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USE OF THE INTERNET AND TECHNOLOGICAL EQUIPMENT AMONG HIGH SCHOOL STUDENTS IN THE INTERIOR OF PARÁ STATE

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Abstract: The inclusion of Information and Communication Technologies (ICT) in contemporary society has transformed social dynamics and educational processes. Given this scenario, it is important to investigate the impact of these technologies among high school students. This study seeks to analyze the use of the internet and technological equipment by high school students in a city in the interior of Pará, considering the socio-educational implications in contexts of socio-economic vulnerability and digital exclusion. This is a quantitative, descriptive and analytical study carried out with 378 students from public and private schools in the southeastern region of Pará. The data was analyzed using SPSS software (version 22) and included descriptive statistics and association tests (Pearson's chi-square), with a significance level of 5%. The sample was predominantly female (95.5%), with brown students (63.2%) and an average age of 18.2 years. Family income of up to one minimum wage (55.8%) highlights the socio-economic barriers to technological access. The Internet (62.7%) was the most valued resource, followed by computers (19.6%). Statistical differences ($p=0.004$ and $p=0.007$) show that younger students depend more on family support, while older students show autonomy. The conclusion is that there are challenges to equal access to ICT, with the family environment being the main digital support. Educational strategies must be adapted to age and contextual differences in order to promote technological inclusion.

Keywords: Information and Communication Technologies, High School, Digital Inclusion, Education.

INTRODUCTION

The presence of Information and Communication Technologies (ICT) in contemporary daily life has transformed not only social dynamics, but also educational processes. Inserted in the so-called information society, individuals are increasingly crossed by digital flows that demand new cognitive and technical skills, especially among young people. In this scenario, the school, as a training and socialization space, is challenged to critically incorporate technological resources to promote meaningful and socially contextualized learning.

Authors such as Löbner et al. (2010) and Araujo (2017) point out that the adoption and proper use of information technologies in high schools has a positive impact on student performance, with evident reflections in assessments such as the National High School Exam (ENEM). The results of his research indicate that schools with better technological infrastructure and effective use of IT assets tend to achieve higher results. This finding reinforces the argument that access to technology, combined with its intentional pedagogical use, can contribute to reducing educational inequalities, especially when considering the gulf that separates public and private schools, or even those located in central and peripheral regions.

On the other hand, recent research has pointed to the existence of a paradox between encouraging the integration of digital technologies into teaching and the simultaneous imposition of legal restrictions, unless they are explicitly intended for pedagogical purposes, creating an interpretative ambiguity that negatively impacts the effectiveness of public digital inclusion policies (Moraes; Casagrande; Maieski, 2024, Lima, Araújo, 2021).

Technologies must be understood not just as instruments or tools, but as fundamental elements that structure the contemporary way of learning, communicating and producing knowledge. This perspective requires an

educational approach that promotes training aimed at the full exercise of digital citizenship, highlighting the importance of developing skills that transcend the technical and instrumental use of these technologies (Bortolazzo, 2020; Lima, 2023).

In view of this, it is essential to understand how students from different socio-territorial contexts experience the insertion of technologies into their daily school life. This study aims to analyze the use of the internet and technological equipment by high school students in a city in the interior of the state of Pará. The research seeks not only to describe the scenario of access to and use of technologies, but also to reflect on the implications of these practices for the educational process in contexts of socio-economic vulnerability and digital exclusion.

METHODOLOGY

This is a quantitative, descriptive and analytical survey of 378 high school students from public and private schools in the southeast of the state of Pará. Data was collected using a structured questionnaire applied in digital format, containing closed questions on sociodemographic profile, ownership and use of technological equipment, forms of internet access and learning digital skills.

The students answered a questionnaire with questions about the following variables: demographic and socioeconomic profile, health conditions and lifestyle, use of and access to Digital Information and Communication Technologies (DICT) and perception of Scientific Literacy and Science. The questionnaire was built in *Google Forms*, based on a broad review of the literature on the subject, to make it possible to apply it more quickly and effectively. The questionnaire was administered in the classroom, in person, to clarify any doubts the participants might have, between November 30 and December 12, 2023. The estimated completion time was up to 20 minutes.

Based on the quantitative data collected, the database was built using the Microsoft Excel program, version 2013, and exported for compilation using the *Statistical Package for the Social Sciences* - SPSS software, version 18. The data was processed and analyzed using SPSS software, version 22. Descriptive statistics (frequencies, means and standard deviations) and association tests (Pearson's chi-square) were applied, considering a 5% significance level. For comparative analysis, the students were grouped into two age groups: 14 to 17 years and 18 years and over. The project was approved by the Ethics and Research Committee of the Federal University of Pará (CAAE 67199623.6.0000.0018), and all participants signed an informed consent form.

