Digital natives? Perception of skills among children of rural areas

¿Nativos digitales? Percepción de habilidades en niños y niñas de zonas rurales

Nativos digitais? Percepção de habilidades em meninos e meninas de áreas rurais

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Abstract

Children of rural areas have historically faced severe disadvantages both educationally and digitally. The COVID-19 pandemic has been a reminder of the barriers they must overcome due to unstable internet signals, device shortages, and digital skills. For this reason, this paper discusses the concept of digital natives, that is, the belief that minors, regardless of their circumstances, have digital skills that allow them to use the Internet without prior guidance or instruction. From a qualitative perspective, discourses and social constructions on the role of the Internet in the daily life of children between 11 and 12 years old are analyzed through a triad interview with the minors, their mothers, and head teachers, as well as school principals in four rural localities in Chile during the second year of the pandemic. The main findings show that, despite being part of a disadvantaged group and the precariousness of internet connection, all participants have access to smartphones from an early age. However, adults in their educational environment tend to agree that poor digital skills development hinders their remote learning process, despite the children's confidence in using devices.

Keywords: Internet, rural education, digital divide, smartphones, pandemic.

Resumen

Los niños de zonas rurales se han enfrentado históricamente a severas desventajas tanto en el ámbito educativo como en el digital. La pandemia de COVID-19 ha sido un recordatorio de las barreras que deben sortear debido a la inestable señal de internet, carencias de dispositivos y habilidades digitales. Por ello este trabajo discute el concepto de nativos digitales, es decir, la creencia de que los menores de edad, independiente de sus circunstancias, gozan de habilidades digitales que les permite hacer uso de internet sin necesidad de guías o instrucción previa. Desde una perspectiva cualitativa se analizan discursos y construcciones sociales sobre el rol de internet en la vida diaria a niños de entre 11 y 12 años, a través de la entrevista en tríadas a los menores, sus madres y profesores jefes, además de los directivos de escuelas en cuatro localidades rurales en Chile durante el segundo año de la pandemia. Los principales hallazgos muestran que, a pesar de ser parte de un grupo desfavorecido y la precariedad de la conexión a internet, todos los participantes tienen acceso a teléfonos inteligentes desde una edad temprana. No obstante, los adultos de su entorno educativo tienden a coincidir que el escaso desarrollo de habilidades digitales obstaculiza su proceso de aprendizaje remoto, a pesar de que los niños presentan confianza en el uso de dispositivos.

Palabras clave: internet, educación rural, brecha digital, smartphones, pandemia.

Resumo

Historicamente, as crianças rurais enfrentaram graves desvantagens em ambientes educacionais e digitais. A pandemia do COVID-19 tem sido um lembrete das barreiras que devem ser superadas devido ao sinal instável da internet, falta de dispositivos e habilidades digitais. Por isso, este trabalho discute o conceito de nativos digitais, ou seja, a crença de que os menores, independentemente de suas circunstâncias, possuem habilidades digitais que lhes permitem utilizar a Internet sem a necessidade de guias ou instrução prévia. A partir de uma perspectiva qualitativa, são analisados discursos e construções sociais sobre o papel da Internet no cotidiano de crianças de 11 a 12 anos, por meio de entrevistas em tríades com os menores, suas mães e professores chefes, além de diretores de escola em quatro localidades rurais do Chile. Os principais achados mostram que apesar de fazerem parte de um grupo desfavorecido e da precariedade da conexão com a Internet, todos os participantes têm acesso a smartphones desde cedo. No entanto, os adultos em seu ambiente educacional tendem a concordar que o fraco desenvolvimento das habilidades digitais dificulta seu processo de aprendizagem à distância, apesar de as crianças estarem confiantes no uso dos dispositivos.

Palavras-chave: internet, educação rural, exclusão digital, smartphones, pandemia.

Introduction

Although for rural communities, distance and isolation are often part of their daily lives (LaRose *et al*., 2011), in a pandemic scenario, the need for connection and communication is even more present.

These are forced routine changes that involve interacting with the world in a different way whereas the Internet has taken on an accelerated and often compulsory role. In childhood, it is even more relevant since the access and use of technologies are the gateways to educational and communicational opportunities, in addition to reducing poverty levels in rural areas (García-Mora & Mora-Rivera, 2021).

