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The effects of rapid digitalisation
on tertiary-level education during
the COVID-19 pandemic**

José Burneo
Roxana Barrantes
Danna Duffó

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Preface

Governments worldwide are increasingly relying on digitalization in public service delivery. The effects of the COVID-19 pandemic significantly accelerated this trend. However, existing structural inequalities in access and use of ICT risk leaving behind historically marginalized populations and creating new groups of disadvantaged people. In this context, it is crucial to understand the opportunities and challenges presented by the transition to digital public services in the Global South.

Southern Voice partnered with the Centre for Budget and Governance Accountability (CBGA), the *Instituto de Estudios Peruanos* (IEP), and the *Science, Technology and Innovation Policy Research Organization* (STIPRO), to explore the impacts of the rapid digitalization of public services caused by the pandemic. Through a cross-country collaboration between India, Peru and Tanzania, new evidence was gathered regarding the online learning experiences at the secondary and tertiary levels of education, as well as in online business registration. The findings allow us to reflect on common challenges arising in different contexts, and envision some of the steps forward. The initiative was part of the COVID collective research platform, led by the Institute of Development Studies (IDS).

The present study, authored by the *Instituto de Estudios Peruanos*, explores some of the early impacts, opportunities, and challenges experienced in two public universities in Peru with the drastic shift to online distance education. It examines the repercussions in access to quality education, particularly for women. Research findings provide lessons and evidence-based policy recommendations to harness the opportunities offered by ICT in tertiary education.

We expect this publication to shed light on key public policy initiatives and reforms required to advance digital inclusion and gender equity through digital public education services.

Rose Ngugi

Chair, Southern Voice

and

Executive Director, Kenya Institute for Public Policy Research and Analysis (KIPPRA)



Acknowledgement

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The studies presented in this document would not have been possible without the resources provided by the research and administrative teams of the Institute of Peruvian Studies in Lima, Peru.

It is of the utmost importance that we recognise the participation of 52 students from the National University of the Peruvian Amazon (UNAP) and the National University of San Marcos (UNMSM). This group of students was very kind to share with us their personal day-to-day experiences throughout this gruelling stretch of the pandemic that began in 2020. Lastly, we extend our gratitude to all the public officials that expressed their criticism and optimism regarding the outlook for a more inclusive public tertiary-level education.

Abstract

In Peru, the transition of public education from in-person schooling to online classes due to the COVID-19 pandemic has presented challenges for students, teachers, and state officials. This study explores the difficulties of this process and its repercussions, the goal of which is to better understand the situation of public universities throughout the pandemic, specifically in the case of female students.

Researchers used a qualitative methodological approach with interviews and focus groups, conducted in three different phases: the exploratory phase, the in-depth phase with students, and the phase with administrative authorities. We noted the existence of gaps that affect the entire student population and that are associated with pre-existing inequalities in two areas: (i) access to and use of Information and Communications Technologies (ICT); and (ii) women's performance at public university institutions given differences in the distribution of domestic roles and gender violence in virtual spaces. Change in class schedules, from later in the day to early in the morning was a common strategy used in the former case to mitigate inequalities. In the latter case, inequalities directly affected participation, given that they led to class desertion.

The development of future public policies requires a focus that takes into account the structural inequalities that span the experience of online classes and the thematic inequalities associated with gender and its impact on studying conditions for women.

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Acronyms and abbreviations

ENAHO	National Households Survey
INEI	National Institute of Statistics and Informatics
MINEDU	Ministry of Education (Peru)
NSE	Socioeconomic Level
ODS	Sustainable Development Goals
SISFOH	Household Allocation System
STEM	Science, Technology, Engineering, and Mathematics
TIC	Information and Communications Technologies
UNAP	National University of the Peruvian Amazon
UNMSM	National University of San Marcos

Gender gaps in Peru: The effects of rapid digitalisation on tertiary-level education during the COVID-19 pandemic

*José Burneo
Roxana Barrantes
Danna Duffó*

Introduction

Leaving No One Behind in Digital Delivery of Public Services is a Southern Voice research project that seeks to study the effects of the rapid digitalisation of public services—a move adopted in response to the COVID-19 pandemic—in view of risks and opportunities for women in the Global South. Its main objective is to provide recommendations for the creation of more inclusive public policies by using case studies from India, Tanzania, and Peru. This study focused on online public tertiary-level education in Peru against the backdrop of the COVID-19 pandemic.

From the mid-1990s onwards, a shift towards the privatisation of a variety of public services—including educational ones—gave way to the scarcely supervised proliferation of educational institutions at every level (Balarin, 2015; Cuenca, Reátegui & Oré, 2019). In 2014, the University Act, Act 30220, passed as a central piece of university reform that sought to guarantee access to quality learning.

Prior to this reform, only a fraction of tertiary-level educational centres had implemented distance learning. In its pursuit of attaining quality standards, the University Act stigmatised distance education, deeming it inferior to in-person classes. Consequently, it discouraged all work aimed at improving distance learning (RPP, 2020).

When COVID-19 erupted, the Peruvian government implemented containment measures that meant the end of many in-person activities in various sectors. To avoid an interruption to classes, the educational sector initiated a process of rapid digitalisation that would allow for remote learning. This presented a significant challenge for the country's university population and had varying effects on both male and female students. Although internet usage in Peru has increased in recent years—rising from 35% in 2010 to 65% in 2020 (National Institute of Statistics and Informatics [INEI], 2021, p. 32)—, the percentage of female internet users over the age of 6 remains five percentage points below their male counterparts (INEI, 2021, p. 10). Women living in rural areas, with a

lower educational and socioeconomic level (SEL), are often the least served by access to ICT, reflecting the numerous barriers this demographic faces (Gillwald, 2018; Barrantes, Agüero & Matos, 2018).

On the other hand, evidence gathered from different parts of the world suggests that, because of pre-existing gender roles, stay-at-home orders have led to an overload of household and caregiving responsibilities for women (Clark et al., 2020; Hupkau and Petrongolo, 2020). This evidence contributes to our understanding of how sociocultural norms play a part in determining the access women have to the benefits of distance education.

Though there are existing studies in Peru about the gender digital divide in the early stages of life, such as infancy and adolescence (for example, León et al., 2019) and in the employment arena (for example, Gillwald, 2018), an absence of research persists with respect to tertiary-level education. This study aims to contribute to the understanding of this crucial period experienced by approximately 1.1 million people in the country (INEI, 2020a)¹ whose varying trajectories and sociodemographic profiles could bring about difficulties in taking advantage of digital tools, especially in the case of women.

For the purposes of collecting firsthand experiences, researchers employed a qualitative methodological approach. Through focus groups and interviews conducted remotely, the study identified significant obstacles impeding women's access to quality online education.



Women living in rural areas, and with a low educational and socioeconomic level, tend to have less access to ICTs.

¹ This figure refers to both public and private university students throughout the entire country in the year 2020.

Literature review

The gender digital divide: Approaches and dimensions

The concept of the digital divide refers to the structural inequality in access to ICT. At first, the issue was reduced to a “technological and economic problem”. However, thanks to new insights, we can now treat the issue as a multidimensional phenomenon (Ragnedda, 2017, p. 16).

A wide consensus exists in literature with respect to the digital divide being of three levels; however, this classification may vary. Hereunder, we describe these three levels.

The first level in the digital divide is that of physical access to *ICT*, specifically, the availability of technological resources in a specific geographical region, the physiological accessibility to employ ICT, and the acquisitional possibilities and affordability of these (Milne, 2006). Other authors (Gonzales, 2016; Van Deursen and Van Dijk, 2019) include additional material factors that allow the user to maintain a device or digital service over time, indicating that the emergence of new technologies requires sufficient resources to keep them updated.

Several studies emphasise the physical and material inequalities, which Van Dijk (2018) defines respectively as the possibility to count on readily available digital infrastructure and the necessary resources to ensure their use over time. Incorporating a gender-informed approach, it was found that, generally, women in Latin America possess fewer mobile devices (Rotondi, Billari, Pesando, & Kashyap, 2020) and internet connections than men (Gray, Gainous, & Wagner, 2016). Additionally, women’s access to ICT is determined by their sociodemographic profile; those that have a lower educational level and live in rural areas present lower indices of access to these technologies (Gillwald, 2018; Rotondi et al., 2020).

Several authors have studied the experience of using *ICT* as the second level in the digital divide. This includes digital skills and sociocultural norms that allow or restrict the use of technologies (Robinson et al., 2015; Hargittai, Piper, & Morris, 2018). Highlighted amongst the proposals included in this line of research is the focus on results around access to the various abilities needed to utilise these technologies (Van Deursen, Helsper, Eynon & Van Dijk, 2017; Scheerder, Van Deursen, & Van Dijk, 2017; Van Deursen and Van Dijk, 2019).

Once the first level of access has been overcome, it is necessary to develop skills for employing ICT (Van Deursen and Van Dijk, 2019, p. 361). Cummings and O’Neil (2015)

contend that a greater mastery of this technology correlates to greater indices of self-confidence, economic power, independence, and better-informed decisions among women. Nevertheless, the possibilities for developing these competencies vary, and those historically more vulnerable remain at a disadvantage (Dodel, 2021; Helsper, 2021; Hargittai et al., 2018). Deficient development of these abilities can reproduce pre-existing social inequalities (Van Deursen and Van Dijk, 2019).

Conversely, some authors have signalled a correlation between gender and more constrained patterns in the use of ICT. Usage patterns are determined by frequency of use and activities performed with ICT (Van Deursen and Van Dijk, 2019). The disproportionate domestic burden that women undertake is linked to the limited amount of time they have available when it comes to learning how to use, and experimenting with, digital technology (Antonio & Tuffley, 2014; Bercovich & Scuro, 2014). In addition, evidence suggests that women are more exposed than men to situations of violence and control when utilising electronic devices and the internet (Antonio & Tuffley, 2014, p. 679).



**Women
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and the Internet.**

Furthermore, some authors (Ragnedda, 2017; Van Dijk, 2018) have noted the beneficial or detrimental effects that arise from the use of ICT, which constitutes the third level of the digital divide. A sequentiality exists in the types of digital inequality, meaning that the initial barriers of physical and material obstacles determine the consequences that arise from the utilisation of ICT (Van Deursen et al., 2017).

Cummings and O'Neil (2015) found that when women have greater access to ICT it tends to generate pushback on the part of men, which ends up impacting women's safety both "online" and "offline". Often, female populations report that they have fewer practical skills when it comes to matters of cybersecurity (Dodel, Kaiser & Mesch, 2020). Dodel and Mesch (2018) suggest that cybersafe behaviours are often adopted through the frequent utilisation of the internet. Having the necessary skills to learn to navigate the web safely can lower the risk of becoming a victim of online criminal activity (Dodel et al., 2020).

Even though the digital divide—on both a physical and material level—has recently decreased around the world, a focus on the diversity of local experiences sheds light on the significant advantage that certain groups have over others in their ability to access the skill set and benefits of ICT (Gray et al., 2016, p. 330). Some authors have pointed out that these inequalities are neither isolated facts, nor do they escape pre-existing power dynamics (Robinson et al., 2015).

In particular, talking about gender inequalities puts us face-to-face with a panorama that is as heterogeneous and diverse as there are countries in the world (Agüero, Bustelo & Viollaz, 2020). In addition to the reality of being a woman, living in a rural area, being older, speaking an indigenous tongue, and not having economic resources or time, are circumstances associated with a more unfavourable situation with respect to the digital divide (Barrantes et al., 2018; Benítez, 2018). The different levels of the digital divide intersect with diverse social, economic, and political inequalities (Van Deursen et al., 2017), which reaffirms the importance of employing a multidimensional approach in addressing access to ICT (Ragnedda, 2017, p. 10).

Tertiary-level education in Peru 2020-2021

Before the pandemic began, official statistics showed considerable differences between women and men ages 25 and older in terms of access to education. While 19% of men reported having reached tertiary-level education, only 16% of women reported the same (INEI, 2020a).