RESULTS AND DISCUSSION

The predominance of women (95.5%) and the strong representation of brown students (63.2%) highlight the socio-cultural and ethnic context of the Amazon region, suggesting that public policies aimed at digital inclusion should consider the specificities of these populations. This sample composition, coupled with the average age of 18.2 years and the predominance of adolescents aged between 14 and 17 (67.7%), points to the need for interventions that dialog with the demands of young people in the process of academic training and citizenship, expanding access to quality digital resources. When coupled with socio-economic conditions, where 55.8% of families live on up to one minimum wage, this reality shows a clear vulnerability that can limit the supply of technological equipment and adequate infrastructure, a reality that accentuates the phenomenon of digital exclusion.

Socio-economic profile	n	%
Age group		
14 to 17 years	235	62,2
18 years and over	112	29,6
No reply	31	8,2
Sex		
Female	361	95,5
Male	12	3,2
Other	2	0,5
I'd rather not answer	3	0,8
Skin color		
Yellow	15	4,0
White	64	16,9
Indigenous	4	1,1
Brown	239	63,2
Black	50	13,2
Other	1	0,3
I prefer	5	1,3
Religion		
Buddhism	2	,5
Catholicism	104	27,5
Evangelical Christianity	152	40,2
Judaism	1	,3
I have no religion/belief religion	43	11,4
Other	44	11,6
I'd rather not say	32	8,5
Shift		
Integral	126	33,3
Morning	70	18,5
Afternoon	117	31,0
Night	65	17,2
Marital status		
Single	348	92,1
Married/stable union	29	7,7
Divorced	1	0,3
Family income		
Up to one minimum wage	211	55,8
From five to ten minimum wages	11	2,9
From ten to 15 minimum wages	3	0,8
From two to three minimum wages	38	10,1
From four to five minimum wages	12	3,2
From three to four minimum wages	20	5,3
From one to two minimum wages	83	22,0

Table 1. Distribution of frequencies for the socioeconomic profile of high school students, PA.

Source: survey data

With regard to technological resources (Table 2), the data shows that an internet connection is considered the most important resource to have at home (62.7%), followed by a computer (19.6%). This preference suggests that, in the students' view, the ability to access information and maintain virtual communications outweighs even the possession of traditional processing devices, reflecting a paradigm shift in which connectivity is essential not only for entertainment, but above all for learning and educational development. The devaluation of obsolete devices, such as CD/DVD players (59%), reinforces this idea, pointing to the urgency of investments that keep pace with technological evolution, adapting the domestic technological park to the current and future demands of students.

As for where and how they use the internet, the predominance of use at home (55.6%) and via cell phone (37.6%) shows that private spaces and mobile devices are the main channels of access to information for the majority of students. This distribution indicates a lack of technological infrastructure in schools, as only 4.2% of students report using the internet in this environment (Table 2). This gap highlights the need for educational policies that prioritize the modernization of equipment and the expansion of connectivity in educational institutions, not only in order to improve academic performance, but also to reduce the inequality of access to digital resources between different socio-economic backgrounds.

Variables	n	%
Most important equipment		
Internet connection (radio, cable, fiber, wifi)	237	62,7
Computer/Notebook/Netbook	74	19,6
Tablet and/or similar	25	6,6
Printer/Scanner	2	0,5
CD/DVD player/writer and/or similar	2	0,5
I don't have any of the equipment on this list	32	8,5
None	6	1,6
Less important equipment		
CD/DVD player/writer and/or similar	223	59,0
Printer/Scanner	35	9,3
Tablet and/or similar	31	8,2
Computer/Notebook/Netbook	17	4,5
Internet connection (radio, cable, fiber, wifi)	4	1,1
I don't have any of the equipment on this list	29	7,7
None	39	10,3
Where you use the internet most		
At home	210	55,6
On your cell phone	142	37,6
At school	16	4,2
At the homes of friends and colleagues	4	1,1
At relatives' houses	2	0,5
At work	3	0,8
I don't use the Internet	1	0,3
How you learned to use a computer		
With the help of family members	64	16,9
With the help of friends / colleagues	31	8,2
At school (computer classes, clubs)	41	10,8
At school in different subject classes	16	4,2
In computer courses or similar	117	31
Alone	109	28,8

Table 2. Frequency distribution for internet use and technological equipment among high school students, PA.
Source: survey data

In terms of digital learning, 30.5% of students learned to use computers through specific courses, while 28.5% were self-taught (Table 2). Continuous and equitable access to the internet and technological equipment is fundamental for developing digital skills among students, as technology plays a central role in both the learning process and citizenship training

(Aureliano, Queiroz, 2023; Souza, 2011). The data shows that learning to use computers is largely done with the help of family members, which shows that the home environment is crucial for the initial development of digital skills; in addition, the high value placed on computers over other devices reinforces their educational role.