However, Latin America is a region where inequalities in Internet access and use are part of its hallmark despite technological development (ECLAC & OREALC/ UNESCO, 2020). Thus, in times of health emergencies, with widespread school closures and social isolation, it is necessary to revisit ideas and cultural constructs that refer to innate expertise in children and technologies, such as the concept of digital natives (Prensky, 2001, 2004).

Although this construct has been widely refuted (i.e., García *et al*., 2013; Aḳayır *et al*., 2016), culturally and from a public policy design perspective, a dangerous idea persists of assuming children and teenagers as experts in technologies given their age (Kirschner & De Bruyckere, 2017).

In Chile, although the digital divide has decreased considerably (Rojas & Poveda, 2018; SUBTEL, 2021), it is rural children who are at the greatest disadvantage (Hinostroza, 2017; Correa & Pavez, 2016; Correa *et al*., 2017) and where precarious access to the internet is a reflection of long-standing social and structural inequities (Beaunoyer *et al.*, 2020).

Furthermore, the most popular access device among youngsters is the smartphone (Trucco & Palma, 2020). This is relevant because the evidence shows that computers and laptops offer a wider range of activities and the development of digital skills (Allmann & Blank, 2021) while the use of cell phones focuses on activities linked to entertainment and communication (Napoli & Obar, 2014).

In theory, the discussion of the digital divide delves into the importance of providing tools to disadvantaged people who, through technologies, could develop skills that allow them to reach their potential at social, economic, and educational levels (Helsper, 2012; van Dijk, 2005).

However, providing connectivity is not the only answer required by the digital divide, but the first step to exploring the use of technology from the users' perspective. The concept of technological appropriation helps to illuminate this approach. It is a construct developed from the Social Construction of the Technology stream and explores the idea of using devices in ways that make sense according to the user's specific reality (Hutchby, 2001; Sørensen, 1994).

In other words, technology offers possibilities that are not necessarily standardized or preset because they depend on the needs, expectations and capacity of the user (Humphreys *et al.,* 2018). This notion is tied to the idea of agency and

that technology should expand the possibilities of users rather than establish a normative use (Miller & Slater, 2000).

Along the same lines, it has also annexed the idea of empowerment as the use of technologies is aligned with the possibility of achieving the proposed goals according to the user's context (Meera, 2013).

This position is radically different from the concept of digital natives (Prensky, 2001) where children and teenagers are considered "'native speakers' of the computer digital language, video games, and internet" (p. 2).

In other words, a generation born into a digital environment has a greater tendency to adapt to it naturally and intuitively, especially when compared to a generation that experiences these technological advances as adults, the so-called digital immigrants (Prensky, 2004).

Researchers from all over the world have contributed and criticized the concept, mainly because of its generalization and the assumption of age - a generational factor - as the only conditioning factor. This is how it has been stated that the country of origin is relevant since in those that are more developed there is greater technological access, as well as the length of experience that promotes digital capabilities (Akçayır *et al*., 2016).

While there is recognition of the increased use of new technologies for various purposes, there is also a consensus that the development of digital skills is not guaranteed, as well as a preference for consuming entertainment over educational uses or content creation (Kennedy & Fox, 2013).

In this context, the access device is relevant. For example, since 2016, data has shown steady internet usage growth in the southern region. Chile is one of the leaders with 87.5% penetration, where cell phones are the most popular access devices, as it is in all Latin America (Trucco & Palma, 2020).

This is consistent with evidence showing that mobile connectivity is increasing, particularly among lower socioeconomic groups (Donner *et al*., 2011). Moreover, it is also a trend among the younger population Data from a comparative study across Brazil, Chile, Costa Rica, and Uruguay indicates that cell phones are the most widespread means of accessing the internet from home among children between 9 and 17 years of age (Cabello *et al*., 2020).

However, the effectiveness of smartphones in terms of access is problematic, particularly about entertainment and communication usage types (Green & Haddon, 2009; Mascheroni, 2014).