Quality tertiary-level education is expected to generate individual and collective benefits, including social mobility (Cuenca, 2012; Ames, 2013; Benavides et al., 2015). However, certain gender gaps remain hidden in plain sight, minimising the positive impact of a tertiary-level education on women—for example, obtaining better salaries or job positions—(Sánchez, Favara & Porter, 2021). With the spread of online distance learning in the wake of the COVID-19 pandemic, it became evident that challenges around access to digital technologies would be one of the main issues.

Figures indicate that the first level of the digital gap between men and women has been decreasing amongst the segment of the population with more education (INEI, 2020a). So, in 2019, 94% of female university students on a national level had internet access, compared to 93% of their male peers (INEI, 2020a). Notwithstanding, and as stated previously, gaps in access are characterised by their multidimensionality. Recent evidence suggests that when observing differences between female populations with distinct sociodemographic profiles, inequalities in patterns of usage—for instance, restrictions and control of access—can vary.

Rojas (2021) compiles the experiences of men and women as they progress through remote tertiary-level education in Peru, utilising evidence from the Niños del Milenio (Children of the Millennium) project. According to their sample, 85% of women indicated that, because of the pandemic, they dedicated more time to household chores, compared to only 72% of men. This evidences the strain that recurring traditional gender roles continues to have, especially in households with lower SEL (Rojas, 2021). At this point, the study observes a clear effect of gender roles in the opportunities to take advantage of digitalised services, such as distance education.

It is noteworthy that evidence on the digital gender gap in tertiary education in Peru is insufficient, especially concerning the large-scale transition to distance education. At the same time, the importance of incorporating multiple variables in the study is stressed, including area of residence and socioeconomic status.

Methodology

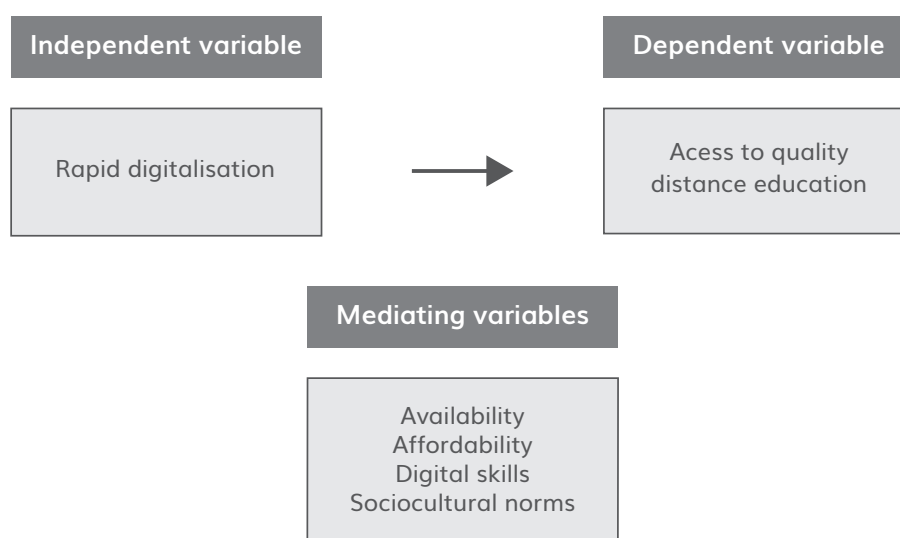
Against this backdrop, it is relevant to question the effect of the transition to distance learning on populations that have commonly been hindered by the digital divide. The rapid digitalisation brought about by the COVID-19 pandemic limits the exercise of rights by those populations that have been most excluded by the digital divide, particularly women. As a result, they are marginalised when it comes to socioeconomic opportunities and access to public services.

Rapid digitalisation is considered an independent variable that affects the access women have to quality education. Observations identify a set of variables that factor into the relationship between both processes.

This study intends to answer the following questions:

- To what extent has rapid digitalisation limited access to quality distance education for women from two public universities in Peru?
- Based on the experiences of female Peruvian university students during the COVID-19 pandemic, what lessons can be gleaned to reinforce the positive use of digital technologies in distance learning?
- What reforms are critical in promoting gender equality within the scope of online tertiary level education in Peru?

Figure 1. Summary of conceptual framework



Source: Southern Voice (2021).

Table 1. Description of study variables

Variable	Type of Variable	Definition
Rapid digitalisation	Independent variable	The process of integrating digital resources into people's daily lives at an accelerated pace.
Access to quality education	Dependent variable	The possibility of creating major opportunities for personal and collective development by participating in a learning process.
Availability	Mediator variables	The possibility that a digital service can be acquired in a geographical area (Milne, 2006, p. 3). This includes telecommunication infrastructure.
Affordability		Refers to the connection between household income and the costs of available services (Milne, 2006, p. 2).
Digital skills		Learned skills and practices for creating, critiquing, consuming, and contributing to digital content (Flew & Smith, 2014)
Sociocultural norms		Gender roles systematically exclude women from occupying digital spaces, thereby limiting the benefits that they could otherwise obtain.

Source: Prepared by the authors.

Participant selection

Fifty-two students, 26 men and 26 women, from two public universities were contacted: The National University of San Marcos (UNMSM) in Lima, in the Department of Lima (coastal region), and the University of the Peruvian Amazon (UNAP) in Iquitos, in the Department of Loreto (Amazon region).

To characterise our sample, we used data from the 2020 National Households Survey (ENAHO), as it is the most up-to-date database of the INEI.² According to said survey, 20% of UNAP students share cell phones, in comparison to 3% of UNMSM students. The latter access materials for their online courses via virtual platforms or webpages. 92% of UNAP students have accessed their classes remotely through text messaging—for example, WhatsApp—in comparison with the 2% from UNMSM. Similarly, certain notable differences appear with respect to learning via audio recordings: 50% of UNAP students compared to 9% of UNMSM students. This data offers insights into the different dynamics that exist with respect to the availability of devices or the functionality they offer (for example, mobile apps).

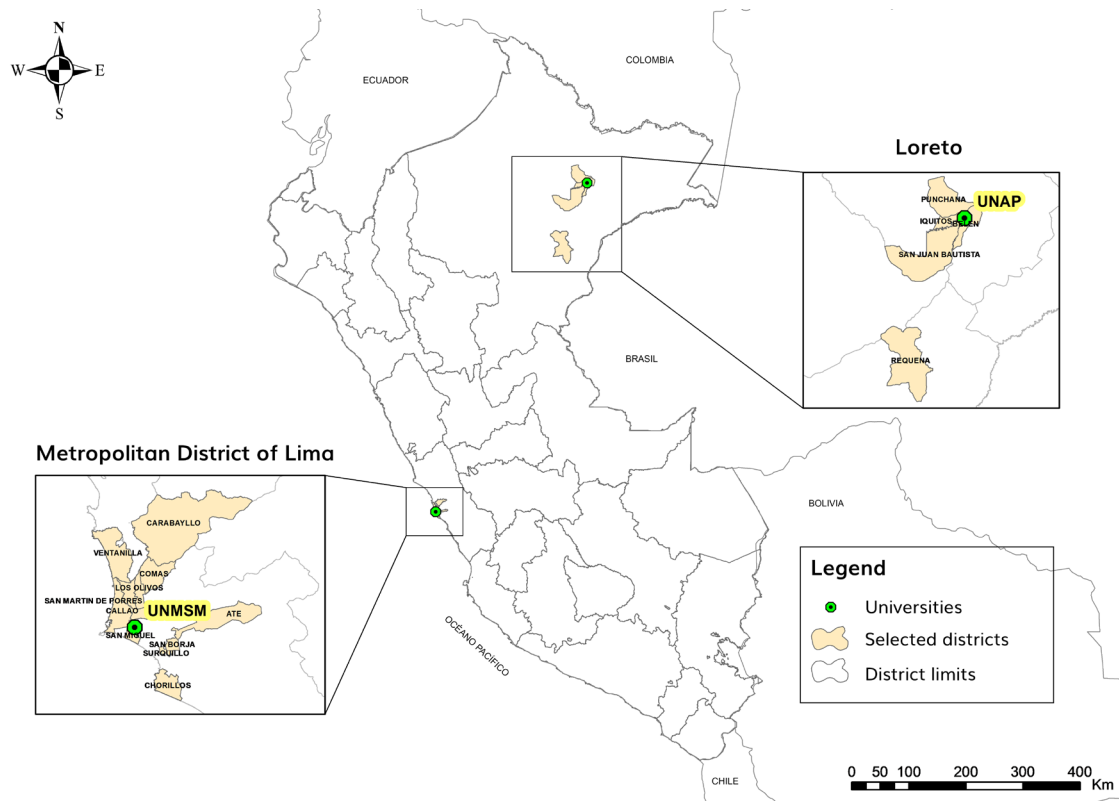
This selection considered acute differences in connectivity between the two regions, as well as the importance of the educational institutions mentioned, which are the ones that have the greatest number of students in their respective localities. The focus of the study is not strictly comparative; rather, it intends to capture, in detail, the diversity of contexts that exist within Peru's borders, given its sociocultural differences and varying degrees of access to quality internet.

It was decided to work with students from one area with high internet connectivity and another with very low internet connectivity. Recent data indicates that the population of internet users in the Metropolitan District of Lima is close to 74%; while in Loreto, one of the most isolated areas in the country, this figure stands at 33% (INEI, 2020b).

For the sake of convenience, the type of sampling used was probabilistic, while the method employed in the recruitment of students was snowball sampling. This technique was utilised because of the vastness of the university community, and students hailing from districts with different SEL indicators were prioritised.

² We analysed 696 answers from UNMSM and 405 answers from UNAP, with similar response rates between men and women. Despite not being statistically significant on a national level, this information is important for preliminarily describing the sample.

Figure 2. Distribution of Participants' Home Districts



Source: Map prepared by the authors.


Lastly, interviews with public officials were carried out, selected for their role in developing a government response to the pandemic. The aim of these interviews was to help us better understand the limitations of the transition to distance education in the wake of COVID-19, from the perspective of a state provider. As such, the study sought to identify the heterogeneous impacts of digitalisation and, subsequently, propose policies that take into account contextual differences with respect to access and use of ICT.

Data collection techniques

We employed two techniques for compiling data: semi-structured interviews—exploratory and supplementary—and focus groups. Semi-structured interview guidelines allowed for interviewees to propose their own topics of interest, such that the information was not exclusively limited to what was presented by the interviewers (Guber, 2001).

First, 12 male and female students were interviewed: 6 from UNMSM and 6 from UNAP. The distribution is detailed in Appendices 8 and 9. The structure encompassed the mediator variables of rapid digitalisation—availability, affordability, literacy, and

sociocultural norms—across five thematic areas: (i) physical access, (ii) personal trajectories in the use of ICT, (iii) digital literacy, (iv) uses of ICT during the pandemic, and (v) sociocultural norms in the home (see Appendix 5). Afterwards, eight focus groups with five participants each were conducted. Some of the thematic areas from the previous phase were kept. The sections referring to access, personal trajectories, and participants' use of ICT during the pandemic were the most important. However, the questions were as much as possible adapted to local realities, without abandoning the objectives of the study (see Appendix 3). Both techniques—semi-structured interviews and focus groups—provided insights into students' experiences with distance education and helped us elucidate differences between female students and their male peers.



The students found it necessary to use personal networks to establish a self-organized redistribution of technological equipment.

Finally, public officials were interviewed. They were selected for their role in formulating a state response to the pandemic. This was useful for answering the question related to the need for public policies that favour the delivery of quality education services, by allowing us to understand the limitations perceived by public system actors, in addition to their prejudices and notions with respect to distance education. This way, strengthening the understanding of the heterogeneous impacts of digitalisation was expected, as well as proposing policies that take into account contextual differences in access and use of ICT.

In brief, these techniques have allowed us to understand the effects of rapid digitalisation on female students at the tertiary education level, from a perspective that addresses both the supply of educational services and their demand.