In this context, incorporating ethical practices into technology use routines is essential to prevent bias and ensure a safe and transparent educational environment, which translates into fairer conditions for student development (Rossetti, Angeluci, 2021). In this way, promoting an inclusive digital environment not only expands access to technological tools, but also contributes to reducing inequalities in education, preparing students to become critical citizens who are trained to act in an increasingly connected society (Lima, Araújo, 2021).

Table 3 shows the results of the chi-square test for internet use and equipment by age group. Younger students show a marked dependence on family support for the development of skills related to the use of technology, while older students show greater autonomy in this process. The results show that 22.1% of younger students rely on family support, while 38.4% of older students are self-taught. These data show statistically significant differences ($p=0.007$ and $p=0.004$, respectively, for the variables “place of internet use” and “form of digital learning”), reinforcing the importance of age and home environment in building students’ digital experience. This interaction directly influences the development and acquisition of technological skills, impacting on the learning of these individuals.

Variables	14-17 years		18 years and over		p-value	
	n	%	n	%		
Less important equipment						
Computer and similar in the room	2	0,9	2	1,8	0,270	
I don't have any of the devices on this list	30	12,8	13	11,6		
Gameboy, Ngage, PSP	43	18,3	19	17,0		
Games (Nintendo, Sega, PlayStation, Xbox, etc.)	118	50,2	68	60,7		
None	35	14,9	8	7,1		
TV/Video or similar in the room	7	3,0	2	1,8	0,004	
Most important equipment						
Computer and similar in the room	82	34,9	64	57,1		
I don't have any of the devices on this list	36	15,3	15	13,4		
Gameboy, Ngage, PSP	1	0,4	0	0,0		
Games (Nintendo, Sega, PlayStation, Xbox, etc.)	5	2,1	2	1,8		
None	19	8,1	3	2,7		
TV/Video or similar in the room	92	39,1	28	25,0	0,007	
Who did you learn to use a computer from?						
With the help of family members	52	22,1	9	8,0		
With the help of friends / colleagues	19	8,1	11	9,8		
At school (computer classes, clubs)	27	11,5	13	11,6		
At school in different subject classes	6	2,6	5	4,5		
In computer courses or similar	75	31,9	31	27,7		
Alone	56	23,8	43	38,4		

Table 3. Association between internet use and technological equipment among high school students, PA.

Source: survey data

Furthermore, the lack of adequate technological infrastructure in school institutions, in contrast to the predominance of technology use in domestic environments, highlights the need for meticulously designed educational strategies. These strategies must take into account the specificities of each age group in

order to promote more equitable and efficient access to digital resources, thus optimizing the process of technological training in an inclusive and comprehensive manner.

These results outline a scenario of challenges and opportunities. On the one hand, the consolidation of a sociodemographic and economic profile that contributes to digital vulnerability; on the other, the identification of ways to promote more effective digital inclusion, based on strengthening the technological infrastructure in schools, expanding access to modern devices and offering training programs that take into account the specificities of different age groups and family contexts.

The data shows that, even in the face of economic limitations, students maintain regular contact with technologies, especially via mobile devices and home connections. However, the lack of adequate support in schools and unequal access to more complex equipment represent obstacles to the consolidation of critical and inclusive digital literacy.

FINAL CONSIDERATIONS

The research revealed a panorama marked by contrasts: while the internet is an essential element in students' daily lives, access is still mostly through mobile devices and in family contexts, which limits its educational potential. Valuing certain equipment over others reflects not only individual preferences, but also the material restrictions imposed by historical inequalities.

Understanding these dynamics is vital for planning educational and technological policies that take into account regional and generational specificities. Investments in school infrastructure, teacher training and digital inclusion programs can contribute to a more critical, equitable and emancipatory appropriation of technologies by Amazonian youth.

We therefore recommend strengthening cross-sector initiatives that promote quality internet access in schools, as well as encouraging teaching practices that value the conscious, creative and ethical use of digital technologies.

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