

Paraguayan Students' Adaptation to Emergency Remote Education due to COVID-19

Adaptación de estudiantes paraguayos a la educación remota de emergencia provocada por el COVID-19

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Abstract

In 2020, education underwent significant changes due to COVID-19, requiring all educational stakeholders to adapt to virtual learning to salvage the academic year. This paper examines the experiences of high school and university students during this period. The study was conducted in two phases: the initial weeks of the transition to virtual learning and the final two months of the year. The findings revealed notable transformations in technological access, particularly outside the capital. The use of computers increased, and internet usage grew across all sectors and regions. Communication platforms also experienced widespread adoption. However, students faced various challenges during ICT-mediated learning. Common difficulties included task comprehension, time constraints, and internet connectivity issues. Despite these obstacles, students' satisfaction with ICT for learning purposes increased by the end of 2020. This indicates their resilience and adaptability in embracing technology to continue their education amidst adversity. The study emphasizes the need for ongoing support and resources to address these challenges, including improving task understanding, allowing sufficient time for completion, and addressing connectivity issues. Moreover, the growing satisfaction observed toward the end of the year suggests the potential for lasting changes in educational practices. It is crucial to capitalize on this transformation and effectively integrate technology into future teaching and learning approaches. By acknowledging the hurdles faced and leveraging the lessons learned, education can be adapted to better meet students' needs, fostering an inclusive and dynamic learning environment in an uncertain future.

Keywords

Remote virtual education, ICT, pandemic, students.

Resumen

En 2020, la educación sufrió cambios significativos debido a la COVID-19, lo que obligó a todos los agentes educativos a adaptarse al aprendizaje virtual para salvar el curso académico. Este artículo examina las experiencias de estudiantes de secundaria y universitarios durante este periodo. El estudio se realizó en dos fases: las semanas iniciales de la transición al aprendizaje virtual y los dos últimos meses del año 2020. Los resultados revelaron notables transformaciones en el acceso tecnológico, sobre todo fuera de la capital. Aumentó el uso de ordenadores y creció la utilización de Internet en todos los sectores y regiones. Las plataformas de comunicación también experimentaron una adopción generalizada. Sin embargo, los estudiantes se enfrentaron a diversos retos durante el aprendizaje mediado por las TIC. Entre las dificultades más comunes figuran la comprensión de las tareas, las limitaciones de tiempo y los problemas de conectividad a Internet. A pesar de estos obstáculos, la satisfacción de los estudiantes con las TIC para el aprendizaje aumentó a finales de 2020. Esto indica su resistencia y adaptabilidad a la hora de adoptar la tecnología para continuar su educación en medio de la adversidad. El estudio subraya la necesidad de apoyo y recursos continuos para hacer frente a estos retos, incluida la mejora de la comprensión de las tareas, la concesión de tiempo suficiente para completarlas y la resolución de los problemas de conectividad. Además, la creciente satisfacción observada hacia el final del año sugiere la posibilidad de cambios duraderos en las prácticas educativas. Es crucial aprovechar esta transformación e integrar eficazmente la tecnología en los futuros enfoques de enseñanza y aprendizaje. Reconociendo los obstáculos encontrados y aprovechando las lecciones aprendidas, la educación puede adaptarse para satisfacer mejor las necesidades de los estudiantes, fomentando un entorno de aprendizaje inclusivo y dinámico en un futuro incierto.

Palabras clave

Educación virtual, TIC, pandemia, estudiantes

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1. Introduction

Traditional or face-to-face education was drastically interrupted across the planet from the first months of 2020 (CEPAL, 2020; UN, 2020) because of the threat to global health generated by the new coronavirus (Cortés, 2020; Lizaraso and Del Carmen, 2020; Reina, 2020; Serra Valdes, 2020; Trilla, 2020). Educational migration to a new educational format for many was imminent, as the intention of several countries in those early days was focused on educational continuity, but without jeopardizing the health of all its citizens. Somehow, institutions that had been adopting the distance and/or online education modality, or that had face-to-face programs with the support of online platforms, were not greatly affected compared to those that did not have that experience (García Aretio, 2021). Lockee (2021; 6) notes that «in response to the COVID-19 pandemic, the technological and administrative systems for implementing online learning and the infrastructure supporting its access and delivery had to adapt quickly.»

Many important decisions related to education were made by the educational institutions of the different countries facing this emerging crisis (World Bank, 2020); for example, new online educational platforms were created, more digital educational resources were shared and many training sessions in the use of technological tools were implemented for teachers and students. However, there was uncertainty as to whether remote education would be adopted by all, especially by people with fewer economic resources or residing in marginalized areas without access to the necessary tools to carry out this type of adaptation, causing inequality in the opportunities for students to continue learning during the pandemic (HRW, 2021).

In addition, as Barbera (2008) points out, it should be borne in mind that every educational modality needs a certain amount of time for planning so that learning with the support of information and communication technologies (ICT) can be of quality. Likewise, Grande de Prado *et al.*, (2021; 56) note that

In each context, university and specific subject there may be factors that alter the mosaic to be considered, and teachers will have to make decisions adapted to their situation. There are no magic or universal proposals that guarantee a solution to all online problems, just as there are no magic solutions for face-to-face teaching and assessment. What is possible is careful planning to minimize the consequences of problems that may arise. These contingency plans should take into account possible student difficulties and provide guidelines for action within the institutional strategy.

The response of each country to face this situation was different, since the economic and social situation varies from one country to another. In Paraguay, educational projects such as «Your School at Home» (MEC, 2020) were developed with the aim of minimizing the negative impact that COVID-19 could have on all members of the educational community. This platform contains a range of educational resources for teachers, students and families found in the national educational system of the Ministry of Education and Science and is completely free to use (<https://aprendizaje.mec.edu.py/aprendizaje/>). For their part, higher education institutions presented varied proposals according to the resources available to them. In all cases, the intention to reduce adverse effects was at the core of these measures.

All members of the educational community were affected by the adoption of the (emergency) online education modality, perhaps disproportionately. However, in this paper we focus on student adaptation to emergency remote education. Several studies have tried to show the adaptation and perceptions that stu-

dents have about contingency remote education. For example, Casero and Sanchez (2022) reported that students perceived an alteration in teachers' methodologies and ways of evaluating. They also highlight a deficit in the types of resources provided to students. Hassan *et al.*, (2021) analyzed students' self-perceptions and found interesting results on motivation. Other aspects related to difficulties, limitations, innovation and access to technologies were described in studies such as Aucejo *et al.*, (2020), Flores and Gako (2020), Mereles *et al.*, 2020 and Canese *et al.*, 2021. Thus, the aim of this study is to describe how high school and college level students adapted to the emergency remote teaching modality, what were the main educational resources used, the perception about online academic work, the difficulties experienced and the level of satisfaction with the remote classes triggered by COVID-19.

2. Methodology

The research was conducted at two different points in time during the pandemic in the year 2020. These instances correspond, on the one hand, to the beginning of ICT-mediated remote educational activities in the month of March (referred to as the first phase in this study), and on the other hand, to the months of November and December (referred to as the second phase) when most of the country's educational institutions concluded the academic year. The study focused on students in the secondary level of the Paraguayan educational system and in higher education.