Ethical considerations

A protocol was elaborated to provide information about the purpose of the study, so that female and male participants could give their informed consent. The voluntary and anonymous nature of their participation was emphasised, as well as the confidentiality of the information collected.

Given the context of the COVID-19 pandemic, two different means of interaction were used to safeguard the well-being of both the interviewees and the members of

our research team: phone calls and video calls (see Appendix 1). This initiative also came about through our previous understanding that the female and male students interviewed could have varying degrees of internet connectivity. Similarly, meetings were coordinated around the interviewees' availability, and it was assured that they could count on a space that offered confidentiality. Keeping in mind that the pandemic caused a widespread economic crisis, and, in appreciation of their efforts, availability, and time, a modest financial compensation for participants was arranged.³

Data collection and processing

In the case of UNMSM, telephone exploratory interviews were conducted to ensure participant safety and comfort. Focus groups were carried out via video conference on Zoom with the goal of developing good rapport and greater trust. At any moment, participants could opt to participate with both their camera and microphone on, or just their microphone, without this affecting the quality of the information collected. In both focus groups with female students, participants opted not to turn on their cameras. In contrast, male students felt comfortable participating with their cameras on in both sessions.

In the case of UNAP, interviews were conducted over the phone, given that the internet signal in the city of Iquitos is generally intermittent and of poor quality. Additionally, convenient times were arranged for the participants based on their schedules and the quality of their phone signal. In the focus group phase, both video and telephone group calls were tested. While the former allows for a more fluid and visually interactive dynamic, signal interruptions forced to opt for group calls.

Whether conducted by video conference or by phone, the dialogue sessions were documented via audio or video. Both the men's and women's focus groups were respectively moderated by a researcher of the same sex and conducted with logistical support.

The data collected was systematised into matrices organised by the topics and questions that arose from each dataset. Two matrices were used in each phase: one for male students and another for female students. Additionally, the information in each matrix was organised according to the participants' corresponding university, while noting key ideas and quotes for analysis.

³ The equivalent to USD 8.

Biases and limitations

Our qualitative approach allowed us to gain insights into female and male students' situations through their own perspectives and opinions. The topics addressed served to better understand the multidimensionality of their experiences. Additionally, the virtual meetings helped to understand, in a practical way, how female and male students interact in these channels; for example, to see if they felt comfortable turning their cameras on during video calls or to determine the stability of their internet connection.

It is worth delving into the possible biases of this approach. Given that long-distance techniques were employed, interactions with students only occurred through digital means. This is to say, the study did not have access to other everyday spaces of the students.

Lastly, the study addressed the digital divide that exists among students that were, in fact, able to continue their studies during the pandemic. This limits our understanding of the situation of a large segment of the university community for which studies were interrupted.


Findings

This section condenses the information gathered in the three phases of data collection into five thematic areas: (i) access, (ii) digital skills, (iii) household dynamics, (iv) safety in virtual spaces, and (v) mental and physical health. With this data, difficulties experienced by the students due to the public education system responses are articulated.

Physical access: Difficulties, self-management strategies, and aid allocation

First, we addressed the physical access in terms of availability and affordability. These two concepts are distinct in that the first looks at infrastructure and the external possibility that subjects could own and use ICT, while affordability refers to the economic capacity to acquire devices (Milne, 2006). We couch this definition in the spectrum between formal and effective access (Selwyn, 2004); in other words, we contrast the availability of equipment provided by the university with the technologies that female and male students actually have at their disposal. In the words of Helsper (2021), at this first level in the divide, access to ubiquitous, quality technologies should be automatically guaranteed.

Exploratory interviews shone a light on the vast differences in terms of infrastructure and possibilities for connectivity between geographical regions. In particular, female and male residents of Iquitos reported major dissatisfaction with respect to the velocity and stability of their internet connection. This deficiency affects the whole of the university population—lecturers and students alike—and directly impacts the online educational dynamic. Another factor responsible for the deficient internet connection is climate. In the city of Iquitos, the constant heavy rains cause interruptions in internet service that affect the entire population.



Poor internet connection affects both teachers and students, and directly impacts digital educational dynamics.

Lecturers had also commented that Iquitos is the city with the worst internet possible. [...] They (students) don't like doing classes online because we have problems, we always have problems. The students complain because they can't connect. Lecturers also complain because they can't connect. It is our daily bread, so to speak (Female student 1, UNAP, Iquitos).

We found that many participants in the study connect to the internet exclusively via mobile data, a fact that is in line with the responses offered by UNAP students in the 2020 ENAHO (households survey).

Well, I connect via mobile data because it is the only option in my case. But, from what I hear, even my classmates that have Wi-Fi or a modem end up connecting via their mobile data because it is faster than their modem's internet connection (Female student 1, UNAP, Iquitos).

On the other hand, 5 out of 12 participants in the exploratory phase indicated that they did not have problems covering the costs of their internet service. However, the testimony of Female Student 1 (FS1) from UNAP shows us the flipside; she indicates that, as students, it is more difficult to cover their costs independently. In Peru, it is common for female and male students to work part-time to cover education costs (Balarin, Alcázar, Rodríguez & Glave, 2017). In fact, those who are unemployed or who live on their own have reported dealing with this financial problem more.

Self-management strategies

In response to problems around access to ICT, students from both universities developed a series of “self-management” strategies. In broad terms, this concept refers to individual or group efforts aimed at resolving a need that has arisen from the pandemic. Depending on the type of approach, these strategies are grouped into three categories: reallocation, sharing, and schedule modification. Consistent with the information compiled through our research, these types of peer-to-peer support strategies have been observed in other studies focused on groups of “digitally excluded” young people with unfavourable, pre-existing situations that affect their access to and use of ICT (Eynon and Geniets, 2016).

Students mentioned that their universities mainly offered support by providing them with digital devices: portable modems or SIM cards for mobile devices, each with internet connection packages (see Appendix 11). However, students at both universities shared a prevailing view that there was a lack of precision in identifying which students truly required this assistance. There is also consensus on the limitations of their respective educational institutions—and the public system in general—to effectively allocate what few resources are available.

Well, that's the type of thing we saw when students from every department went to pick up a modem offered to them by the government. But there was a lack of communication with those students [...] not everyone that showed up really needed those devices. And people that actually did need them weren't there, they weren't included. This was a bit unfair. The way I see it, and I think, the way everyone sees it, it was total chaos (Male student 7, UNAP, Iquitos).

In response to this situation, students saw the need to make use of personal networks to establish an independently organised redistribution of this equipment, “informally” handing off these devices to those classmates that needed them more. In certain instances, students received support from relatives that stepped up to also provide assistance.

For example, my sister's friend received a device and, because she knew that my sister was having issues with her internet, she let my sister know it was available [...] in one form or another, it has saved us when our internet has cut out during an important presentation, or something like that (Male student 15, UNMSM, Lima).

Some students from UNMSM mentioned efforts by student organisations to facilitate this same type of redistribution. Moreover, these organisations resorted to alternative strategies, such as fundraising and raffles, to provide economic aid to those classmates

that found themselves in particularly complicated situations. This is how the student body sought to resolve the shortcomings and limited reach of the allocation strategies offered by their respective institutions.

As in the case of some student organisations, such as the Centre for Students of Social Work [...] if someone had an extra laptop or a mobile phone that they weren't using and wanted to donate it or maybe lend it out, the Centre would facilitate this so that another student could use it (Male student 16, UNMSM, Lima).

In my department, I've seen the will to work on these issues, to articulate them, and pressure the authorities (administration) [...] These same students have conducted surveys and an assessment to call attention to the problem and resolve it (Male student 19, UNMSM, Lima).

The Centre for Students of Sociology held a raffle in which several of their classmates participated, and the funds raised went to students that needed them, it was organised by and for the students (Male student, 17, UNMSM, Lima).

Another strategy for solving connectivity problems was the in-person sharing of resources. To access an adequate or viable connection, some students moved to their classmates' or relatives' homes with better internet connections—be they of higher quality or greater acquisitional capacity. In these scenarios, some homes became designated spaces for studying or attending class. They evolved naturally from the practice of sharing equipment. Particularly in the case of UNAP, several students would gather in person and would use the same device—a laptop or even a smartphone—to connect to class.

My sister and I concluded that, on class presentation days—since, here, Bitel's internet seems to work better in certain areas and it turns out that the internet is quite fast at my aunt's house—so, on days when we had to give a presentation, my sister would go present from there. Or, she would give her presentation from a friend's place, someone who would share his Wi-Fi with her (Female student 10, UNAP, Iquitos).

Parallel to the described responses, female and male students negotiated certain measures to guarantee their continued studies on a daily basis. In the case of UNAP, where there were more challenging connectivity issues, some students, in coordination with their peers and lecturers, planned changes to class schedules to have them coincide with times when local internet networks provided a faster and more stable connection. This meant that, on occasion, classes, presentations, and assessments shifted to early dawn sessions, starting between 4 and 5 in the morning, or nighttime hours—starting between 10 and 11 at night. This way, they could make use of a relatively more stable

internet connection, one that would allow them to enjoy better class dynamics and take tests or exams

In my case, yes, we had to coordinate with the lecturer. We had class scheduled from 6 to 7, but we had to get up earlier so we could have more efficient classes because between 6 and 7 in the morning, the internet didn't work. I think, more so because of the lecturer, because their provider, I think, was not good. We had to have class at 5 in the morning (Male student 7, UNAP, Iquitos).

For this reason, all of us agreed to have class in the morning, especially in the pre-morning hours. Because that is when the connection is faster. We could attend our classes before 7 (Male student 9, UNAP, Iquitos).

I remember that we began our final class presentations at 11 at night, and by the time everyone finished presenting it was 3 in the morning, precisely because of the internet connectivity issue. [...] Had it not been like this, we would never have been able to get through our presentations (Male student 10, UNAP, Iquitos).

When it was not possible to resort to these measures, or when the result was insufficient, classes took on a more impromptu nature. For example, when the quality of the connection made real-time dynamics impossible, lecturers would email class materials to students, and in some cases, they would even give lessons via WhatsApp—in the form of text messages—a phenomenon that has been observed in other countries of the region (Gil, 2020; *Laboratorio de Economía de la Educación* [Laboratory for the Economy of Education], 2021).

Whenever we had connectivity problems over Zoom or (Google) Meet, the lecturer would cancel the virtual class, and we would instead coordinate things via WhatsApp [...] the lecturer would then send us assignments or, if we were scheduled to give a presentation, well, they might suspend class and send us an assignment that we hadn't been counting on for that day, and so forth. (Female Student 14, UNAP, Iquitos).

Limitations of available information and administrative capacities

Accessibility issues and the need to develop self-management strategies are closely linked to the State's ability to respond to challenges posed by these new circumstances, particularly with respect to making informed and efficient decisions. Between 2020 and 2021, the Ministry of Education (MINEDU) recognized these existing technological gaps and so implemented crucial measures to guarantee a quality transition to distance education (see Appendix 11). More specifically, Emergency Ordinance 117–2020 and

Legislative Act 1465 took effect, which provided PEN⁴ 61.4 million in financing to 48 public universities throughout the country. These funds could be used to pay for internet services and acquire computer equipment. In July of 2020, students and lecturers began receiving portable modems and SIM cards. In the case of UNAP, 2,376 students received these devices, compared to 4,362 students at UNMSM (MINEDU, 2021). Beneficiaries were selected via the Household Allocation System (SISFOH).

At this point, it is worth considering the perspective of qualified interviewees that have firsthand knowledge of this process and its limitations from their experience of working within the state apparatus. The opinion of these individuals poses a two-tier problem. On the one hand, limited access to up-to-date and detailed information about the tertiary education situation hindered efforts to efficiently assign available resources. Additionally, university autonomy meant that each educational institution was responsible for implementing support and control measures. This generated greater difficulty for those institutions with lesser established administrative capacities.