Researchers have found that these usage types increase gaps among internet users, particularly among the most vulnerable cohorts, impacting their level of digital skills, with most women being left behind (Napoli & Obar, 2014; Martinez-Cantos, 2017).

This has also been found in children, as Cabello *et al*. (2020b) argue: "the most widespread form of inclusion (...) is, at the same time, the one that shows the least positive results in opportunities for the use of technologies, as well as in skills for their use" (p. 49). This is an example of a complex scenario in which a focus on cell phones is perpetuating gaps (Katz, 2017).

Teachers, the link to technology

The role played by educational environments in ICT learning is key, especially for vulnerable populations. Evidence indicates that through the educational system in Latin America, access to technologies has been equalized in vulnerable populations, compensating for socioeconomic inequalities and considerably reducing the access gap (Rico & Trucco, 2014).

From the educational front in Chile, a series of public policies have been implemented to promote children's digital inclusion. The most notable has been providing a laptop with internet access to vulnerable seventh-grade students.

Evidence shows that in more than 60% of the cases, this is the first laptop used at home (Feller *et al*., 2019). Thus, school environments are crucial for them to access technology and develop digital experiences where teachers are relevant actors.

However, research reveals that mere access to ICT in schools is insufficient to achieve concrete results (Cabero & Valencia, 2019; Formichella & Alderete, 2018). In this regard, teacher education and training, incorporating technologies in their educational practices, is key for the improvement of the system and for adequate public policy implementation in favor of the development of digital tools.

In Chile, the evidence is not very encouraging. For example, there is a deficiency of teacher training in this area, coupled with a lack of guidelines from their school principals, who tend to be superficially involved in ICT development in their institution (Claro *et al*., 2017; Claro *et al*., 2018). Added to this is the lack of time needed to plan educational uses with digital resources or venues for experience exchange and innovation (Ibieta *et al*., 2017).

When they do so, however, the quality of the tasks carried out is extremely variable and tends to be insufficient, especially with respect to searching criteria, selection, and checking contents from the Internet, which has direct repercussions on their teaching processes (Hinostroza *et al*., 2017). The researchers highlighted that the tendency to consider the very young as digital natives persists, that is, that they do not need further guidance, although research findings indicate that they only have basic skills.

The problem with this reality is that students are the most disadvantaged, since the preparation and support that teachers can provide is key, both for better student performance and for their online experiences (Feller *et al*., 2019). For example, a representative study on internet users between 9 and 17 years of age, led by the Chilean team of the Global Kids Online project (Cabello *et al*., 2020), reports that a significant percentage of students reported little or no support and guidance from their teachers.

For instance, 57% have never or rarely talked to their teachers about what they do on the Internet; 33% received help when they encountered online material that disturbed them, and only 1 in 4 reported that they were encouraged by their teachers to explore and learn online (p. 22).

These results are consistent with a study on teachers from schools benefiting from the "Me Conecto para Aprender (Connecting to Learn)", (JUNAEB, 2022)

program in the Valparaíso region. Its key findings indicate that teachers tend not to integrate ICT into their teaching activities, being also unable to identify and define the digital skills their students should achieve, and evidence of a lack of knowledge of the specific software provided by the program for such purposes (González *et al*., 2016).

Furthermore, teachers showed a lack of knowledge about the general guidelines, as well as technical issues contemplated in this public policy (González *et al*., 2016), confirming the program's deficiencies in terms of knowledge and training on the educational resources it provides (Feller *et al*., 2019).

These findings show that for a successful implementation of the program, in terms of academic results and development of digital skills, as well as promoting the use of technologies in the classroom, it is necessary to develop strategies that allow teachers to increase their ability to provide educational support to students (Ibieta *et al*., 2017).

Rural families: the context of this research

In the area of digital inclusion, being rural represents a disadvantage. This is due to the urban-rural divide (LaRose *et al*., 2011; Correa & Pavez, 2016; Correa *et al*., 2017) and because it has been established that the access quality remains a challenge, particularly in the Global South (Martínez *et al*., 2020).

While considerable efforts have been made in Latin America to provide 4G internet access to rural areas, broadband access remains precarious (Rojas & Poveda, 2018). Studies also indicate that the sociocultural context exerts an influence on resistance to becoming an internet user, especially in adult and elderly populations, most commonly associated with insecurity when accessing it (Pavez & Correa, 2017).