In the first phase of the study, a heterogeneous sample of 856 students from public and private educational institutions across the country participated. Among these participants, 25% were at the high school level, while the remaining students were at the university level, including graduate students. To ensure representation from both educational levels, the sample composition aimed to reflect the proportion of students in the population. According to the Ministry of Education of Paraguay (MEC, 2020), the estimated population of middle level students in 2020 was around 261,147, while the National Council for Science and Technology (CONACYT, 2021) reported that the population of university level students was approximately 235,000.

In the second phase of the study, the number of participants reduced to 308, with only 3% representing secondary level students. Despite the smaller sample size in this phase, efforts were made to maintain diversity by considering students' place of residence and the type of educational institution they attended that year.

Data collection in both phases involved the use of online questionnaires primarily distributed through email and the messaging app WhatsApp. Each questionnaire underwent a rigorous validation process conducted by the research team, which included a pilot study involving a group of students prior to the actual data collection phase. This pilot study aimed to ensure the questionnaire's reliability and validity in capturing the intended information effectively. During the pilot study, a subset of students who were representative of the target population participated in a trial run of the questionnaire. This allowed the research team to identify any potential issues or areas of improvement in the questionnaire design, wording, or format. Feedback from the pilot study participants was collected and carefully analyzed to refine the questionnaire and address any ambiguities or confusion that arose. The pilot study played a crucial role in enhancing the overall quality of the questionnaire. It helped to validate the questionnaire's content, ensuring that the items accurately captured the research objectives and covered the relevant dimensions of the study. Additionally, the pilot study enabled the research team to assess the questionnaire's clarity,

comprehensibility, and length, ensuring that it was appropriate for the target audience. Participants were informed about the voluntary nature of their participation and the assurance of anonymity and confidentiality in handling their data, adhering to ethical guidelines.

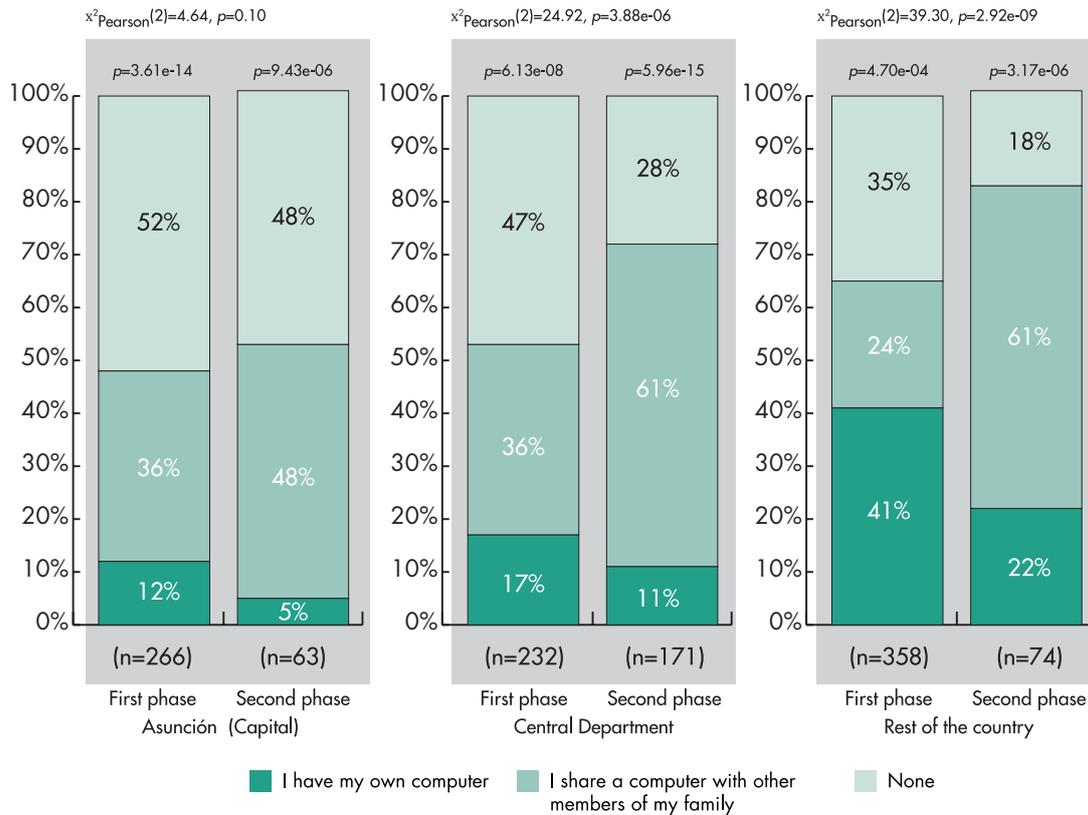
The questionnaires consisted of approximately 40 items distributed across three main sections: socio-demographic data, aspects related to the implementation of remote education, and students' perspectives on future prospects for education in the coming years.

The collected data were analyzed using R statistical software (R Core Team, 2021). Figureal representations, including descriptive bar charts with accompanying numerical information such as percentages, were generated using the *ggpubr* and *ggstatplot* packages. Hypothesis testing based on the Chi-squared Test was employed to analyze potential statistical differences between attributes of categorical variables. In cases where the Chi-squared Test yielded a significant result, post hoc Chi-squared Tests were conducted. A standard significance level of 5% ($p < 0.05$) was considered to determine statistical significance.

3. Results

Based on the analysis conducted, Graphic 1 shows the distribution of students according to computer ownership in the three places of residence considered in the study, together with the corresponding chi-squared tests. It shows that in Asunción, in both phases of the study, similar percentages of students with their own computers were reported. These percentages are around 50%, which means that about half of the students had their own device in that first year of the pandemic. In the second phase of the study, a higher percentage of students sharing a computer with other family members was observed (from 36% to 48%), which influenced, although not significantly, the reduction in the percentage of students without a computer at home. Computer ownership in the Central department was more varied. The proportion of students who reported having their own computer decreased and the proportion who reported sharing with other members of the household increased. In this department there were no significant differences between the proportions of students without computers. As for the rest of the country, all categories underwent significant changes. The proportions of students without computers and with their own computers decreased and the portion of students sharing a computer with other members of the household increased considerably. Regarding the compulsory purchase of computers, between 30 and 41% of students responded affirmatively to having to buy a computer (30% reside in Asunción, 41% in the Central department and 38% in the rest of the country). These proportions cannot be considered statistically different ($\chi^2 = 2.27, p = 0.32$).