We implemented a measure to provide SIM cards to public university students. We ended up having enough funding to supply more or less 70% of students and 100% of lecturers (with equipment). But public universities had to implement this on their own. In other words, we provided them with the money, the (funds from the) MEF (Ministry of Economy and Finance), but the public universities never managed to deliver... I don't recall exactly what that figure is, say, to which ones it reached (Martín Benavides, former minister of education).

Drawing from the experiences collected here, a vast majority of the people interviewed do not have access to quality digital technologies. The availability of ICT is not guaranteed in many cases; while in others, connectivity issues interrupt the use of these technologies. In all, the first level of the digital divide—referred to as physical access—persists amongst university students.

Digital skills: Digital literacy, educational challenges

Digital literacy

During the exploratory phase, none of the participants negatively ranked their ability to use digital tools. Nevertheless, in some cases, dissatisfaction with participants' own abilities acquired up to that point was evident. This was due to shortcomings in their

⁴ Peruvian soles.

school training and a lack of economic resources with which to continue developing their skills. One participant, for example, noted that he had had to teach himself several skills.

I've learned on my own. Training is not offered for free in Iquitos because it costs money. There are computers at the university. There, I suppose you should know the basics. During the pandemic, there haven't been in-person classes with computers (Male student 3, UNAP, Iquitos).

The study makes clear that the digital literacy process does not end with the basic schooling period. In many cases, it encompasses learning on your own, be it by necessity, interest, or habit. Notably, FS1–UNAP improved her skill set since the beginning of the pandemic, given that she had to get used to utilising functions that were new to her.

In my opinion, [the lecturers] were not prepared [for online classes]. I've noticed that there are some lecturers that have trouble using certain computer programs [...] As the year has gone on, students have learned on their own how to protect themselves and their social networks (Female student 1, UNAP, Iquitos).

So, of course, using that logic, the students—and, for that matter, teachers—had problems with digital skills. It follows that metacognition, learning how to learn [...], was very difficult, well, because what lecturers had to do was reinvent themselves. [...] The narrative of this new model asked very complex things of the lecturers (Sandro Marcone, steering committee member and advisor to the National Education Council).

Other students indicated that, even though they generally felt prepared to employ digital media when distance education began, they had difficulty with adapting to certain computer programs. Given this, universities facilitated training sessions. For example, participant FS2–UNAP took advantage of one of these training sessions to familiarise herself with the registration platform. On the other hand, some students organised amongst themselves to share this kind of knowledge; FS4–UNMSM shared that, amongst students at UNMSM, they organised their own collective training workshop in digital media.

Educational challenges

The pandemic's initial scenario was marked by public efforts aimed at addressing physical access and connectivity issues, given that these represented the most obvious gap. It involved focusing the state response on the delivery of physical equipment to compensate for what students lacked. However, the strictly educational challenges around

transitioning to online instruction went unnoticed. Broadly speaking, the migration of content to the digital realm was the responsibility of each lecturer, which affected the quality of the education offered.

It was so that the model began to shift for the lecturers themselves. Once they understood they were being forced to transition away from in-person classes, what they chose was the closest thing to in-person classes, and their first instinct—echoed by academic departments—was not just an individual reaction but a collective one: to simulate the classroom. The virtual classroom on the Zoom platform was, apparently, the answer (Sandro Marcone, member of the steering committee and advisor to the National Education Council).

To make use of these resources, you need other abilities apart from digital skills; ones that were not sufficiently developed during this period. For example, there is a link between problems with individual time management and a lower willingness to study via digital platforms. This type of limitation has also been observed in other, similar contexts, like remote work, with differing effects stemming from diverse sociodemographic traits, including gender (Frize et al., 2021).

Conversely, there is a void when it comes to lecturers' abilities to utilise the full scope of digital media. In the case of both instructors and students, it is necessary to distinguish between knowing how to "utilise" certain technologies and knowing how to "learn" and "teach" by implementing these. Before the pandemic, this latter aspect was largely absent from student and lecturer training.

The main problem with distance learning in Peru at the moment—although I think it also exists in several countries throughout the region, and even other continents—is this tendency to want to virtualise in-person interactions. And while that won't effectively change with the process of building better online classes, this situation will persist regardless of how much you train lecturers, how much material you give them, or whether you provide them all with internet connectivity. [...] There is no logic to how learning and teaching are different in virtual spaces. [...] Looking towards the future, what we need to do is make a real change in how we envisage online education and distance learning in the scope of higher education, knowing that [...] it's not just about lecturers' abilities, it's also about students' perspectives and the ability to use a different approach [...] an approach that's designed for virtual learning, and by this, I am referring to the more educational side of things, rather than merely knowing how to upload a video (Ricardo Cuenca, former Minister of Education).

Future possibilities for employment

The widespread view that educational quality has diminished during the pandemic is related to the difficulties presented in this study. It is reflected in questions raised about the entirety of the education being provided, and how these educational shortfalls will impact students' prospects of finding employment in the near future, given the perception of limitations related to their learning.

There were no notable differences between men and women—nor between students from either university—in their perceptions and concerns regarding the negative effects of the transition to online classes. In other words, and strictly on an educational-experience level, any concerns regarding the possible negative impact that rapid digitalisation will have on their entry into the workforce appear to be independent of students' gender. Rather, these perceptions have to do with changes in the dynamics of their interactions, as well as the practical experience that is required for their professions.

Obtaining a degree that demands in-person training and hands-on experience make students feel more satisfied and less concerned about their education. That is not the case with students obtaining a degree based on presentations and other tasks common in online education. The university degrees perceived as most affected were those that required practical experience—the use of machinery, laboratory research, work with patients, or fieldwork, amongst other similar dynamics—which, so far, cannot be satisfactorily substituted in the virtual world. Broadly speaking, concerns related to the detrimental effects of distance education are not the same for all students and are concentrated the most in those pursuing natural sciences, engineering, and medical science degrees.

Well, I'll tell you something. There is a certain fear amidst those with experiential degrees that have to treat or operate on people (Male student 4, UNMSM, Lima).

It's one thing to know all the theory; it's another thing to apply it to real life, there's a big gap there. There's trial and error. It's not always the case that if you know the theory, the entire theoretical framework, that you'll be able to do things well, that's why you need practice. In this era, there's no practice, and of course that's going to have an effect (Male student 3, UNAP, Iquitos).

In recent years, some lecturers would take you to visit worksites (companies), but because of the pandemic, they no longer could. It really disadvantages me; I would've loved to visit companies and familiarise myself with the job (Female student 16, UNMSM, Lima).

Additionally, students who began their university training during the pandemic—those whose only educational experience has been through digital means—are considered to be more affected than their peers that experienced in-person education at some point in their education. The perception associated with this concept revolves around exposure to a “normal” educational experience, considered to be of greater quality, which is presented as a benchmark for what female and male students should expect.

Household dynamics

With respect to this topic, the composition of the domestic unit and the distribution of household chores directly affect the daily routines of the male and female university students we interviewed. With the initial lockdown due to the pandemic, domestic responsibilities changed for many of the students; they even increased. At this point, the distribution of activities between male students and female students depends on who lives in the household and how much time these chores require.

To understand these daily routines—which incorporate academic responsibilities as well as domestic ones—it is worth basing our approach on the use of time. In the exploratory interviews, we documented that the people who dedicated the most hours to domestic chores were FS1-UNAP and FS3-UNAP, both residents of the city of Iquitos. Both students indicated that, as they are each the oldest sibling, they spend the most amount of time helping their mothers with food preparation, laundry, cleaning, and tidying up. FS3-UNAP stated that she and her siblings had to split the chores, both housekeeping and caring for their progenitor, when their mother fell ill. In this context, she assumed most of the responsibility and took on a more active role, similar to her mother’s.

Generally, miss, I am a person that likes to help others. My mom was really ill. Thank God, I somehow didn’t get sick, but I kept an eye on her, and also on some (female) classmates. One of my classmates’ dads died, so we were right there with her, supporting her as classmates. [...] I had to help my mom. Everyone was sick, and sometimes, I had to be my mom, for my siblings. We are six siblings, three are little, I am the oldest (Female student 3, UNAP, Iquitos).

In the case of female students living in Lima, time dedicated to domestic chores drops down to one or two hours per day or, in some instances, none. Similarly, in the case of male students in the city of Iquitos or Lima, none of them said they dedicate more than three hours per day to household chores. While this does not constitute a representative sample, it does provide sufficient insight to keep delving into the roles of gender and their effect on the daily routines within the focus groups.

It is also worth underscoring that, for those students living by themselves (FS5-UNMSM, MS3-UNAP, and MS4-UNMSM), carrying out domestic chores did not take up more than two hours a day. In the case of MS3-UNAP, he takes care of his chores at different times throughout the day because he has more autonomy in organising his time, distributing it amongst his responsibilities. His case contrasts with the situation of participants FS1-UNAP and FS3-UNAP: these students had a lower degree of autonomy in determining how to utilise their time since they had to take over chores usually performed by their mothers—who, for reasons related to illness or work, were absent from the household. Both students had to also be responsible for the care of their younger siblings.

Notably, students view the time they dedicate to household chores and caregiving as time they would otherwise be spending commuting to classes. Thus, the impression is that there's a positive balance in the total time made available and, in this sense, new household chores do not necessarily represent a hindrance to their academic performance.

With respect to time, I remember that I would wake up at 5:30 in the morning if I wanted to go by car. I live two-and-a-half hours away from the university by car. I would get up at 5:30 in the morning to arrive in time for my 8:00 a.m. classes, and then catch up on sleep while riding in the car [public transport/rideshare] or at some point throughout the day. I couldn't go back to my house to eat because I had to stay there all day, and my classes were scheduled at different times: in the morning, in the afternoon, or at night. [...] So, with

respect to time, I'd spend the entire day at the university. Now, instead, I have much more time available. Sure, there are certain household responsibilities and all that, but I have more time for other activities... like, I don't know, going for a run in the morning (Male student 25, UNMSM, Lima).

Well, in my case, I was already working and that's why I think it was a good thing when it came to my classes. My classes started at 6 [in the afternoon]. I'm not sure if you've experienced it, but leaving work and heading to your university during rush hour is a disaster for those coming from Javier Prado, and those travelling from the



Female students register greater participation in domestic tasks, including cleaning, cooking and taking care of family members.

north, too. So, most of the time, you would get to class late [...] In that sense, you have more flexibility (Male student 23, UNMSM, Lima).

However, experiences do vary when it comes to students' gender. Female students reported higher participation in domestic chores, including cleaning, cooking, and taking care of family members.

Yes. Now [since the pandemic began] I take care of everything at my house, from cooking to cleaning to taking care of my little sister. She and I take care of household chores, whereas before, this didn't happen. My mom, or sometimes my dad, would do it. But now that we're both at home, it's what we have to do (Female student 8, UNAP, Iquitos).

Broadly speaking, yes, I do perceive that, especially amongst my female friends; that if you have a younger sibling, you now have to take care of them all day. Same thing with older family members [...] so, I believe that this has indeed affected them somehow (Male student 15, UNMSM, Lima).

Clearly, experiences vary according to the makeup of the household. Especially in those households with school-age children, female and male university students tend to spend time taking care of them. In certain cases, other factors, such as mental exhaustion from caretaking, blur the balance of time.

In my case, with this new educational format, I've got a little sister at my house, and she doesn't go to school. She does it all on her laptop and, well, since last year, I've been her teacher because my parents are busy working and I'm the only one that can help her. So, it's up to me to watch over her, and I spend my mornings taking care of her. [...] It's a little harder to teach someone that young and help them understand things (Female student 7, UNAP, Iquitos).

Experiences also vary depending on the household rules in each family. For example, some students acknowledge that their families are particularly "egalitarian" compared to others, given that the distribution of household chores among family members is more even, and ignores gender. Nevertheless, in other cases, domestic chores are unevenly distributed between brothers and sisters.

In my case, I have several sisters, but when my mom travelled, it was harder because we had to cook and clean. And with schoolwork, it's quite burdensome. That was one of the challenges my family faced during the pandemic. [...] [The distribution of chores was fair] more amongst my sisters, not so much with my brothers.