Yet, the family also plays a relevant role in the digital empowerment of girls. This is related to the strategies used by parents to influence how, when, and why their children access ICTs, with a tendency to reduce potential risks associated with their use and to enhance the positive effects (Livingstone & Blum-Ross, 2017).

Studies indicate that this mediation is a relevant factor in the development of their sons' and daughters' digital skills, particularly when parents have confidence and experience in the web that allows them to actively support their children (Correa *et al*., 2015; Livingstone & Blum-Ross, 2017).

The picture is complex, however, because the most disadvantaged sectors tend to have parents or caregivers with less internet experience and thus fewer digital skills (Pavez & Correa, 2019).

When breaking this down into segments D and E (N=293), pertaining to vulnerable families, similar to those with students receiving ICT Scholarships, it is possible to see that 65% of the parents have never or rarely made use of parental controls or other technological means to block, filter or monitor their child's online activities; 54.9% have never or rarely checked which websites their children have visited and 49.1% have never or rarely limited the number of hours or days their children are on the web.

Regarding issues related to talking with their children, 43.6% say that they often or always talk to them about what they do online; however, 43.3% never or rarely talk about what content they can see, read or listen to on the web, a figure that rises to 45.3% for how to behave with others online.

On the other hand, parents have generally been reported as less skilled than their children, particularly among lower socioeconomic groups (Livingstone *et al*., 2013; Correa, 2014). Evidence shows that this is stronger within rural families, although the most common reason for accessing the Internet is to provide educational opportunities for their children (Correa *et al*., 2019). Here it was found that children teach their parents how to use applications and devices and function as proxy users when performing a task.

In this scenario, parents' lack of digital experience and their children's confidence in handling devices made parents more uncomfortable and less willing to try. One reason stated in the literature is that they have fewer ICT exposures in general, resulting in children acting as technological intermediaries, where socioeconomic and gender elements are strong indicators (Pavez, 2016).

Methods

This study is part of a main project designed to explore the experiences of rural girls benefiting from a laptop with internet through the "Yo Elijo Mi PC (I Choose my PC)" and "Me Conecto Para Aprender" programs, policies of the Ministry of Education to guarantee internet access and device availability for seventh-grade public education students (JUNAEB, 2022).

The fieldwork involved in-depth interviews conducted between November 2020 and December 2021, that is, at the end of the first year and during the second year of the pandemic in Chile. It was conducted before the participants received the laptops, which allowed us to investigate their access and interactions with other devices and their daily experiences with technology.

Therefore, the recruitment process was initiated in rural elementary schools, where contact was made with the parents of the future laptop recipients and their respective teachers. The request to participate in the research was sent to ten schools in the rural area near the central region of Chile, but only four agreed to collaborate.

The research design using in-depth interviews reflects a qualitative approach because it allows for a context-specific analysis by incorporating participants' narratives and experiences (Porter, 2000). In addition, interviewees gain a voice and guide us toward understanding by providing details on the reasons for their decisions, backgrounds, the extent of their online experiences, and levels of participation.

In short, qualitative strategies allow for immersion in the day-to-day lives of participants with an inclusive approach to explore ICTs in everyday life, as well as their meanings and uses (Silverstone, 2005).

However, as evidenced by the literature review, although the main participants are rural children who will soon receive a laptop, it was not possible to obtain a

deep understanding of their situation and context without the inclusion of other actors such as their mothers, an adult that is part of their family environment and who is identified as the main person responsible for their education.

This was supported by the key person at the school, where the head teacher and principal were interviewed. This comprehensive approach helps to give voice to a range of participants to complement their perspectives (Kendall *et al.*, 2010).

Authors from other fields have used triad interviews to access similarities, disparities, and understanding of a phenomenon to integrate their views (Brownhill & Hickey, 2012). Incorporating their testimonies was fundamental to complement the children's day-to-day experiences along with the visions and discourses of elementary school adults participating in the daily school and home context.

Moreover, when interviewing minors, participants can be easily influenced by the way the question is formulated (Kvale & Brinkmann, 2009), so contrasting their discourses with that of adults was another way to increase the reliability of the testimonies and experiences (see Table 1).