Graphic 1. Computer ownership in the home

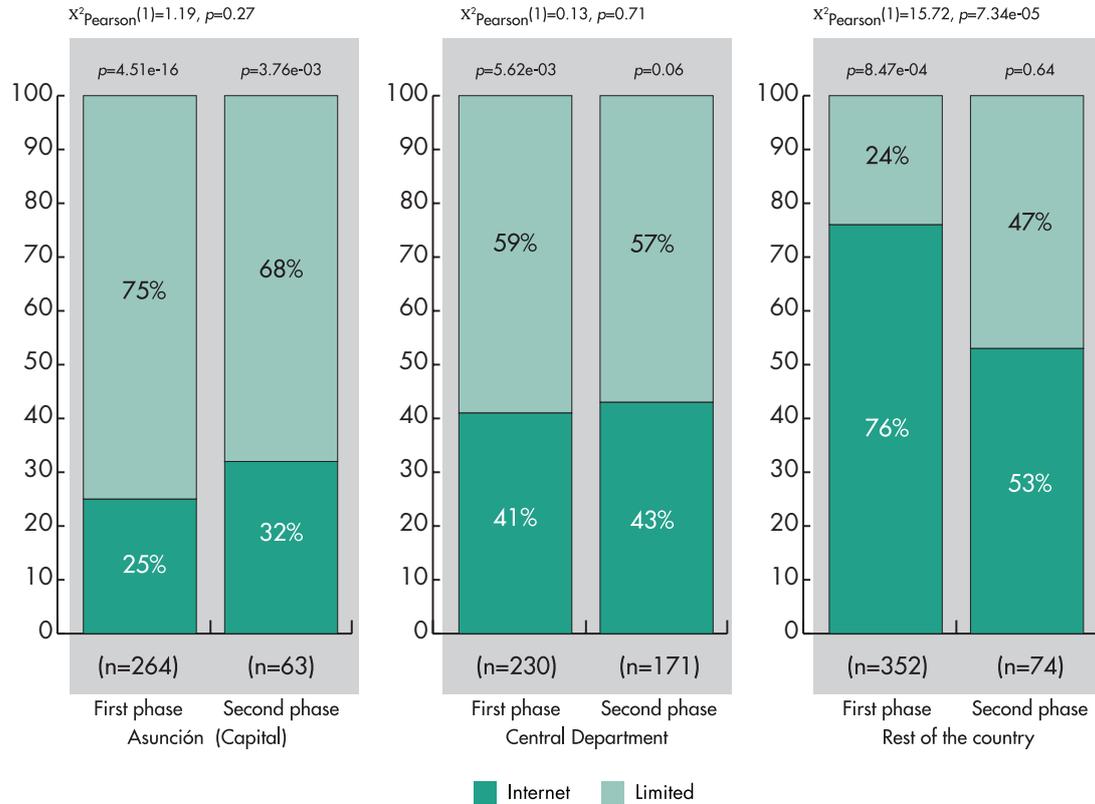


Source: original analysis based on sample data.

The students in Asunción and the Central department reported, in high proportions, having an unlimited internet connection. Although at the end of 2020 the proportions decreased, they were not significant (Asunción: $\chi^2=1.19, p=0.27$ and Central: $\chi^2=0.13, p=0.71$). However, in the rest of the country the majority of students (76%) had a limited internet connection in the first phase of the study. These connections are usually via cell phone, with a limited amount of data packs. By the end of the 2020 school year this last percentage experienced a significant decrease ($\chi^2=15.72, p<0.001$). This phase ended with very similar distributions of students according to these two types of internet connection considered in the study. Nevertheless, the observed gaps in Internet connectivity are still very marked when comparing students from the rest of the country with those residing in Asunción and the Central Department (Graphic 2).

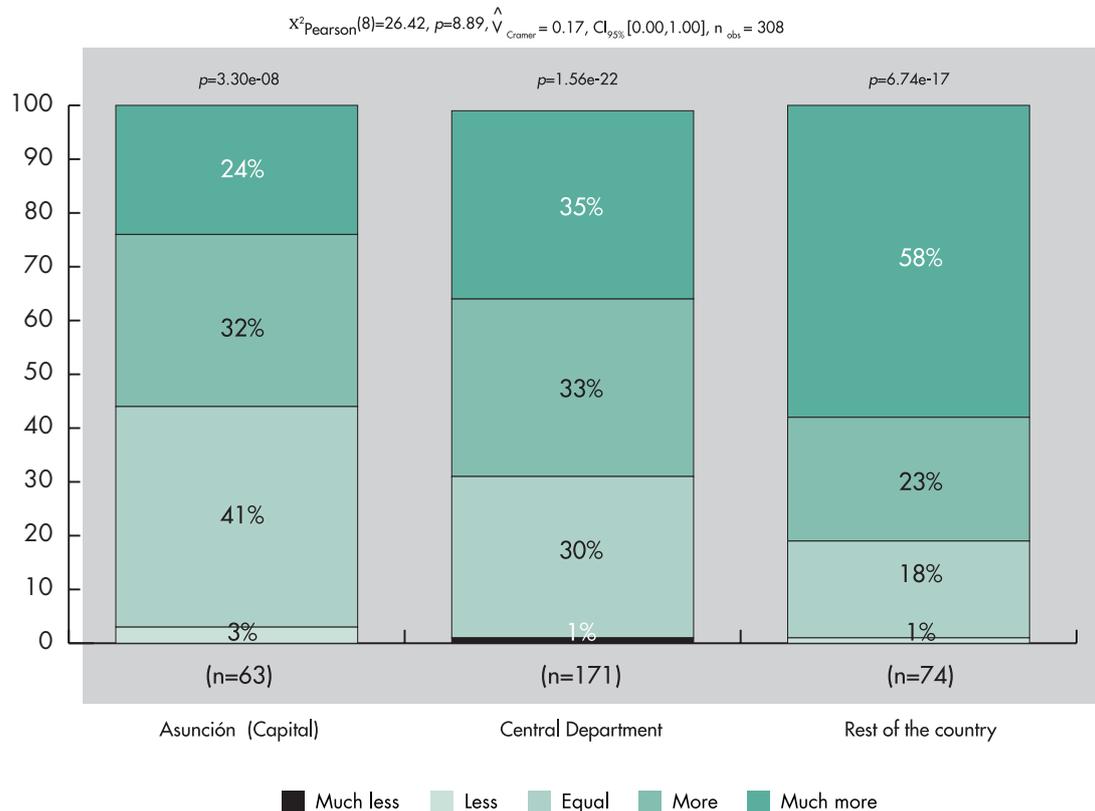
In relation to this aspect, the majority of students in the Central department (68%) and the rest of the country (81%) reported that they were forced to acquire more internet services to continue their education. Meanwhile, in Asunción, slightly more than half of the students showed these conditions. In the three places of residence considered, the proportions of students with responses toward less Internet use were negligible (Graphic 3). We also compared the responses of students from different educational levels and found no significant differences ($\chi^2=7.41, p=0.83$). This indicates that educational level did not represent a differentiating factor for the acquisition of greater internet services.

Graphic 2. Distribution of students according to type of internet connection and residence



Source: original analysis based on sample data.