They do more of what they personally want to do, but when it comes to the house, no. That's just how it works with boys, in other words, men. However, with my sisters, yes. For example, one would sweep the floor, one would clean the bathroom; and, in my case, I would cook, and my little sister would help by making beverages or taking care of some other little things. (Female student 7, UNAP, Iquitos)

Safety in online educational settings

Based on the testimony of participant FS1_UNAP in the previous phase, we proposed delving into the topic of safety around bullying and harassment. Even though not all female students mentioned having been exposed, directly or indirectly, to this type of event, at least one participant in each discussion group knew of a case, be it suspected, in the form of a rumour, or stemming from a public accusation. In some instances, they referenced stories that had taken place prior to the pandemic, in the context of in-person classes.

Female participants perceive digital settings as secure spaces given the absence of physical interaction or proximity with lecturers or other male peers. Also, the fact that virtual interactions are recorded—as text, in the case of chat-style platforms (email, WhatsApp), and as video, in the case of audio-visual platforms (Zoom, Google Meet)—creates an additional layer of protection that deters possible acts of harassment. Moreover, Trajtenberg, Dodel, Sanchez, Cabello & Claro, (2021) suggest that the perceptions of risk, psychological traits, and risky “offline” behaviours can play a role in cyberviolence experiences. For instance, female students may feel that certain situations can be replicated in virtual spaces, such as when an aggressor seeks to meet in an intimate space. In this case, for example, it could mean in a private chat.

I believe that [harassment] is something that typically occurs in in-person settings. It shouldn't, but it does. The university doesn't tend to protect or take the side of its female students. Quite the opposite, really, as it always takes the lecturer's side. Whenever that doesn't happen, it's because the university feels media pressure, or the student suddenly reports the accusation to the media. [...] Perhaps it wasn't observed much online because, being a virtual setting, the female student could have evidence, take screenshots [screen captures], have proof that implicates the lecturer, which is harder to prove in in-person settings. It's harder to obtain evidence when the harassment takes place in-person. Maybe because of that, online harassment didn't occur so blatantly, for fear of being caught (Female student 9, UNAP, Iquitos).

I think that in virtual settings, I'm not aware of any [cases of harassment]. In person though, I've seen it quite a bit. And I think that that's the drawback because other people can't suddenly find out that something is happening. On the other hand, when

it happens in person, you can notice such things. Suddenly, things get weird because there's a sort of blackmail at play. But when it's online, you really don't realise certain things or note certain attitudes because everything remains private (Female student 17, UNMSM, Lima).

Nonetheless, in some testimonies, female students mention cases of harassment that have occurred in online education. In contrast to what was previously reported, for some female students, the need to interact with lecturers over private or personal messaging platforms, such as WhatsApp, involves an elevated risk of harassment.

I know of one classmate that withdrew from a course because they were creating WhatsApp groups in which they would send files... The lecturer of that course had everyone's contact information. So, he started to send suggestive messages to that student, which made her feel uncomfortable because he would always invite her over to his house so that she could pick up the syllabus. He even wanted to designate her as a representative for the class. In the end, she ended up dropping the class because the situation kept stressing her out. So, she didn't know who to turn to (Male student 10, UNAP, Iquitos).

Additionally, some classmates and lecturers were alleged to have taken part in *hacking*, that is, they accessed personal accounts without permission.

Yes [the victims of harassment have largely been female students], because the majority of my female classmates experienced harassment. Sometimes, their accounts would get hacked, and it was complicated. For some, yes, [the harassment would come from] people they didn't even know, or sometimes from their own classmates, or at times, even their own lecturers (Female student 1, UNAP, Iquitos).

Some female students expressed feeling insecure and scared when it came to sharing spaces with lecturers. They would talk about accusations filed before the pandemic that had not been duly investigated, nor had the academic institution sanctioned the lecturers. The lack of institutional support becomes another relevant factor in the experiences of feeling unsafe in educational settings. This cannot be considered an exclusive variable linked to the transition to online education. However, knowledge of previous harassment cases and their continuation in these new online dynamics is a topic that merits further investigation. Similarly, the lack of support for female students on the part of other faculty members is a point of criticism.

It just so happens that, one day, [someone] published a post [about a lecturer] on a Facebook page. The Facebook page was [called] "Harassing Lecturers of Peru." The post was about a lecturer that had harassed a student at the Catholic University.

They had [requested] that, as punishment, the lecturer no longer be permitted to teach. However, a group of lecturers signed and submitted a petition to—if I'm not mistaken—the Rectorate, asking that the institute not remove him from in-person classes. And one of the lecturers that signed that request was my lecturer. So, when we found out—and it took us all by surprise—it was really ugly because I felt that the victim did not carry the blame. And, although my lecturer wasn't the one that harassed that female student, in a way, he became an accomplice the moment he signed that letter (Female student 9, UNMSM, Lima).

The subject of safe spaces was also addressed in focus groups consisting of male students. However, and in contrast to the female focus groups, men never mentioned knowing or having been exposed to these types of events. This observation sheds light on the notable difference that exists between experiences that are influenced by gender: from their point of view, men don't view or identify safety as an issue for themselves.

Well, I think, the truth is, I've never heard much about it. But there have always been those types of comments, frequent, but nothing specific. Just a topic of conversation, like teasing or screwing around. In other words, nothing specific (Male student 8, UNAP, Iquitos).

Mental and physical health

To the extent that physical and mental health is a particularly important issue in the context of the pandemic, the study gathered information about participants' relevant experiences.

Students mentioned that the most notable impacts of transitioning to online classes were experienced at the beginning of the pandemic. During this period, students felt the effects on their mental health due to changes in their routine, social distancing measures, the general fear of contagion, and the need to modify spaces and resources at home for studying.

Spending so much time attending online classes can be really stressful [...] When I started the year, I just took on more than I could handle, and the truth is... I almost collapsed. Being stuck here in a room, on top of the work, it was hard (Male student 16, UNMSM, Lima).

At one point, I got depressed and hit a tremendous slump during the first three months of the pandemic. I even had to reach out to psychologists that offered

help for free (through a service provided by Facebook, not the university), try to recover [...] but my anxiety is constant. It has been increasing daily (Male student 17, UNMSM, Lima).

I feel more stressed. First of all, because of university. In my case, it's always the stress I feel because of the lecturer's teaching methods. Sometimes they'll assign videos for us to watch, related to our classes. Other times it's the problem with my internet. It's a complicated issue. Now, on the other hand, we have new activities to do. Now, I can't go out much, everything takes place at home. I have new responsibilities now. (Female student 7, UNAP, Iquitos)

Another thing is that, because we no longer attend in-person classes, lecturers think we have all the time in the world to do the five-thousand other assignments they give us. That's not the case either because, when we used to attend class in person, we still had other obligations, but at that point they didn't send us as much homework as they do now. They think things are easier now that we've moved to virtual learning, but it's not like that (Female student 9, UNAP, Iquitos).

Female respondents reported the negative effects of their emotional state on their academic performance with greater frequency; males, on the other hand, barely mentioned it. Whenever they did touch on this subject, male students from both universities and female students from UNMSM maintained that "overcoming this barrier" involved change at an individual level.

Even though I'm at home, the stress, paired with my studies, is exhausting. But it's a matter of organising yourself, that's what some believe; it's a matter of switching focus from one thing to another. As I mentioned, this shift to virtual learning helped me gain a little bit more time for myself, to spend time with my family and take extracurricular courses, like learning a new language (Female student 17, UNMSM, Lima).

According to students' perceptions, and despite the fact that the pandemic affected their emotional well-being, its toll was not sufficiently significant to alter their academic performance. It is worth noting that these perceptions are strictly subjective; it could be interesting to analyse via measurable changes in female and male students' academic performance.

You could say that, emotionally, Miss... including, as I say, a family member could get sick, to not call it an inconvenience, but of course it is, to see your family member ill and not be able to attend class because you need to take care of them. [...] It affects

you; it affects you a lot to see people dying, becoming really ill. It doesn't feel good to see those people that, one moment, are healthy and the next, have to go through that. A lot of times it's not even the illnesses themselves; we don't have the adequate food items, because prices started to go up and it has had a tremendous effect on our budget (Female student 3, UNAP, Iquitos).

The stress [makes] you feel more exhausted, more than anything because you need to be there, doing the work, paying attention in class. Or, the stress of not understanding much, because sometimes the connection would cut out because the internet wasn't working properly. And, well, the class was interesting, but you couldn't understand why the internet connection was so poor and why you could barely hear and understand the lecturer. That was pretty stressful. [...] Well, the chores, too. It felt more burdensome having to do both things. To give you an example, in the morning we would have to make breakfast, but sometimes we couldn't. We would make breakfast later in the day because we had to attend class (Female student 8, UNAP, Iquitos).

The students opined that the services offered by their respective universities, regarding health-related issues, were rather limited, both in their reach and their delivery. According to their perceptions, these services should have been more extensive, and information about these should have been presented in a more visual and accessible way to the university population.

With the pandemic I thought that they'd put a little more emphasis on that, publicise it more, or even provide some kind of online assistance. In my case, if this exists, I'm not aware, but it would've been nice to at least get an email that said: "You know what, guys? There's this free hotline that you can call for help." But nothing (Female Student 16, UNMSM, Lima).

I think it's more a matter of management, organisation, outreach, and I think there's also a lack of staff [...] I do believe that there are very good professionals over here in San Marcos, there just aren't enough of them. There's no good management, nor do I think the university, as an institution in general offers good support (Female Student 19, UNMSM, Lima).

Lastly, despite proposing this as a topic of discussion, there was no mention of the perceived effects on physical health. Every now and then, students would mention discomfort related to the sedentary hours they would spend paying constant attention to their electronic devices through which they attended classes. However, this trade-off does not seem to be a strictly negative one: the comfort associated with studying and learning

from home is viewed as a benefit of distance education and appears to offset some of these potentially negative physical aspects.

Conclusions and implications

This study investigates the effects of the rapid digitalisation of public tertiary-level education provided by the government in two cities in Peru, with particular attention paid to the effects of this process on the female student population. The working hypothesis proposes that this phenomenon has widened the gender gap that existed prior to the pandemic, which, in turn, has exacerbated existing conditions of inequality around access to quality education. A review of the literature associated with this subject matter identified multiple dimensions that comprise the whole of the digital divide, as well as the gender variable. This formed the basis for the initial focus of our approach to the issues and their various threads. Additionally, we discovered—both in what we read and through our fieldwork—a set of pre-existing gender gaps that reinforce the challenges faced by female students.

In terms of methodology, this study employed qualitative tools in the form of interviews and focus groups with students from public universities in the capital city of Lima and in Iquitos. The information obtained through this study was organised and systematised around the main points of the students' experience, with special attention paid to their challenges. We paired the needs that students had with the strategies they developed to satisfy them. With respect to this, we offer the following reflection on the nature of the gaps we found that were of particular significance.

Gaps not related to gender

First, a key finding of the study is the absence of important differences between men and women in the university population regarding their physical access to ICT. This information is consistent with both the data compiled by the INEI from 2020 and the available literature on this topic. Concerning differences in the way students are exposed to technologies and digital literacy, the reports do not show significant discrepancies in the education received by male versus female students at each university.

Thus, our investigation seems to point to a different expression of the gaps in access; one that mainly revolves around conditions and limitations that existed before the pandemic. Two particular categories stand out in this regard: (i) students' socioeconomic status, which alters their capacity to respond to the demands of transitioning from

in-person schooling to online education; and (ii) the set of differences associated with their region and the unequal circumstances around connectivity that exist in the country. These findings reinforce the notion that there are groups at a greater disadvantage when it comes to realising the potential of ICT, whose unfavourable situations are maintained by underlying structural inequalities (Gray et al., 2016; Robinson et al., 2015).