The research was intended to conduct face-to-face interviews and participant observations in homes and schools. However, the COVID-19 health crisis and new restrictions, closures, and warnings from the authorities forced the project to adapt and complement the interviews with online interactions via WhatsApp.

This was a way to incorporate elements of digital ethnography by supplementing participants' discourses and reports with exchanges over time (Rosenberg & Asterhan, 2018; Góralska, 2020).

Table 1

Participants

Location	Name	Role
Puangue	1. Marina	School Principal
	2. Pablo	Headteacher
	3. María	Mother
	4. Teresa	Mother
	5. Verónica	Mother
	6. Diego	Student
	7. Génesis	Student
	8. Viviana	Student
Huelquén	9. Ana	School Principal
	10. Consuelo	Headteacher
	11. Cecilia	Mother
	12. Carolina	Mother
	13. Lorena	Mother
	14. Alicia	Student
	15. Juana	Student
	16. Lorena	Student

Location	Name	Role
Cuncumén	17. Carolina	School Principal
	18. Pedro	Headteacher
	19. Elena	Mother
	20. Nicole	Mother
	21. Alejandra	Mother
	22. Francisca	Student
	23. Patricia	Student
	24. Trinidad	Student
San Pedro	25. Lucinda	School Principal
	26. Rosa	Headteacher
	27. Berta	Mother
	28. Jacinta	Mother
	29. Betty	Mother
	30. Loreto	Student
	31. Ana	Student
	32. Pamela	Student

Note. Names were changed to protect the participants' anonymity.

All interviews and exchanges were transcribed and analyzed with NVivo. The software helped to perform a meaning-focused analysis, following three stages:

1. Coding.
2. Condensation.
3. Interpretation. (Kvale & Brinkmann, 2009).

Coding included segments that were spread across testimonies and labeled to create codes (Fielding & Thomas, 2008). The main themes were determined by literature and previous research, such as internet access, meanings attached to cell phones, and parental and teacher mediation.

Subsequently, it incorporated new elements and emerging themes contributed by the participants (Flick, 2002), such as the ubiquity of social networks and the level of trust when using cell phones compared to other devices like computers.

Results

Rurality and use of cell pones

Rural areas enjoy the reputation of being peaceful and safe, where children can grow up with more freedom and close to nature. This is the predominant view of the mothers in this research, where they consider that despite the distance from the city and the constant problems with Internet connections, their children are the big winners. These are young families who see their communities as

safe places, where everyone knows each other and, in most cases, they live surrounded by family members.

This idea is closely related to what teachers and principals call the "healthy" environment in which they find themselves. As Consuelo (32), a sixth-grade teacher in Huelquén said: "They do not have that bad influence that can be found in a big city, on the contrary, they are good children, respectful children".

The children who were part of this study, however, do not necessarily appreciate this environment in the way that adults do. On the contrary, the idea of boredom and disconnection from the urban environment is very present, especially after a year without going to school. In fact, several of them have already spent more than ten months without socializing face-to-face with their peers at the time of the interview.

In this scenario, and even though there are other entertainment devices at home -such as satellite TV-, the interviewees valued having access to smartphones. Practically everyone has owned one of their own for two or three years, new or recycled. "Everyone has a smartphone...why wouldn't you?" says Alicia (12, Huelquén) with a genuine expression of disbelief when asked about the importance of being connected.

For most of them, cell phones have been their main distraction during the pandemic. For example, Trinidad (11, Cuncumén) is a Tik Tok fan; although she says she does not upload videos, she likes to watch them incessantly from the corner of her bedroom, which is the only place in her room where she receives an Internet signal.

The acquisition experiences vary. Some obtained one as a Christmas or birthday gift from a family member. In other cases, they got a cell phone because their parents upgraded theirs, so the old one was given to them. Several also have problems with a lack of memory and data plan, so they must be selective about what they use or download.

Added to this situation is the fact that a cell phone is an entertainment device, rather than a communication tool. In this context, socialization is also present but through these platforms and as a consequence of interaction through apps, that is to say, it is not necessarily the purpose of their use.