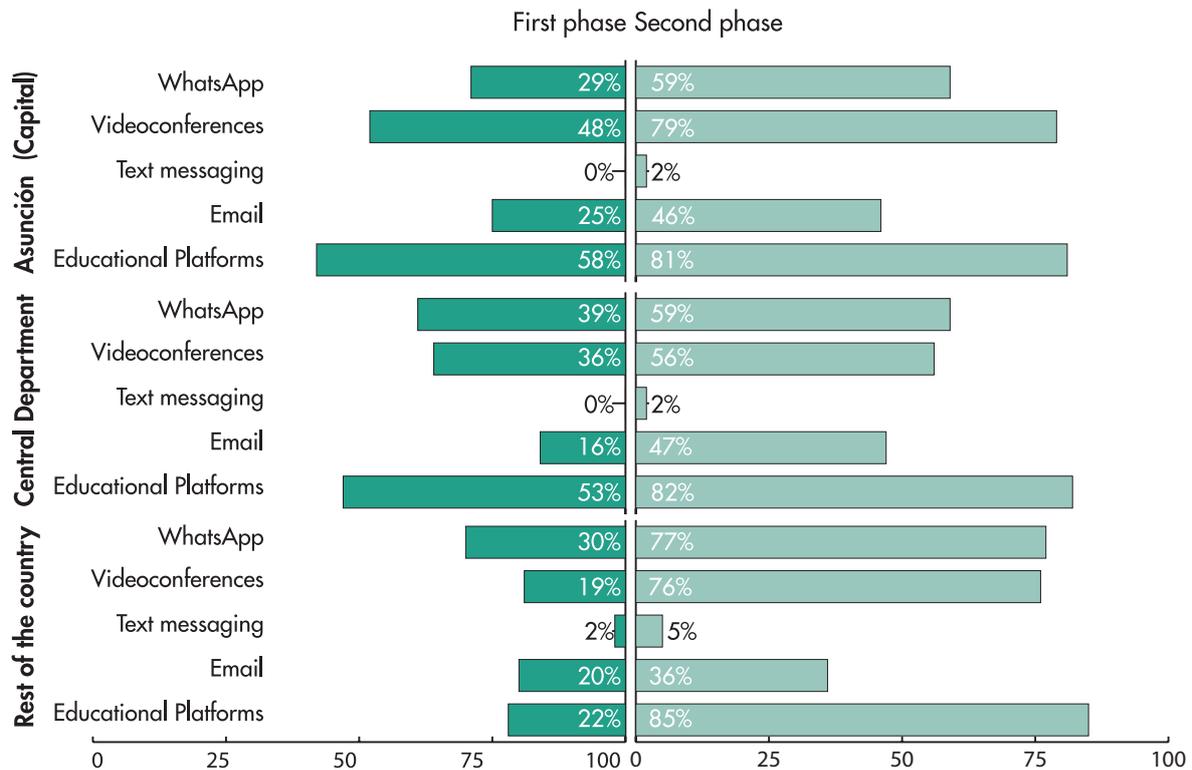
Graphic 3. Acquisition of more internet services according to residence



Source: original analysis based on sample data.

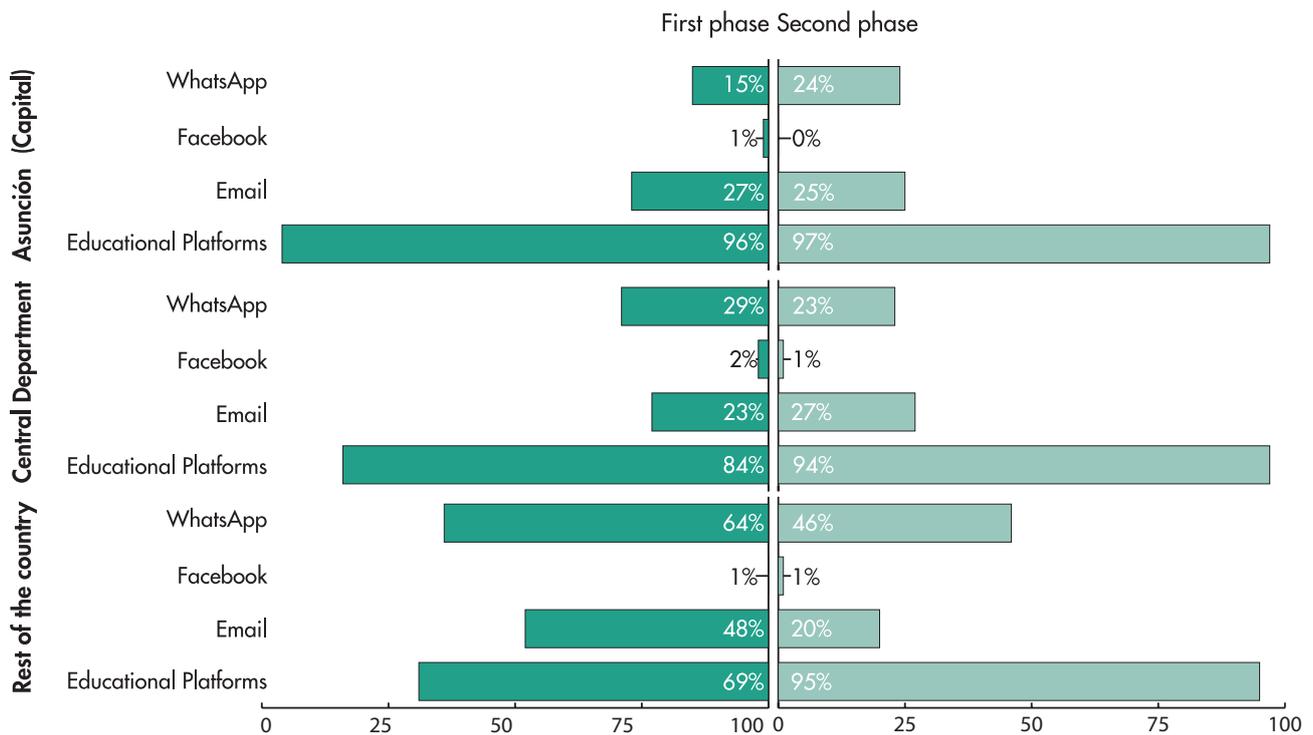
At the beginning of the remote classes, the use of communication media was still scarce, as some educational institutions did not even start their activities after the declaration of a health emergency in the country. However, this changed abruptly, as expected, by the end of 2020. The chi-squared test highlights very significant increases for all media, except for «Text Messaging». The most used media were WhatsApp (mainly among middle level students), educational platforms, email and videoconferencing (Graphic 4). The latter were fundamental to maintain empathy between teachers and students to some extent in a difficult year. On the other hand, educational platforms were the main means by which assignments were sent in the three places of residence, although WhatsApp and email were also used in smaller proportions (Graphic 5). In Asunción, none of the means used experienced a significant increase. However, at the end of 2020 the use of educational platforms was higher in the Central department ($\chi^2=8.03, p=0.005$), as well as in the rest of the country ($\chi^2=17.85, p<0.001$). In the latter place of residence, significantly lower percentages of students were observed who responded to be using WhatsApp and email to receive their activities or assignments by the end of 2020 (WhatsApp: $\chi^2=6.49, p=0.011$ and Email: $\chi^2=15.30, p<0.001$).

Graphic 4. Means of communication used by students



Source: original analysis based on sample data.