On the other hand, the capabilities of the public system and the competencies of institutions also play a role in students' experiences. Therefore, the ability of the public system to respond to the connectivity-related needs of students in a precise and efficient way played an important role in the challenges that students had, and continue, to face throughout the pandemic. This includes the uneven distribution of institutional capacities, which created unfavourable conditions for students to take full advantage of ICT, despite the existence of a resource distribution plan, which is to say, formally speaking, access had (already) been guaranteed (Selwyn, 2004).

Finally, the quality of pedagogic offerings was also an issue that had a general effect on the student population. As such, the quality of the education received was not only subject to the aforementioned connectivity issues but also the lecturers' varying levels of ability to facilitate the transition from in-person learning to virtual education. In view of this, it turns out that the formulation of a new approach, one that contemplates a complete overhaul of the educational offering, is of vital importance.

Gaps related to gender

The previous observation does not imply that differences do not exist between male and female experiences. On the contrary, we found empirical evidence that these differences do exist, but that they are expressed along different dimensions of the phenomenon.

In particular, the area in which we've uncovered the most inequality is the set of sociocultural norms that influences the use of ICT. And while these norms don't have a direct impact on the educational experience, they do manifest themselves explicitly in daily life, in the gender roles that condition students' routines. In this sense, if we consider studies to be separate from the combined life experience of tertiary-level education students, gender would not appear to be a determinant variable. But if, by contrast, we place educational experience within the wider context of female students' life experience, we find a series of indirect effects that may play an important role in their performance and ability to progress academically.

First, in the case of female students from UNAP, domestic chores tended to consume numerous hours of the day, which does not occur with their male peers. While at first

glance, daily routines involving traditional domestic chores—for example, cooking and cleaning—do not differ much between female and male students at UNMSM in terms of the number of hours invested, there is indeed a great difference in the social expectations related to time devoted to the care of other family members. The testimonies illustrate that in the context of the pandemic, the responsibility of caring for the sick, the elderly, or children has mainly fallen on female students. This disparity aligns with findings from other studies about the uneven distribution of responsibilities in the household as related to gender (Rojas, 2021; Frize et al., 2021; Antonio & Tuffley, 2014; Bercovich & Scuro, 2014).

The second topic, whose origin can also be related to gender differences, concerns pre-existing harassment issues within in-person class dynamics, adapted to, and perpetuated in virtual spaces. In some cases, the physical distance between female students and potentially abusive lecturers or classmates has helped improve the situation for them. But in other cases, the need to interact with classmates and lecturers through private messaging platforms, such as WhatsApp, creates a new, potentially unsafe space for female students. Once more, these observations fall in line with the findings from studies focused on this topic—studies that have found a significantly higher frequency of violence against women online, as well as a greater sense of vulnerability and risk against this backdrop (Trajtenberg et. al, 2021; Dodel et al., 2020). In this case, the issue is presented in a university context.

Implications

It is possible to say that, in Peru, the rapid digitalisation of tertiary-level education in the context of the pandemic has had varying effects on different populations. This assertion is supported by two groups of variables: (i) the pre-existing conditions related to access and connectivity; and (ii) the set of sociocultural norms that place women at a disadvantage.

During this period of rapid transition, the response from the government apparatus has been limited on two levels in relation to these groups of variables. First, the national level response has impeded the creation of solutions adapted to the specific conditions of various regions throughout the country. Therefore, students have had to make use of improvised resources and strategies to compensate for the shortcomings of the government, in what it was unable to fully resolve or address in any way. Additionally, the lacklustre and insufficient information about students' experiences has contributed to a reduction in the reach of the government's response, leading to a poor approach and, subsequently, limited efficiency in the distribution of already insufficient resources.

Secondly, the government response, centred on education, is conceived, in a certain sense, as an airtight compartment of experiences exclusively limited to the classroom—be it physical or virtual—and the immediately adjacent variables, meaning material requirements that distil academic performance to connections and devices. This approach has failed because it ignores a set of additional variables that surround the educational experience, such as culturally influenced social dynamics that unevenly assign household and caregiving responsibilities by gender.

This logic, on each level, is evidenced in the set of policies and measures implemented with the purpose of promoting access and ownership of ICT, which still does not pay attention to the diverse sociocultural, economic, and political conditions that persist in the way these technologies are used. This realisation aligns with what has been indicated by several authors (Balarin, 2013; Flores & Albornoz, 2019) with respect to the implementation of public policies directed at closing digital gaps, but which are only focused on covering material items like technological equipment. This type of policy disregards contextual needs. As a response, it presupposes a non-existent homogeneity of citizens' experiences with respect to internet access and the use of devices. Deficiencies in the public response to the ongoing pandemic have exacerbated pre-existing gaps because of rapid digitalisation, thus reducing the chances for egalitarian access to quality educational formation. When it comes to access, this is as much the case for those underserved populations as it is for the female population in particular.

Far from indicating that the gender variable is irrelevant or superfluous, this situation does the contrary and shines a light on the fact that female students in regions with less access are doubly affected, both in their condition as citizens with insufficient access to technological resources and their condition as women. Therefore, we submit that the effects of rapid digitalisation on the widening of social gaps be addressed from a multidimensional perspective.

Policy recommendations

This study analyses particular difficulties that should be addressed in a comprehensive and articulate manner. These include:

- Differences in existing infrastructure in various geographical regions, which hinder the attainment of a stable, nationwide, quality internet connection.
- The absence of a comprehensive educational offering, adapted to digital media.
- The uneven distribution of household responsibilities between men and women.

- The lack of safe virtual spaces for female students.
- Students' mental health problems, with emphasis on the female population.

Regarding these points, we propose the following set of recommendations:

- *On access.* It is essential that the government promote policies throughout the various geographical regions directed at guaranteeing access to quality internet that is affordable, fast, and stable. Only then will tertiary-level education students throughout the country have equal footing. This task goes beyond the specific powers of the Ministry of Education and requires a broader and more coordinated effort among all accountable institutions.
- *On digital literacy.* The national educational curriculum should consider, on an institution-wide level, a more complete and integral use of ICT that not only addresses office computerisation, but also further develops skills related to other technologies and internet usage. This includes the development of a set of essential abilities directed at distance education, such as learning how to look up information, independently organise your time, and use video communication platforms, among others. Currently, students at private institutions have a greater capacity to take advantage of educational opportunities via digital means than their counterparts at public institutions.
- *On the quality of educational offerings.* Lecturers should also receive continuous ICT training so that they can be better prepared to create stimulating learning environments. In this regard, we are not just referring to the skills associated with being able to use specific software but to the capacities needed to create learning environments that are suitable for digital media. As an example, the use of different strategies and dynamics—mentioned by the participants in this study—would help make classes less monotonous and make it easier for students to stay focused. Additionally, lecturers should be trained to better understand the issues that now exist for students within this actual context. An example of this would be to establish contingency plans if students are unable to access learning platforms due to problems with their internet connection. Moreover, an evaluation should be carried out on how to keep lecturers motivated throughout this entire process.
- *On allocation and decision-making:* The public education system, in coordination with educational institutions, should improve strategies for identifying populations that are most affected by the digital divide. Doing so would guarantee a better selection of beneficiaries entitled to receive technological equipment and other forms of related support. This involves generating more precise and more frequently updated information about students' socioeconomic status and access. Based on this, the State can make better decisions about the allocation of its limited

available resources. Along the same line, it is necessary to strengthen educational institutions' administrative capacities, with an emphasis on those institutions that have historically received lower levels of investment. Additionally, and taking into consideration the proposal put forth by students, institutions should re-evaluate the duration of available support to deal with the pandemic.

- *On the adoption of new solutions for connectivity problems:* Local connectivity strategies could be implemented without neglecting major infrastructure and connectivity problems. For example, interconnected local nodes between districts or population centres could be created. Local solutions of this type would allow the interconnection of geographically proximate teachers and students for the purposes of educational practice, without the complexities associated with connecting to the global internet network.
- *On levelling learning opportunities.* The effects of rapid digitalisation on university students have been different due to factors, such as: gender, SEL, internet connectivity, and mastery of digital skills, to name a few. Therefore, we propose the creation of levelling programmes so that those who are at a disadvantage can enjoy the same benefits from distance education as their more privileged peers. Such measure can be achieved by strengthening students' digital skills and autonomy in learning. This would also be useful for those students that did not receive support from their lecturers or institutions when dealing with unstable internet connections.
- *On the inclusion of sociocultural variables in policies.* Public policy should extend enough to cover areas that have not been considered traditionally within educational standards, despite solid evidence of their relevance. Therefore, it is necessary to nurture spaces for reflection and dialogue around the sociocultural circumstances that negatively affect women's experiences in the educational realm, including areas of daily life, such as the distribution of household chores and increased vulnerability to online violence. Otherwise, there is the risk that these inequalities perpetuate over time and widen pre-existing gaps.
- *On the effects of the pandemic on students' mental health.* It is necessary to consider the effects of the lockdown and transition to distance learning on the mental health of female and male students, so that adequate support mechanisms are created. This involves paying attention to the differentiated effects on the female student population.
- *On the safety of female and male students in virtual spaces.* It is necessary to create protocols aimed at establishing controlled environments that guarantee safer virtual spaces for female students. This involves waging a comprehensive battle against harassment and assault through the implementation and enforcement of specific rules. Additionally, we need to train lecturers and students with respect to the forms in which violence manifests in digital spaces,

in addition to disseminating information about support mechanisms available to victims. Digital safety skills should be part of young people's self-care capacities. Finally, disciplinary processes should be reinforced to deter recidivism amongst harassing lecturers and guarantee the safety of students in classroom spaces above all else.

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Appendices

Appendix 1. Use of mobile devices

Used a mobile device during the prior month	UNMSM	UNAP
Personal mobile phone	94%	91%
Friend's or relative's mobile phone	3%	20%
Work mobile phone	3%	3%
Other	0%	0%
Does not use a mobile phone	4%	1%
Rented mobile phone	0%	0%

Note: This sample consists of individuals enrolled in some a tertiary education programme. This sample is not representative of the university population in Peru.

Source: INEI (2020b). Prepared by the authors.

Appendix 2. Means of accessing online classes

Accessed distance education via:	UNMSM	UNAP
Television	0%	0%
Radio/sound equipment	0%	0%
Virtual platform/website	100%	80%

WhatsApp	37%	51%
Email	13%	31%
Telephone call	0%	2%
Other	0%	0%

Note: This sample consisted of individuals enrolled in a tertiary education programme. This sample is not representative of the university population in Peru.

Source: INEI (2020b). Prepared by the authors.

Appendix 3. Teaching methods for online classes

Received distance education by means of:	UNMSM	UNAP
Interaction with the lecturer	100%	100%
Videos	60%	53%
Documents (texts, tables, etc.)	72%	60%
Audio messages	9%	50%
Text messages	2%	92%
Studied without any accompanying instruction	0%	0%
Other	0%	0%

Note: This sample consists of individuals enrolled in a tertiary education programme. This sample is not representative of the university population in Peru.

Source: INEI (2020b). Prepared by the authors.

Appendix 4. The process of ethical considerations

1. Before the interview:
 - 1.1. We designed data collection instruments, as well as the informed consent protocol.
 - 1.2. Initial contact with participants consisted of explaining research objectives and their role in said research, emphasising that participation is voluntary and that their identities would remain confidential.
 - 1.3. The interview or focus group was scheduled according to the participant's availability. Interviewers were flexible with students' availability and respected their time.
2. During the interview:
 - 2.1. Due to the COVID-19 pandemic, and to safeguard the health of team members and participants alike, data collection was conducted remotely via digital means.
 - 2.2. The team secured a physical space to guarantee participant confidentiality during the interview or focus group.
3. At the beginning of the interview or focus group:
 - 3.1. Participants were reminded of the research objective and the goal of their participation. Their rights were emphasised, for example, that they could refrain from answering any question or withdraw from the study at any moment.
 - 3.2. Participants were asked to provide an informed verbal consent through audio or video.
 - 3.3. Participants were asked consent to record the session.
4. After the interview:
 - 4.1. Participants' privacy and anonymity was ensured
 - 4.2. Recordings were saved with a code—not a name—in a secure, password-protected folder.
 - 4.3. The information provided by the participants was collected and systematised accurately.
 - 4.4. Participants received financial compensation.
5. Upon conclusion of the study:
 - 5.1. All interview recordings will be destroyed.
 - 5.2. The results will be made available, and participants will be able to access this information.