> I like to watch them (TikTok videos), I don't like to upload things, but I like to watch prank videos, and music videos, it's fun, it's the first thing I do when I wake up, before I get up, and to send a text message to my mom telling her I'm awake and start my day. (Ana, 11 years old, San Pedro).

Ana is the oldest of three sisters and lives with her parents and grandmother. When she wakes up, her mother is usually working in the family's field, so she likes to text her a good morning message and then help with her siblings' breakfast. They only began receiving internet at home six months ago, when the grandmother decided that Ana was falling behind in school because she could not access the internet properly.

Before that, Ana had to go to Melipilla, the nearest urban city, during the weekend, where her other grandparents live, to access a stable signal, do her homework, and catch up on what she missed from the online classes she could not access.

Instagram is also popular among the participants, although several admit it was complicated to set up since none of them have an email address, nor do they know how to sign up for one. Francisca (11, El Asilo), for example, asked her mom and dad for help in setting up the account.

> I started to see that my classmates had it (Instagram) and I asked my mom and dad, and they said yes. They helped me to add it to my phone, but it was a little bit difficult because I didn't have an email and everything got complicated, I don't know how my dad did it. I do have it in private, and I don't upload any pictures of myself, it's just to look and give Likes (Francisca, 11, El Asilo).

The skills to install and uninstall applications, as well as other actions on WhatsApp such as creating or leaving conversation groups, are tools that they report not knowing or not feeling confident using. For example, when applying a standardized digital skills questionnaire, words such as "favorites", "PDF", and "spyware" were not known to them. Nor was having an email and knowing how to create one.

What is interesting is how the parental figure emerges in situations of technological need. Also, the mother or father are mentioned as people with equal or greater expertise. For instance, Juana (12, Huelquén) says that she learned to use Zoom next to her mother:

> Even though we had a computer room, we went in just to draw, so no, I didn't know that much. With my mom, we learned Zoom a little bit at a time, even though I had a classmate who taught me some things, like the microphone and so on, but we learned things on our own. (Juana, 12, Huelquén)

For the children, social networks were essential to be able to contact their classmates, because despite being surrounded by cousins and relatives, distances often prevent a close relationship with those in their class group. Now, from the testimonies, it is evident that accessing a cell phone can be intuitive, but other tools are needed to install apps and use them more effectively.

Perhaps this is the first divergence from the idea of children as natives who feel comfortable navigating in this digital world when in reality, they are still minors who need parental permission and assistance.

The school on trial

Teachers and principals agreed on the idea that the children had access to some kind of connectivity device, which, although often precarious, did motivate them to stay connected. For Pedro, a teacher at El Asilo, this reflects an age-related need to socialize:

> Children are cruel even if they are not trying to be, without a cell phone they are going to be excluded. If they don't have an updated phone, they will be excluded. Now there are many groups on the Internet, WhatsApp, Facebook, Instagram and more. If the child is not up to date he will wonder, what are they talking about? They are going to leave him on his own. (Pedro, 49, El Asilo)

In some ways, this view reflects the belief that regardless of the type of access, childhood and digitization go hand in hand. A need also felt by the mothers, in terms of the pressure on their children when being part of a group, as commented by the teacher.

Despite access to smartphones at early ages, however, computers and digital skills are not common among the participants, which is consistent with the evidence of significant disadvantages due to the urban-rural divide.

According to teachers and aligned with what has been argued in the literature (Feller *et al*., 2019), the main reason is that schools have limited laptop availability and that the signal schools receive is of very low quality.

In addition, technology curricula are not up to date. When we discussed this issue, both children and mothers mentioned that painting, viewing videos, and using basic programs were predominant in the technology subject. There are also other practices that, although not representative, do help explain the lack of keeping up to date, as the teacher from Cuncumén tells us:

> I arrived at the school in May 2018, I had to rearrange things and I did not have time to implement 100% the case of technology or computer science because they would only draw what can be done in class, and the signal here is horrible, so what's the point? So, I gave them more practical skills... hammer, pliers, scissors, and things that are useful to them. (Pedro, 49, El Asilo)

In part, this decision is consistent with evidence indicating that digital skills and teacher involvement have a direct implication in the use that encourages children's learning of ICTs (Livingstone, 2019).