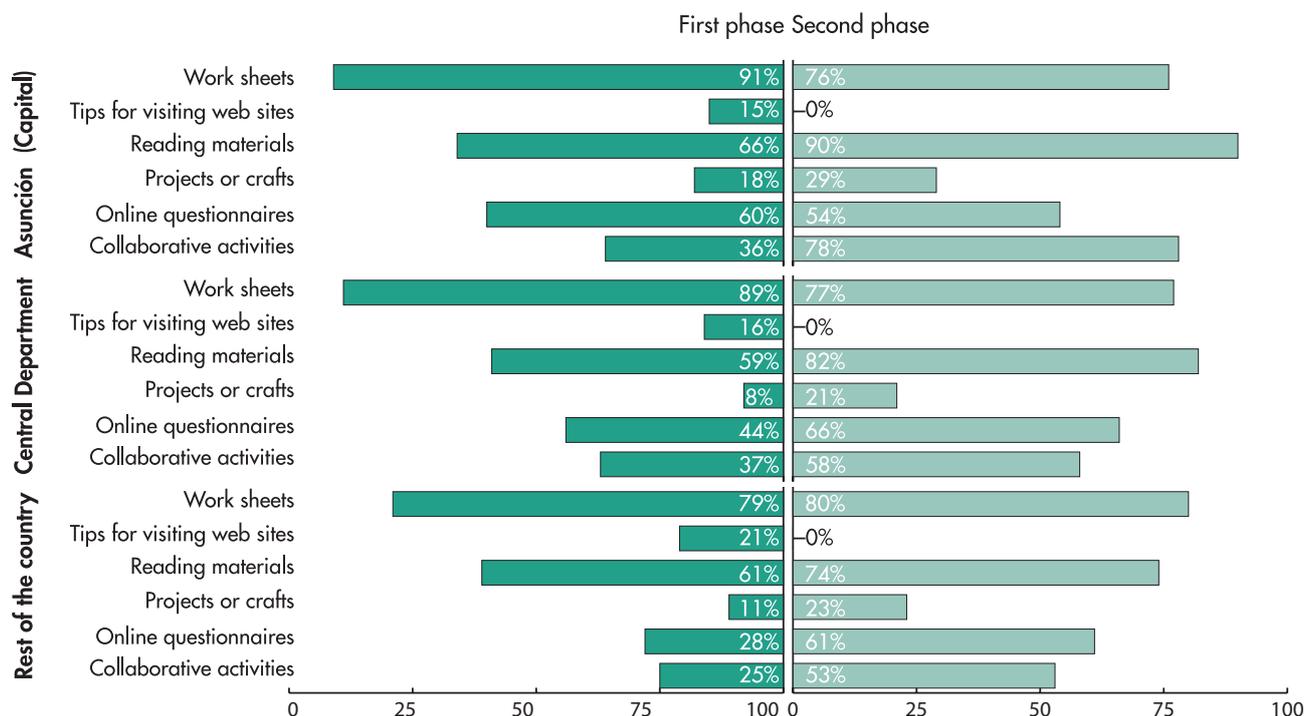
Graphic 5. Means used by students to submit assignments



Source: original analysis based on sample data.

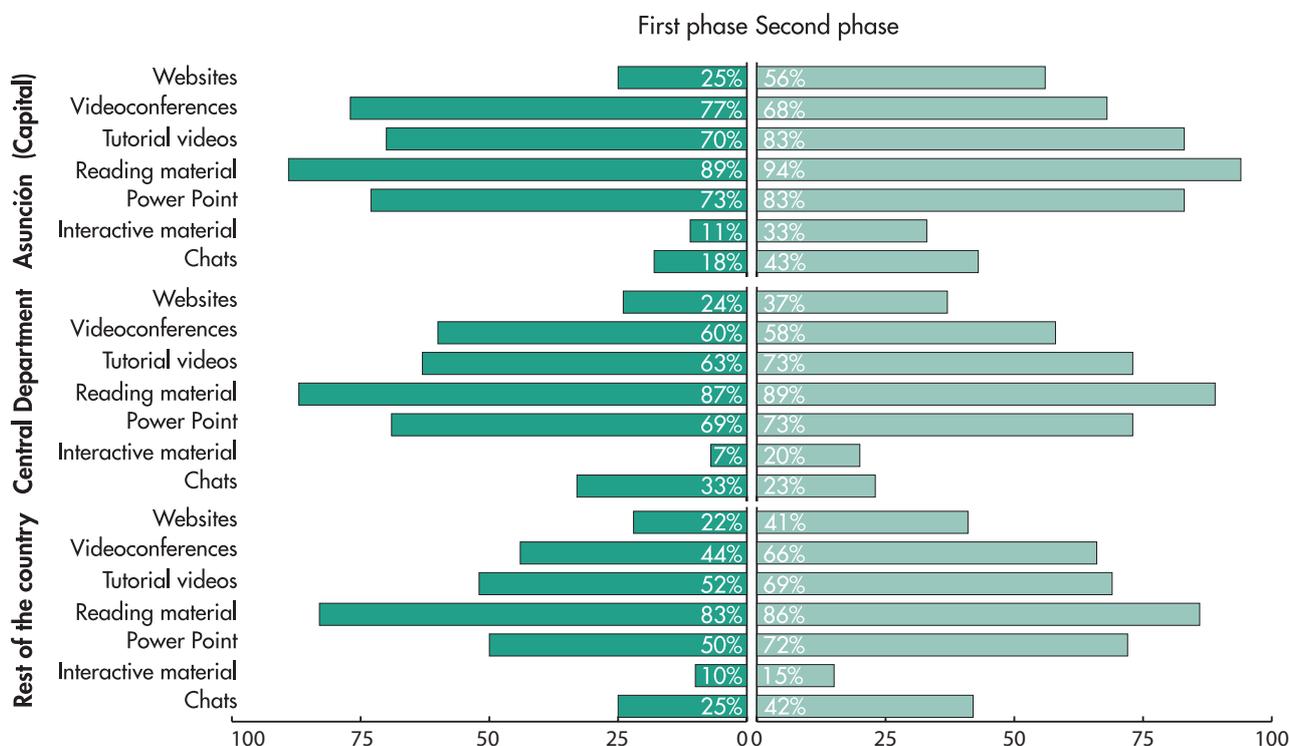
Graphics 6 and 7 reflect, respectively, the different types of activities proposed by the teachers and the materials used for the development of emergency remote classes. During the first phase of the study, it was found that worksheets were the main type of activity used (between 79 and 91%). Reading materials (between 59 and 66%) and online questionnaires (between 28 and 60%) were also proposed as activities, but in smaller proportions. However, the latter activity was rarely used as reported by students from the rest of the country (only 28%). In the second phase of the study, higher proportions of students reported reading materials as an activity (between 74 and 90%) than in the first phase. In the Central department and in the rest of the country, the findings reveal a greater use of online questionnaires by the end of the school year (66% and 61%, respectively). In addition to these activities, at the end of 2020 there was a greater insistence on collaborative activities throughout the country. For all the activities, different materials were presented that were adjusted to the needs of each. Particularly, in the whole country, four main types of materials can be highlighted: reading materials, video tutorials, PowerPoint presentations and videoconferences, although in Asunción a significant proportion of students reported using websites as materials for the teaching-learning process.

Graphic 6. Types of activities proposed during 2020



Source: original analysis based on sample data.