Appendix 5. Guidelines for exploratory interviews

A) Preparation

- Hardware examination: camera, microphones, headphones, and memory cards—verifying that there is enough space for recording.
- Space examination: Interviewers should verify that the setting is free of noise and provides for confidentiality; that is to say, so that those who are not part of the study cannot interrupt or listen in on the conversation.
- Confirmation that all those who are present have provided their informed consent.

B) Introduction

i) Presentation and Introduction to the topic

- Presentation of the Project/Research Topic

The project to which you are being invited seeks to analyse the gender gap that exists in public services offered via digital platforms. In this sense, we wish to know more about the inequalities that exist between men and women upon accessing certain virtual spaces, such as online education and official registry platforms.

- Financing, Organisations Involved, Objectives, and Countries

This study is led by the Southern Voice think tank network, and is conducted in three countries: India, Tanzania, and Peru. Its main purpose is to provide recommendations that serve as a basis for the implementation of public policies that ensure equal opportunities for women and men to enjoy the positive impacts of ICT, specifically in the context of the pandemic.

- Interview Objectives: Provide Clear Information about the Objectives of the Interview or Focus Group, as well as the Phases of the Conversation

In Peru's case, we would like to focus on public tertiary-level education at a university in Lima and a university in the Amazon. We expect these interviews to give us a closer look at interviewees' personal experiences accessing ICT, as well as information about the types of technologies provided to students in different regions of the country.

Next, we will move onto the questions stage, which is divided into three areas: (i) how do you access ICT and the internet; (ii) what your relationship with ICT has

been like throughout your lives, including primary and secondary school years; (iii) how have you used ICT for online education during the pandemic, and which changes has this brought about in your everyday activities.

Before we begin, we would like to start by briefly introducing each of the participants.

- Topics Related to Confidentiality and Dynamics

We would like to remind you that this conversation will be recorded for purposes strictly related to the study, to facilitate data collection and its subsequent analysis. Information provided to us by each participant will not be linked to their name.

In this respect, we would like to ask that you share your opinions as candidly as possible; your answers will not be scored, and there is no right or wrong answer. We aim to have an open, cordial, and fluid dialogue.

We will start by asking each person a series of introductory questions.

ii) Personal Information

- First and last names
- Place of birth
- City of residence or place where you are studying
- Age
- Institution
- Degree/Academic term
- Personal introduction

Before we begin, we would like to ask each person to describe him or herself in a few words, starting with the interviewers/moderators...

- Introductions – interviewers/moderators

C) Physical access to technology

- Number of devices that have an internet connection in your home (computers, laptops, smartphones, tablets, other)

1. Who do you live with in your household unit? [parents, sisters, brothers, other]
2. How many of the following devices with an internet connection do you have in your home?

Type	PC	Laptop	Smartphone	Tablet	Other (specify)
Quantity					

3. Do you have one or more **devices that are your own** and that you use to connect to the internet? What kind (computer, laptop, smartphone, tablet, other)?
 - 3.1. If the answer is that you **do not have your own device**, with how many people do you have to share the device?
4. In your household, who makes the most use of any other devices with an internet connection?
 - Internet connection quality: speed, hours of access per day
5. What type of internet connection do you have?

Fixed	Mobile	Both

6. How would you describe your internet speed? Why?
7. How would you describe the stability of your internet connection? Why?
8. How many hours per day do you have internet access?
 - 8.1. If your internet connection **is not** constant, to what is this owed?
 - External factors that affect the internet connection
9. Are there weather conditions that might affect your internet connection (for example, rain or wind)?
10. Do you think that the COVID 19 pandemic has affected your access to technological devices or an internet connection?
 - 10.1. If it **has** affected your access, in what way?
 - Asequibilidad
11. Do you believe the quality of your internet service corresponds to the amount you pay to have it?
12. Do you have any difficulty with covering the monthly costs of your internet service?

D) Personal trajectories in the use of ICT

- Primary and secondary education: experiences with ICT and school type
 13. What type of primary school did you attend? [private/public]
 14. What type of secondary school did you attend? [private/public]
 15. In what setting was your school located? [rural/urban]
 - 15.1. If the answer is **RURAL**: Did you study in a community?
 16. Did you use ICT during primary or secondary education? What kind?
 17. Do you think that the school where you studied had the proper infrastructure and equipment to teach you about ICT?
 18. Do you think that your lecturers were trained to teach you about ICT?
- Other types of experiences: recreational + open question (work or productive learning experiences)
 19. Throughout your life, have you used ICT in any other context, aside from education? For example, entertainment, communication, information, work-related purposes, etcetera?
- Regarding rapid digitalisation in virtual learning during the COVID-19 pandemic.
 20. When the pandemic began, education moved to virtual learning. Do you think that you were sufficiently prepared to utilise the devices and platforms required for your university-level studies when this happened? Si responde no, ¿has accedido a alguna ayuda de tu universidad u otra institución del Estado para superar las barreras que supuso este hecho?
 - 20.1. If the answer is no: Have you got any assistance from your university or other public institution to overcome the resulting barriers?
 - 20.2. Did you utilise any other means of help or support to overcome these barriers? In what way?
 - 20.3. If you did **not** have access to these mechanisms, what kind of support do you think you would have needed or currently need?

E) Digital literacy

- Use of digital tools
 21. How would you rate your ability to use the following tools?

	Inadequate	Average	Good
Office automation systems			

A browser to search for information			
Video conferencing platforms			
Online communication platforms			

F) Use related to online learning during the pandemic

- Time spent using ICT (study, work, recreational activities, other)
 22. How many hours a day do you spend online to attend your classes?
 23. Are you currently working remotely?
 - 23.1. If **yes**, how many hours a day do you spend on the internet for work?
 24. Do you use the internet for recreational or leisure-related activities?
 - 24.1. If **yes**, how many hours a day?
 25. Do you perform other activities—transactions, paying bills, purchases, communication, research, etcetera—via the internet?
 - 25.1. If **yes**, for how many days a week?
- Classroom dynamics during the pandemic (synchronous or asynchronous, advantages, challenges, general impressions)
 26. Are your classes synchronous (live) or asynchronous (pre-recorded)? Are the recordings made available after class?
 27. What digital platforms does your university use to offer online classes? How accessible are they to you? What is your reasoning?
 28. What are the main differences you have noticed in classroom dynamics between online and in-person classes?
 29. What are the advantages and disadvantages of the online classroom dynamic?
- Changes in access to resources: education (textbooks, facilities), infrastructure (studying spaces, housing, dining areas)
 30. What other aspects of your education have changed (for example, in terms of your access to study materials)?
 31. Do you think there is a physical space at your university whose function has not been able to be replicated in digital media during the pandemic (for instance, the library, laboratories, etcetera)?
- Regarding the learning experience
 32. What are the advantages and disadvantages of using ICT as part of the learning process for your profession?

33. Do you think that your lecturers are trained to use ICT and the platforms utilised by your university?
- Changes in related dynamics: communication with lecturers
34. What digital platforms do you use to communicate with your lecturers?
- 34.1. Do you feel that these platforms allow for fluid communication?
- Mental health, motivation
35. If at any time during the COVID-19 pandemic you felt physically or mentally exhausted, do you think it affected your performance in online classes?
- 35.1. Do you feel that the academic workload has been the same as before since the pandemic started?
- 35.2. Do you feel that your university has addressed mental health and motivation issues during the pandemic?

G) Sociocultural norms in the home

- Dynamics at home (domestic activities: cleaning, cooking, caregiving; activities outside of the home; distribution of the activities/roles)
36. Do you do domestic chores in your home? Which ones?
37. How many hours a day do you dedicate to domestic chores on average?
38. How are domestic chores distributed in your household? If you live with family, do you have sons or daughters? Brothers or sisters?
39. Who does the shopping in your household?
40. How many members of your household currently have a paid job?

H) Closing

41. What are the main barriers to a widespread use of ICT at your university?
42. What recommendations would you offer your university to improve the quality of education?
43. Lastly, is there any other comment you would like to add?

Appendix 6. Guidelines for focus groups

Presentation of the dynamic and warm-up (10 minutes)

- Thank participants for accepting the invitation.
- Present the IEP and the moderator.
- This is a conversation. There are no right or wrong answers. All comments are valuable, we are interested in the sincere opinions of each participant.

- Explanation of the virtual modality (taking the floor, using materials, etcetera).
- The information provided is confidential and for professional use only. Your data will not be shared without your prior consent.
- Given that we have your permission, the audio of this session will be recorded.
- Silence your mobile devices (or set them to vibrate).
- Ask each participant to present him or herself: name, family, area of study (degree, academic term).
- [Possible icebreaker dynamic]

Note: Verify whether it is possible that participants turn on their cameras.

Topic 1: Students and lecturers' self-management strategies (15 minutes)

[General]

- Tell me a bit about your experience with online classes... [Had you ever had this type of experience before? Was it hard to adapt? General impressions]
- What are the main challenges you have faced in carrying out your classes? [Connectivity, access to adequate equipment, digital skills, study spaces, use of time]

[Regarding solutions]

- Do you think that your university helped you resolve the previously mentioned problems? Did you perhaps receive support from a different institution? In what way?
- Did you find a way to resolve this problem on your own or with the help of your family?
- Did you coordinate with other students or with your lecturers to resolve these problems? [Explore the rise of these organised groups and their planning process] How did these initiatives come about? What platform(s) did you use to coordinate?
 - 1) Self-management of resources and tools provided by the university
 - 2) Arrangements made directly with lecturers
 - 3) Teaching oneself how to use the platforms

We will now present a specific case: Mate Wasi is an initiative that stems from the Inter-American Development Bank and is supported by the Ministry of Education. It offers an alternative to teaching methods that rely on the internet; classes are instead transmitted via radio and television.

- During the pandemic, did you resort to any alternative methodologies that did not require using the internet, like the case of *Mate Wasi*?

TOPIC 2: Use of Time, with emphasis on domestic chores and other responsibilities assumed in the wake of the pandemic (15 minutes)

- Describe what you do throughout the day. [Think about narrating your daily routine; including work, studies, etcetera.]
- Compared to how things were before the pandemic, do you feel that you have had to take on more responsibilities at home? Did you do household chores before the pandemic? Have you been given more chores than you had before (such as, cleaning, cooking, assisting other people, etcetera)?
- Do you feel that these new responsibilities have been evenly distributed amongst the people in your household? If not, why do you think this distribution is not fair?
- Do you think that the inequalities in the distribution of chores are related to differences between women and men? Could you give us some examples?

TOPIC 3: Safety in online class settings (15 minutes)

[Only for female participants] We will read an excerpt from an exploratory interview or fictional story [to be determined] in which an anonymous, or fictitious, student talks about a situation involving harassment.

- Does this situation sound familiar or does it remind you of another similar story of which you have knowledge? If you are aware of any instances of harassment, have they happened in virtual education settings? [Note: During this conversation, it is important to use the third person (she or he) whenever possible: acquaintances, friends, etcetera.]
- In what kinds of spaces have these incidents occurred? [personal messaging platforms, academic platforms]
- Do you think the pandemic has influenced the occurrence of this type of problems in some way? For example, has their frequency increased?
- If the incident occurred within the context of an educational setting, were the institution's authorities contacted?
 - If the answer is **no**, what was the reason?
 - If the answer is **yes**, did the authorities offer any kind of assistance or solution to the problem?

Note: Take note of whether the incident was reported or communicated to the institution, or if the institution found out through other means.

- Has the university or have the lecturers addressed these issues in class or in other institutional spaces? Do you know if protocols exist that should be followed to avoid the occurrence of these incidents?
- Do you think additional measures are necessary to prevent these incidents from occurring? What kind? [open discussion]

Topic 4: Mental health; effects on academic performance (15 minutes)

[Consider a hypothetical case or a quote from an interview]

Note: This could be a topic that has not yet come up in this setting.