However, in this case, the teacher is highly influenced by the context, where the poor quality of the signal makes it extremely difficult for him/her to carry out the curriculum or to incorporate technologies as a transversal tool to the school subjects.

The other teachers share this. Consuelo (32), a teacher in Helquén, also states that based on requirements, one technology hour a week is too little: "What are you going to do in one hour if you lose 10 minutes to go and 10 minutes to return to the computer room and there is only one computer for the whole school?

In this sense, the pandemic was a test that took the educational system by surprise. The suspension of in-person classes and the need to find online alternatives exposed the lack of preparation in both students and teachers. That is why the teacher from El Asilo now reflects on the relevance of digital skills, although he supports the adjustment he made to the curriculum because, in his experience, rural life has other types of challenges and expectations.

This adverse scenario has worsened during the pandemic. The Puangue school principal states that the core of technology ("use of hardware, software, and computer peripherals") that should be taught in sixth and seventh grade was interrupted by the pandemic and replaced by more urgent needs, like the weekly supply of food for children.

This is because, due to the vulnerability level of the students, the school is obliged to provide them with three meals a day, meals that their families were especially dependent on due to economic difficulties, so they had to create a system to visit each house on a weekly basis to deliver baskets and printed guides with schoolwork. When an online system is in place, preference is given to Mathematics and Language Arts subjects. However, the lack of digital skills among students worries her:

> (The children) don't know how to work well on the computer... I hope they reach a basic or intermediate level because today it is less than zero, they don't know how to modify a Word document, they don't know anything. They can manage with their cell phone, and they know how to make a video or something with the phone, but with the computer, they know very little (Marina, 43, Puangue).

The notion of a lack of basic digital skills despite access to a smartphone and not enough experience in how to use a laptop is also shared by the other teachers. This was the case of teacher Pablo (32, Puangue) who started using a school-required application from the publisher of the books used by his students, with many problems.

For example, a lack of memory in cell phones, interfaces designed for computer screens, and unclear on smartphones, led him to create video tutorials and send them via WhatsApp to his students. This worked with the 10 to 12-year-olds, but he had to contact each parent directly to help the younger ones.

This unpreparedness and lack of skills were evident in these schools, especially because of the instability and poor quality of the internet signal, both for teachers and students. For example, Patricia (11, Cuncumén) tried to connect with classes from her phone, although she admits that she did not understand how the platform worked. Her mother, Nicole, could not help her either:

> The teacher insisted on video calls, but we have an awful signal, yet he wanted to do it anyway, I don't know what happened, I was 100% busy using the projector, but the screen is very small, there is a bad signal and Patricia was very nervous, she was getting upset that it didn't work. (Nicole, 39, Cuncumén)

Lorena (11) in Huelquén had a better signal experience, however, it was not significant in terms of learning: "I think we used something called Classroom... The teacher put a picture, we had to write and answer, they mention a name and we must answer".

Due to its poor reception, both stopped having online classes and teachers stuck to the weekly delivery of printed guides with educational material. In terms of learning, both mothers and their children referred to the school year as a "waste of time", while others say they had the "longest vacation" despite the constant work on the guides.

The teachers have a similar view despite their efforts and agreed that while conducting online classes, more than half of their time was spent searching for a good reception and then deciding that it was technically impossible to try.

Discussion

Although Internet access is technically not as good as in urban areas, the participants agree that rural children participating in this research are digitalized. They have access to smartphones and use applications for entertainment and socializing with peers, which was accentuated at the time of the pandemic because of their schools closing. The familiarity with the devices is, in any case, like an entertainment device over an educational one.

Parents, teachers, and administrators agree that children have low digital skills and that, although they can use applications for entertainment, they do need to ask for help from peers and adults to install or uninstall them. This lack of skills is most evident in the educational environment. Due to school closures and the need for online classes, both students and parents were forced to enter communication and educational platforms that were not easy for them to navigate.

Added to this is the fact that devices such as cell phones are not the most appropriate for the classroom, as well as the instability of the signal, which led them to give up their attempts at online education. A further problem was the schools' lack of instruction in the use of technology. Teachers recognized the students' lack of preparation and curriculum time, as well as the lack of infrastructure to be able to deliver better digital tools to their students.