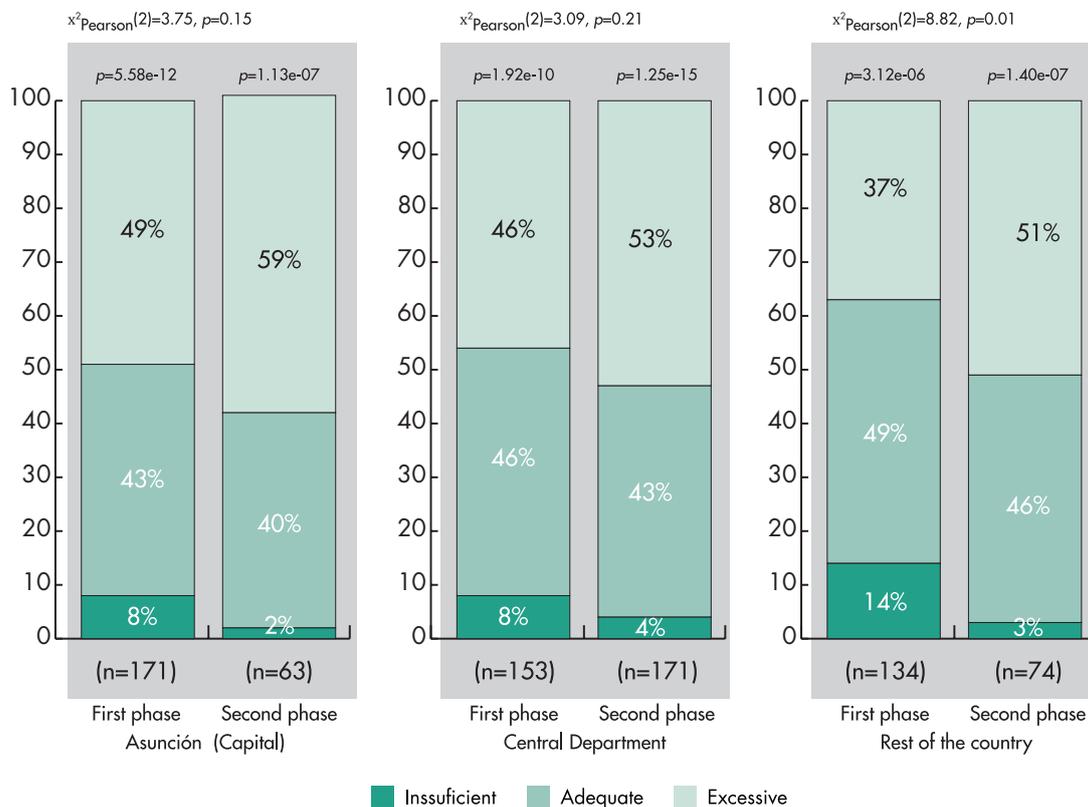
Graphic 7. Types of materials used during remote education in 2020



Source: original analysis based on sample data.

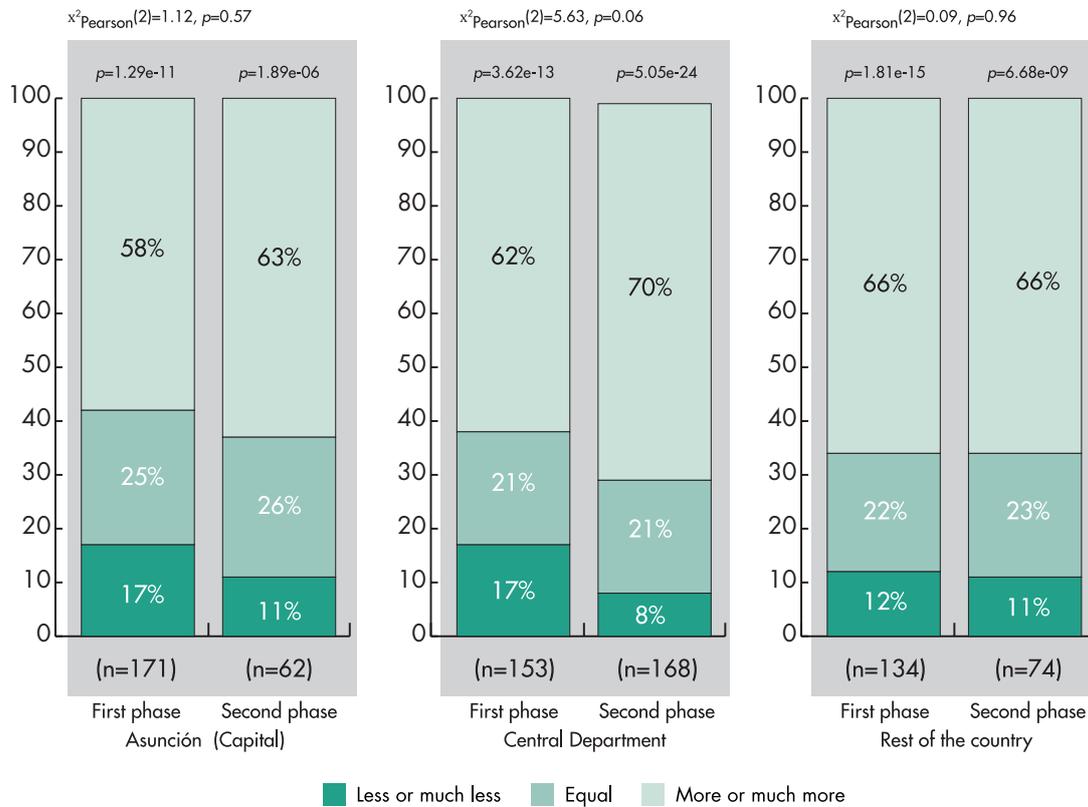
Graphic 8 shows students' perceptions about the amount of homework assigned during the pandemic in 2020. High percentages of students residing in Asunción and in the Central department indicated that they perceive the amount of work as excessive. This occurred in both phases of the study with non-significant increases by the end of 2020. On the other hand, in the rest of the country, the number of students who considered the amount of homework as too much increased from 37% in the first phase to 51% in the second phase, resulting in a significant difference in this group of residence ($\chi^2=8.82, p=0.01$). There were also significant percentages (between 40 and 49%) of students who stated that they had an adequate amount of homework considering the educational modality adopted in that year. In this sense, in the three places of residence, the majority of students expressed that the time dedicated to the whole remote education process is more or much more than that dedicated with normal or regular classes. Although the differences are not significant when comparing the responses between the first and second phases, they are significant when comparing within each phase in the three categories of residence (Graphic 9).

Graphic 8. Perception on the amount of homework during remote education



Source: original analysis based on sample data.

Graphic 9. Time spent performing the tasks compared to regular classes



Source: original analysis based on sample data.

In both phases of the study, identical proportions of students (86%) reported having certain difficulties during the course of remote activities during the pandemic. In both phases of the study, these difficulties were mostly related to the lack of understanding of the tasks, problems of internet connection, motivation and lack of time to cover all the activities proposed by their teachers or educational institutions to which they belong. However, there were also significant proportions of students who responded that they had problems related to lack of access to information and technology, lack of teacher support and lack of knowledge in the use of ICT (Graphic 10). Significant differences were evidenced in: lack of understanding of tasks ($\chi^2=5.32, p=0.021$), lack of parental support ($\chi^2=5.12, p=0.024$), lack of access to information ($\chi^2=12.08, p<0.001$) and lack of time for the completion of all proposed school activities ($\chi^2=42.17, p<0.001$).

In both phases of the study, a consistent proportion of students (86%) reported experiencing various difficulties during their engagement in remote activities amidst the pandemic. These challenges were predominantly associated with four key areas: understanding tasks, internet connectivity issues, motivation, and time constraints imposed by the overwhelming workload assigned by their teachers or educational institutions. However, it is noteworthy that a considerable number of students also encountered obstacles related to limited access to information and technology, inadequate teacher support, and a lack of proficiency in utilizing ICT tools (as depicted in Graphic 10).

