students can co-construct knowledge, inter-subjective reflection of ideas, polyphonic discussions from different perspectives and from a critical perspective.

In connection with this, Carrillo and Flores (2020), conceptualize that the teacher must assume a contextualized, formative, flexible and personalized pedagogy centered on students rich in synchronic and diachronic interactive processes where students develop processes of agency involving social and cognitive actions. In addition, the learner must assume a critical and reflective position on the way they use technology daily, the activities that technologies allow to do and not to do, the processes of meaning construction, the types of relationships and interactions that are co-constructed in remote spaces, the way technological mediations change in our mental processes or the way we think and the way in which the use of digital literacies changes our identities.

From the above, it follows that both educator and learner learn to interrogate the underlying ideologies and agendas of the technological tools being used. That is why teachers must learn to critically mediate pedagogically to evaluate, transform and create relevant content that foster learner autonomy and digital citizenship (Rapanta et al., 2020).

## CONCLUSIONS

Teachers and students at the University of Sucre have a moderate degree of competence in digital literacy. In this sense, students, being digital natives, show a greater comparative advantage with respect to the use of social networks and interaction between them. In contrast, teachers need to continue promoting its use as a pedagogical tool from the development of their disciplines. Although the pandemic has led them by necessity to use virtual meeting tools such as Meet and Zoom, they still need to develop digital pedagogical competencies that overcome transmission processes mediated largely by PowerPoint. They also need to build interaction processes mediated by a variety of ICTs tools that allow the co-construction of knowledge from argued discussions, case studies, projects, and controversial situations that empower the students as multiliterate individuals.

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