In the interviews, it was possible to perceive that their preparation in this subject was not the most adequate, as evidenced by previous works (Claro *et al*., 2017). Thus, the rural educational context was forced to digitally replicate their classrooms, but the lack of signal, skills, and lack of adequate devices prevented it.

This meant that, in two of the four schools, classes were only twice a week and only in the subjects that were considered most relevant (Language and Mathematics). On the other hand, the other schools opted to go completely offline with a weekly delivery of printed work guides. In this way, digital appropriation continues in the field of entertainment and socialization, but it has not been feasible to transfer this confidence of use and skills to the educational field.

Responding directly to the questions initially raised, it is possible to say that the evidence shows that the pandemic acted as a catalyst for digital needs. On the one hand, it increased the need for children to socialize and entertain themselves, since at the time of this research they had been out of school for at least 10 months.

Moreover, the health emergency put digital skills acquired by children, parents, and teachers to the test. So, with little or no success, we have seen how students and their families try to connect despite the previously mentioned barriers (signal, devices, and skills).

This change of scenario has led teachers and principals to rethink the idea of children as digital natives because it has revealed the lack of skills to be able to successfully adapt to the use of technological tools for remote education.

On the other hand, parents are also aware of this situation, and although they consider children to feel comfortable using a cell phone, they do perceive their children's vulnerability and desperation when there are technical problems or when navigating platforms.

Conclusions

This paper has explored the family and academic environment's perception of children as digital natives in terms of their belief that they are technological experts. This was qualitatively explored in four rural elementary schools in Chile during the COVID-19 pandemic.

From the results, it is possible to argue that the digital inclusion of children in rural areas is a process that although it requires certain technical conditions such as access to connection infrastructure, is closely linked to educational and family areas that make up their daily lives (Cabello & Claro, 2017).

However, it is clear from the interviews that the pandemic brought a change in these participants' daily habits. After ten months of school closure, technologies were even more present, whether for leisure or to fill long days and communication with teacher friends. In a few cases, and for short periods of time, it was also used for online classes and educational purposes. Yet, poor signal quality or lack of signal prevented them from using it as an educational resource, so it was only used for coordination with teachers while they continued with their schoolwork using printed guides.

As the literature suggests, smartphones were the main gateway for their digital inclusion path (Katz, 2017). Therefore, children appropriated the smartphone primarily as an entertainment device, and the opportunities were limited to social networks. Despite unstable access and poor signal quality, they are considered active users of Instagram and Tik Tok.

Thus, the reported skills are mostly related to access and use of social networks. Access to computers was not evident either. This is compounded by the fact that when schools were open in pre-pandemic times, the minors' technological experiences were not significant due to equipment and lack of curricula. This is consistent with the literature and the link between mobility and limited digital capabilities in vulnerable groups (Napoli & Obar, 2014).

This paper highlights the gray areas in the process of digital inclusion in a situation of empowered and connected children who, regardless, do not have the opportunity to harness the web's potential, nor to explore and develop skills on a more complex device like a computer.

Empirically, it provides evidence of the specific components of the digital adoption process and how their educational and family contexts contribute to the construction of meanings, narrowly limiting their use to entertainment. Several issues emerge from these findings. First, the idea that rural parents primarily access the Internet for their children's education is confirmed.

Second, the concept of digital natives is challenged, since minors recognize the need to ask their parents for help, who with some difficulties can do so, refuting the notion that they are less skilled than their children (Correa *et al*., 2015). This could be explained from a generational point of view because mothers had the opportunity to know and use the Internet during their school years.

It is also because, in the isolated context of rural areas there is a need for communication, which is consistent with the omnipresence and uses of cell phones within vulnerable groups (Katz, 2017).

In addition, it is relevant to note that the skills and experiences reported were mainly on mobiles and not computers. The limitations of this study lie mainly in the qualitative nature; therefore, the results cannot be extrapolated to the rural population.

Future research should analyze the changes that the incorporation of a laptop will create for minors and their families, as well as the evolution of digital skills and the various gaps as school closures continue due to the pandemic.

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