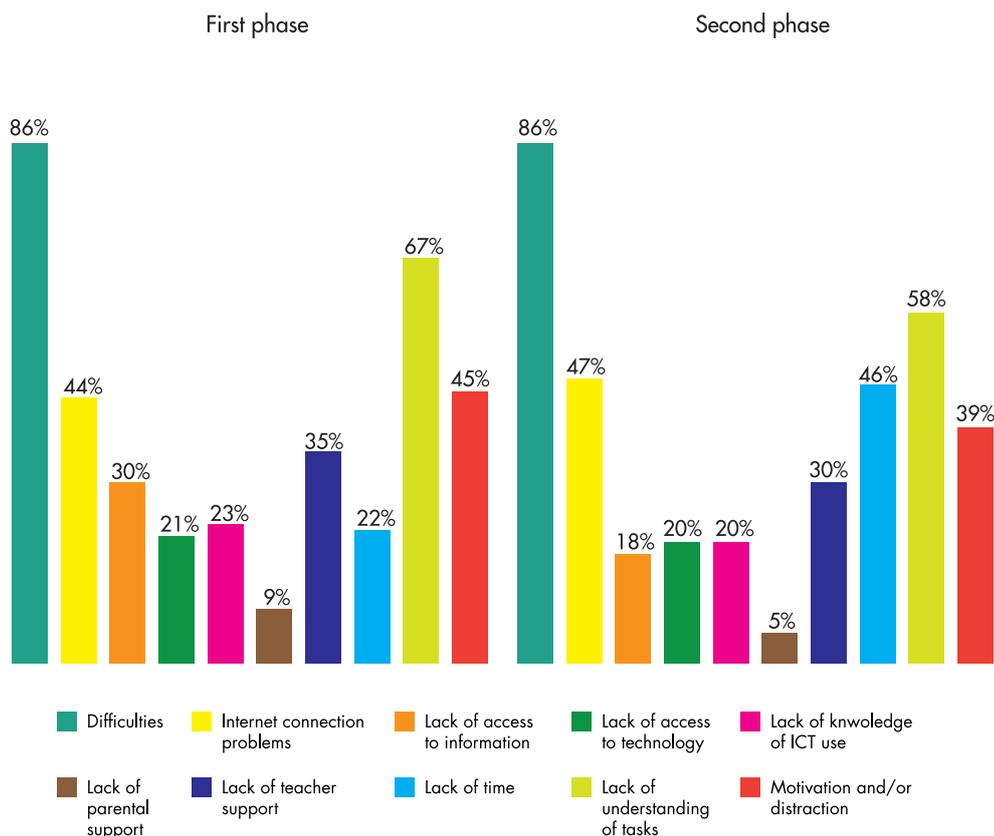
The analysis of the data revealed significant differences in several aspects among the students. Firstly, regarding the understanding of tasks, statistical analysis indicated a noteworthy difference

($\chi^2=5.32, p=0.021$). This suggests that some students faced greater difficulties comprehending the instructions and requirements of the assigned tasks compared to their peers. Secondly, the availability of parental support also exhibited a significant distinction ($\chi^2=5.12, p=0.024$), indicating that certain students had less access to assistance and guidance from their parents or guardians during remote learning.

Moreover, disparities were observed concerning access to information ($\chi^2=12.08, p<0.001$), suggesting that a subset of students encountered challenges in obtaining the necessary resources and materials for their academic pursuits. Finally, significant differences were found regarding the allocation of time for completing the proposed school activities ($\chi^2=42.17, p<0.001$). This indicates that some students faced greater time constraints and struggled to manage their workload effectively, potentially leading to stress and compromised learning experiences.

These findings highlight the multifaceted nature of the challenges experienced by students during remote learning. While a common set of difficulties was prevalent among the majority, the variations observed in specific areas underscore the importance of considering individual circumstances and needs when designing and implementing remote educational strategies.

Graphic 10. Main difficulties reported by students

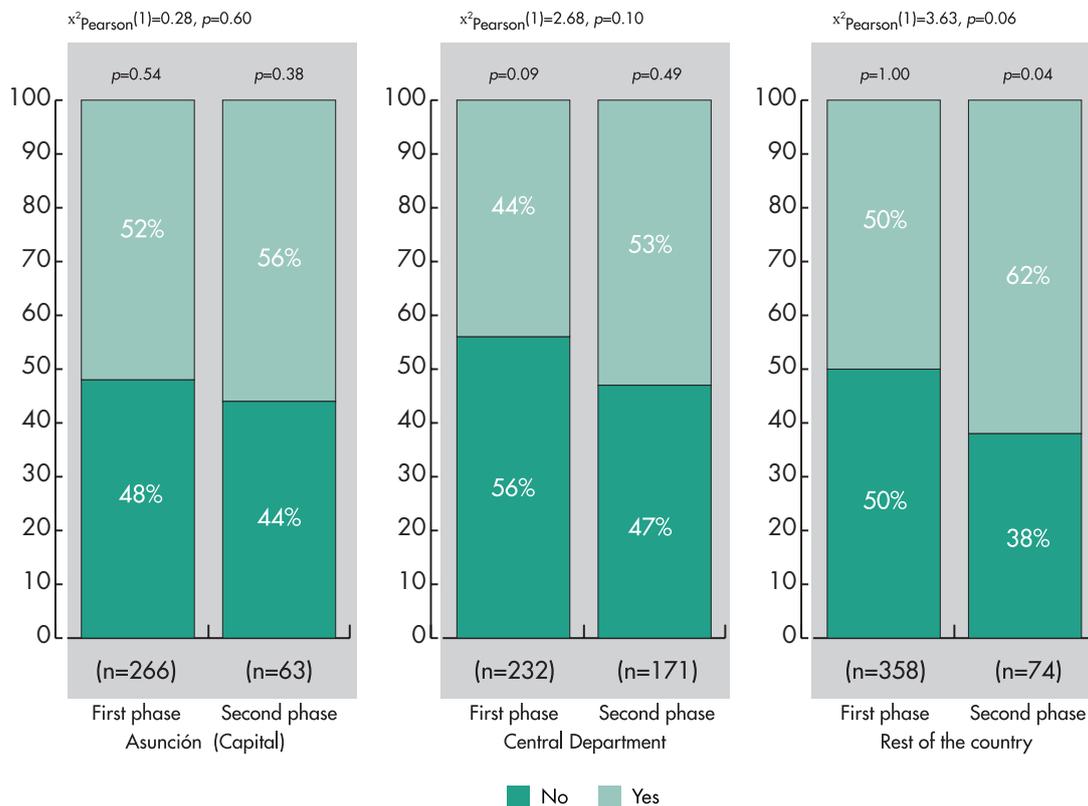


Source: original analysis based on sample data.

Students had similar responses in both phases of the study, and in each place of residence, in relation to satisfaction or conformity with the development of educational activities mediated by technologies. In Asunción and in the Central Department, non-significant differences were observed, i.e., about 50% of the students residing in these localities stated that they were satisfied with the use of technologies in

education because of the pandemic in both phases. On the other hand, in the rest of the country, there was a significant difference as by the end of 2020 there was a majority acceptance of the use of ICT mediated activities when there was not so much acceptance at the beginning of the pandemic ($p=0.04$) (Graphic 11).