- Taking into account all of the difficulties related to the pandemic, how would you say you feel compared to the period before the pandemic? [Think about enthusiasm, motivation, state of mind.]
- Do you feel that this issue is relevant to your academic performance? In what way? Could you give us some examples?
- Has your university provided you with any type of related support?
- Have you found some other way to deal with this situation? Could you tell us about these strategies?

Topic 5: Future possibilities for employment (15 minutes)

- Do you think that the quality of your academic education has been affected by the distance learning methodology? In what way?
- Since the start of the pandemic, have you felt uncertainty about your education or labour field performance after completing your studies?
- Do you think that the possibility of obtaining employment in your respective professions has been affected by what has happened during the pandemic? What challenges have you been able to identify?
- Are you currently employed?

For those that are currently employed:

- What is your job? Is your job related to what you studied?
- Is your job carried out in person or remotely?
- Was it easy or hard to get this job? Why?

Appendix 7. Guidelines for interviews with public officials

1. Context prior to the pandemic

In 2020, César Guadalupe—a researcher and lecturer at Universidad del Pacífico—claimed that the University Act had stigmatised distance education by assuming that it was inferior to in-person education in every context. He pointed out that, for this reason, the State made no effort to improve its quality.

1.1. Do you consider that the existing educational regulations prior to the pandemic made it more difficult to implement quality distance education? In what way?

2. Connectivity

In the context of the health emergency, the public sector approved a variety of measures to guarantee internet connectivity for students, deeming it essential for the continuation of tertiary-level educational services.

2.1 Did the government formulate responses to specifically resolve connectivity issues in the different regions of the country?

2.1.1. If the answer is yes, could you give us some examples?

2.1.2. In the answer is negative, do you think this could contribute to the widening of pre-existing gaps in access to tertiary-level education?

2.2. Considering the inequalities in access to a quality internet connection, what are, in your opinion, some of the opportunities and challenges for developing an inclusive and egalitarian educational system?

3. Allocation

With respect to connectivity issues, the type of support provided by universities that was most often mentioned by students was the distribution of equipment—modems and SIM cards for mobile phones. However, students are of the opinion that these devices did not always reach those who needed them the most. In some cases, they were distributed to students that didn't need them.

3.1. What do you think limited the government's ability to properly allocate resources to students that needed them the most? [for example, logistics, methods, outdated information, budget constraints]

3.2. What kinds of measures should be taken to improve the government's response and its ability to allocate resources in the future?

4. 4. Lecturer training

Students mentioned that lecturers showed signs—to a greater or lesser degree—of having a difficult time transitioning from in-person classes to virtual learning.

4.1. In your opinion, what challenges did the public education system confront with respect to university lecturers' ability to use ICT, and how was this issue addressed?

Students mentioned a decrease in teaching quality, in pedagogical terms. They said that, while lecturers did indeed master the basics of ICT to conduct classes, the dynamics were not motivating or were not very didactic. They also mentioned an increase in academic workload.

4.2. What training efforts were and continue to be made by the government to improve lecturers' abilities in terms of pedagogical resources?

4.3. How should training be directed in the future to guarantee lecturers have the digital and pedagogical skill required to improve the quality of distance education?

5. Student training

We found that students had heterogenous ICT skills. This meant that some faced greater challenges than others in transitioning to virtual learning. These differences are also observed between regions of the country.

5.1. What training efforts directed towards students were and continue to be made by the government?

5.2. What changes would need to be promoted in the educational system, at the primary and secondary levels, to improve students' preparation for the use of ICT? (For example, in the curriculum, infrastructure, etcetera)

6. Other dynamics related to education during the pandemic

Upon the implementation of the Emergency Distance Education Act (ERE, as per its Spanish abbreviation), students had to change their daily routines and juggle household chores with academic responsibilities. In the interviews we conducted with two public universities, we observed that the uneven distribution of domestic chores between women and men limits the time women dedicate to their academic education in comparison with their male peers.

Another factor to consider is mental health. Evidence shows that this issue disproportionately affects the female population.

6.1. How could the educational system address these gender-related inequalities?

7. Regarding university degrees that require practical training

Students enrolled in degree programmes that require in-person training to a greater extent—using machines, laboratories, patient care practice—were of the opinion that the transition to virtual learning negatively impacts the quality of their education and the resources they are able to develop during their career training.

7.1. What measures should be adopted so that institutions are able to offer the necessary educational resources for students whose degrees require practical experience?

8. Challenges for the future of tertiary-level education

Aside from the difficulties addressed, students mentioned certain advantages to distance learning. For example, a greater degree of freedom in the use of time and the acquisition of digital skills.

8.1. Do you believe that distance learning should continue to be implemented in the future, as part of the nationwide educational agenda? Why?

8.1.1. If such is the case, what challenges should be considered in guaranteeing a tertiary-level distance education that is inclusive for both men and women?

Appendix 8. Exploratory interviews: General data of female students

	UNAP			UNMSM		
Variable	FS1	FS2	FS3	FS4	FS5	FS6
Age	24	21	22	21	24	22
District / City of Residence	Iquitos	Iquitos	Requena	San Martín de Porres (Lima)	Los Olivos (Lima)	Los Olivos (Lima)

Degree	Social Anthropology	Ecological Engineering of Tropical Forests	Ecological Engineering of Tropical Forests	Educación	Educación	Educación
Academic Term	2	10	10	7	7	7

Appendix 9. Exploratory interviews: General data of male students

	UNAP			UNMSM		
Variable	MS1	MS2	MS3	MS4	MS5	MS6
Edad	28	31	23	27	19	23
Distrito / ciudad de residencia	Iquitos	Iquitos	Requena	San Miguel (Lima)	Ventanilla (Callao)	San Martín de Porres (Lima)
Carrera	Dentistry	Ecological Engineering of Tropical Forests	Ecological Engineering of Tropical Forests	Literature	Textile and Apparel Engineering	Operational Research
Ciclo	10	10	10	8	5	7

Appendix 10. Focus groups: General data of female students

University	Code	Age	District/City of Residence	Degree	Academic Term	
UNAP	First Focus Group					
	FS7	21	San Juan Bautista (Iquitos)	Chemical Engineering	8	
	FS8	23	Iquitos (Iquitos)	Dentistry	10	
	FS9	21	Iquitos (Iquitos)	Business Administration	6	
	FS10	23	Punchana (Iquitos)	Dentistry	10	
	FS11	26	Iquitos (Iquitos)	Ecological Engineering of Tropical Forests	10	
	Second Focus Group					
	FS12	23	San Juan Bautista (Iquitos)	Dentistry	10	
	FS13	22	Iquitos (Iquitos)	Business Administration	7	
	FS14	23	--	Dentistry	10	
	FS15	19	Punchana (Iquitos)	Ecological Engineering of Tropical Forests	3	
	FS16	21	Belén (Iquitos)	Pharmacy and Biochemistry	7	
	UNMSM	First Focus Group				
		FS17	25	Callao (Callao)	Operational Research	10
		FS18	22	Lima	International Economics	5
		FS19	21	San Borja (Lima)	Telecommunications Engineering	7
FS20		22	Chorrillos (Lima)	Statistics	5	
FS21		22	Lima	Tourism Management	5	
Second Focus Group						
FS22		21	Carabayllo (Lima)	Social Communication	5	
FS23		20	Chorrillos (Lima)	Tax Administration	7	
FS24		19	Lima	Industrial Engineering	2	
FS25		26	Comas (Lima)	Communications Sciences	7	
FS26	26	Lima	Genetics and Biotechnology	12		

Appendix 11. Focus groups: General data of male students

University	Code	Age	District/City of Residence	Degree	Academic Term	
UNAP	First Focus Group					
	MS7	21	San Juan Bautista (Iquitos)	Chemical Engineering	4	
	MS8	23	Punchana (Iquitos)	Dentistry	10	
	MS9	22	Iquitos	Ecological Engineering of Tropical Forests	5	
	MS10	23	Iquitos (Iquitos)	Dentistry	10	
	MS11	21	Punchana (Iquitos)	Nursing	6	
	Second Focus Group					
	MS12	23	Belén (Iquitos)	Dentistry	10	
	MS13	30	Punchana (Iquitos)	Nursing	10	
	MS14	21	San Juan Bautista (Iquitos)	Administration	7	
	MS15	23	San Juan Bautista (Iquitos)	Dentistry	10	
	MS16	23	Iquitos (Iquitos)	Dentistry	10	
	UNMSM	First Focus Group				
		MS17	21	Lima	Operations Research	9
		MS18	25	Los Olivos (Lima)	International Economics	3
		MS19	22	Lima	Telecommunications Engineering	7
MS20		23	Lima	Statistics	9	
EH21		22	Ventanilla (Callao)	Tourism Management	3	
Second Focus Group						
MS22		21	Ate (Lima)	Mathematics	5	
MS23		25	Lima	Operations Research	8	
MS24		22	Surquillo (Lima)	Sociology	7	
MS25		21	Santa Anita (Lima)	Sociology	7	
MS26		21	Lima	Industrial Engineering	9	

Appendix 12. Measures adopted by the Peruvian government during the pandemic

Area	Measures
Regulatory Modifications	Vice-ministerial Resolution 085-2020 MINEDU. Provided pedagogical guidelines for the continuation of educational services. Amongst the principal actions, it emphasised the identification of courses that are adaptable to distance education and the redesign of those that are not.
	Board of Directors Resolution 039-2020 SUNEDU/CD. Provided supervision criteria for emergency distance learning.
	Legislative Decree 1946. Provided measures targeted at guaranteeing continuation and quality in the delivery of services. Its principal actions were aimed at facilitating management and oversight of universities.
Financing and Incentives	Legislative Decree 1465 and Emergency Decree 107-2020. Allocated PEN 61.4 million for subsidising internet connections for students and lecturers at 48 public universities throughout the country.
	Emergency Decree 117-2020. Authorised MINEDU to execute a transfer of PEN 43.2 million to 34 public universities to finance infrastructure maintenance, laboratory computer equipment replacement, and other actions related to the digital divide.
Connectivity support	Legislative Decree 1465. Promoted the delivery of SIM cards and modems to nearly 90,000 students and 440 lecturers. SISFOH was responsible for selecting the recipients.
	Emergency Decree 107-2020. Expanded the number of SIM card and modem recipients to 233,000 students, which corresponds to 70% of the total number of students in public universities throughout the country. The selection criteria were the following: (i) beneficiaries could not have previously received any vouchers; (ii) the student must be a resident of one of the districts considered impoverished according to the 2018 census map, and (iii) the student had no access to any type of digital equipment.
Strengthening Institutional Capacities	Technical assistance in budgetary matters: The government took action to provide remote technical assistance to facilitate, amongst other things, the prioritisation of resources, the targeting of budgets aimed at narrowing the digital divide, and the adequate utilisation of funds bestowed by Decrees 107-2020 and 117-2020.
	Technical assistance for adapting to emergency distance learning: The online platform Conectados (Connected) was created to provide support to the university community, including administrators, lecturers, and students. Additionally, workshops on the use of digital platforms for online teaching were offered. The government also executed a plan to strengthen the institutional capacities of public universities through a process of diagnosis, consultation, and online training that was supported by national and international educational institutions.

Scholarships and Credits	Long-term Scholarships (Becas Permanencia): Aimed at high-performing public university students to guarantee the completion of their university degrees. In 2020, 8,500 scholarships were awarded to students in public universities, while in 2021, this number was 8,000.
	Continuing Studies Scholarships: As an extension of the Long-term Scholarships, 11,000 additional scholarships were awarded to public university students in 2020 and 22,000 in 2021. These were also awarded to students at private universities and technical institutes.
	Continuing Studies Credit: 2,479 credits, out of 10,000 initially announced, were delivered to students.

Source: Prepared by the authors based on MINEDU (2021).



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