Graphic 11. Satisfaction with ICT-mediated classes during 2020



Source: original analysis based on sample data.

4. Discussion

This study shows some interesting findings on how students adapted to the educational process during the pandemic from the place where they were and with the resources available to them during the first year of the pandemic. Regarding access to technological resources such as computers and internet, only in the capital city of the country (Asunción) were there high proportions of students with their own computer and unlimited internet access in both phases of the study. Similar computer ownership was also reported by Pérez-López *et al.*, (2021) in their study on the perception of university students during the pandemic. In addition to this study, there are others (Zapata-Garibay *et al.*, 2021; Mpungose, 2020; Salas-Pilco *et al.*, 2022) that demonstrate access to this electronic artifact in varying proportions according to geographic and/or socioeconomic contexts. In the Central department and in the rest of the country, there was a predominance of students who reported sharing the same computer with other members of the household and that Internet connections were distributed proportionally between the two types of connection, particularly in the second phase of the study. This shows that, in general, accessibility to these technological resources was greater in Asunción, where purchasing power and the economy are relatively greater, than in other places of residence in the country. However, the results also reveal that

the development of educational activities through technology forced students, through their families or through their own resources, to acquire greater Internet services, especially in the rest of the country, despite the difficult economic situation and the uncertainty of the times.

Students adopted several digital tools for communication with their teachers (Casero Bejar, 2022). Among them, WhatsApp, videoconferencing and educational platforms stand out, which although they did not reach widespread use at the beginning of distance classes, they did by the end of 2020 throughout the country. Most of these tools were also used for sending homework assignments during various times of the aforementioned year. However, there is a notable preference for online educational platforms for this task.

In general, reading materials, worksheets, online questionnaires and collaborative activities were the activities most frequently proposed by teachers. This, of course, depended on the educational level of the student and the nature of the subjects or contents involved. Several types of teaching materials used to carry out these activities were detected, namely, video tutorials, videoconferences, PowerPoint presentations or similar and reading materials in PDF, Word or other formats, coinciding to a large extent with the findings of Pérez-López *et al.*, (2021).

Regarding the perceptions about the amount of homework, nearly half of the students in each phase and place of residence, said that it was excessive and only up to a maximum of 14% insufficient. Similar results were obtained in a study by Aristovnik *et al.*, (2020). Thus, these findings highlight a significant number of students who felt overburdened by the tasks and/or activities in this emergency remote education, which is also confirmed by the significantly high responses that the time spent on tasks, compared to conventional classes, was higher or much higher.

Another important aspect highlighted in this research has to do with the presence of difficulties. More than 85% of the students reported some problem associated, directly or indirectly, with education during the pandemic (Almendingen *et al.*, 2021). Lack of understanding of the tasks assigned by teachers was one of the main ones. Kuric *et al.*, (2021) and Toti and Alipour (2021) highlighted this fact in particular situations. The way in which the tasks are presented, the teaching guides or orientations, the level of prior knowledge acquired by the student and other factors are essential for the comprehension of the activities. In addition, if the educational level of parents or guardians at home is not sufficient or even null, they cannot be called upon for possible support.

The lack of sufficient time also represented an aspect that caused problems in the development of some tasks (Hagedorn *et al.*, 2021). Also, the lack of motivation turned out to be an important difficulty for the student according to the results obtained. In a recent study, Casero and Sanchez (2022) found that most of the students responded agreeing that the confinement situation has meant a demotivation for their learning. Other pre-pandemic studies (Albelbisi & Yusop, 2019; Sun *et al.*, 2018) suggest that students' demotivation could negatively influence their cognitive engagement levels, an aspect precisely defined in Kemp *et al.*, (2019). This same hypothesis was tested by Aguilera-Hermida (2020) in a study conducted shortly after the onset of the pandemic.

Another difficulty found, very visibly and perhaps affecting all countries in the world, is the lack of good internet connectivity. The results of this study reveal that there are problems related to Internet connectivity despite greater investment in the acquisition of more services. The works of Chávez-Miyauchi *et al.*, (2021), Romero Alonso *et al.*, (2021), Santos *et al.*, (2021), Sapien Aguilar *et al.*, (2020), Silva *et al.*,

(2021) and Zúñiga Rodríguez and Cáceres Mesa (2021) highlighted results on difficulties in this aspect, particularly regarding the loss of some synchronous classes due to instability in connectivity.

Finally, reported satisfaction with the adoption of ICTs for the development of classes during the pandemic in 2020 was distributed proportionally and equally across the three places of residence and in each phase of the study. It should be noted that this satisfaction is not only associated with the way in which school activities were carried out but also, for example, with the fear of attending school in person. However, even before the pandemic, some empirical results showed a certain preference by students towards a mixed learning modality where synchronous and non-synchronous activities with the support of ICT are contemplated (Giesbers *et al.*, 2016; Moallem, 2015).

5. Conclusion

The findings of this study shed light on the experiences of high school and college students during the COVID-19 pandemic, particularly regarding remote learning. The results indicate that there have been some advancements in terms of increased access to technology and the utilization of digital tools for remote education. However, several challenges persist and need to be addressed.

One of the primary challenges identified is the type and quality of internet connectivity. Many students faced difficulties due to limited or unreliable internet access, which hindered their ability to fully engage in remote learning activities. Additionally, the study highlighted that students struggled with managing their time effectively to complete homework assignments, indicating a need for improved time management skills and support mechanisms.

Another significant challenge that emerged was the varying levels of technological proficiency among both students and teachers. The findings suggest that not all students and educators were equally prepared to navigate digital tools and platforms for remote learning. Addressing this issue requires providing adequate training and resources to enhance digital literacy skills for both students and teachers.

The perspectives shared by students regarding the future of education indicated a desire for better organization within educational institutions and the adoption of a hybrid learning format. Students recognized the potential benefits of combining in-person and remote learning, which could provide more flexibility and customization in their educational experiences. Their perspectives emphasize the importance of involving students in the decision-making process and considering their preferences and needs when designing future educational models.

It is crucial for educators and institutions to take into account students' perspectives to inform and guide their planning for distance or hybrid learning approaches. By placing students at the center of the learning process, educational stakeholders can ensure that the adopted strategies are effective and responsive to students' requirements. Furthermore, it is essential to consider the diverse material conditions of students across the country to bridge the equity gap and ensure that educational plans are accessible and beneficial for all.

While the COVID-19 pandemic compelled the education community to rapidly adapt to remote virtual education, it remains to be seen whether these adaptations will have long-lasting effects on teaching and learning approaches. It is worth exploring how these adjustments can be leveraged to transform the educational landscape to better address the needs of students and society in the twenty-first century.

Therefore, stakeholders and policymakers should reflect on the findings of this study and explore ways to harness the positive aspects of these adaptations. This can involve incorporating effective remote learning practices into traditional classroom settings, integrating technology more seamlessly into the curriculum, and reimagining the education system to be more responsive to the demands of the modern world. By doing so, education can evolve into a more dynamic and inclusive environment that prepares students for the challenges and opportunities of the future.

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