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THE RELATIONSHIP BETWEEN EDUCATION AND NEW TECHNOLOGIES DURING THE COVID-19 PANDEMIC IN AMAZONAS STATE

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ABSTRACT

In December 2019, several cases of pneumonia of unknown origin were confirmed, reported in Wuhan, China. The disease was then identified as covid-19, an RNA virus, now referred to as severe acute respiratory syndrome (SARS-CoV-2). The first cases in China had a common clinical manifestation of fever, cough, myalgia, fatigue, and dyspnea, with organ dysfunction (e.g., acute respiratory distress syndrome - ARDS, shock, heart disease, and acute kidney damage) and death in severe cases. To describe, through literature, the relationship between education and new technologies during the covid-19 pandemic in the state of Amazonas. Methods: This is an exploratory research of the integrative review type. The databases used were: Google Academic, Periodicals, SCIELO, Ministry of Education database (MEC), National Education Council database (CNE) and IBGE database. As inclusion criteria was established articles published in Portuguese and English, between 2017 and 2021 and exclusion criteria were: Articles whose subjects, titles and objectives did not fit the proposed, repetitive articles, in other languages. The challenges of pandemic in education have led to a discussion about the urgency of technologies for the practice of distance education in our country. It is known that technology is an essential factor for the current scenario we are living, regarding digital evolution, admitting beneficial experiences specifically in the educational field. For this reason, it was essential for students and teachers to be in social isolation and to make use of information and communication-oriented technologies, so that all students could have access to quality education. This teaching modality is regulated by specific legislation from the Ministry of Education, implemented both in basic and higher education, considering the specificities of each institution and each region of the country. Remote teaching was adopted by private and public educational institutions as an immediate solution to the country's public calamity situation, as well as to the challenges faced by students, teachers, and parents.

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INTRODUCTION

In December 2019, several cases of pneumonia of unknown origin were confirmed, reported in Wuhan, China. The disease was then identified as covid- 19, a ribonucleic acid (RNA) virus, now referred to as severe acute respiratory syndrome (SARS-CoV2). The first cases in China had a common clinical manifestation of fever, cough, myalgia, fatigue, and dyspnea, with organ dysfunction (e.g., acute respiratory distress syndrome - ARDS, shock, heart disease, and acute kidney damage) and death in severe cases (TEICH *et al*., 2020).

For this reason, both private and public schools have had to suspend face- to-face classes, adapting to remote classes in all states and regions of the country. According to the World Bank, more than 1.5 billion students in 160 countries were left without face-to-face studies. The current panorama shows that many managers of private and public institutions have had to find emergency solutions to continue teaching activities, especially with the help of digital teaching technologies (Bridi, Maria Aparecida, 2020). On March 11, 2020, the World Health Organization (WHO) admitted the covid-19 pandemic. The first Brazilian state to have a confirmed case of this virus was the state of São Paulo. The Ministry of Health (MS) took a

long time to take an attitude that could avoid the contamination of the population. Even the ban on flights from other countries was not effective at that time, because the virus had already spread to all regions of the country (Silva, 2021). On March 13, 2020, the Amazonas government and the Foundation for Health Surveillance (FVS) notified the first case of covid-19 in the state, in a 39- year-old female patient with a history of recent travel to London (England). The local health surveillance authorities emphasized that the assistance network, at all levels (basic, medium, and high complexity), was prepared for the care. In this specific case, the patient did not need to be hospitalized, but in social isolation for presenting mild symptoms of the disease (https://g1.globo.com/am/amazonas/noticia/2020/03/13/amazonas-tem-primeiro- caso-confirmado-de-novo-coronavirus.ghtml.). It is estimated that in Brazil, the interruptions caused by the pandemic may accentuate the gaps already existing in education. However, the Ministry of Education (MEC) has been working intensively with other ministries to ensure that all students will have quality learning (Gusso, 2020). The history of traditional teaching is represented in the three levels of education: primary, secondary and higher education. Distance Education is not adequately represented in all Brazilian states, however, in the midst of the pandemic, remote classes have had a huge increase (Alves, 2020). Given the current scenario, it became evident that it was necessary to seek resources to be able to work with the technologies available on the market, but it was also necessary to train teachers and students to use the new digital tools. As the classes went on, an increase in student absences was observed, many due to the lack of technological devices and, others, for not having internet available or of good quality to attend the classes (Education, 2020). In this context, one should not make unfair comparisons between face-to- face and remote classes. It is important to focus on welcoming the student who is using the teaching platforms for the first time. Brazil needed to stop the operation of public and private schools in order to prevent contamination by the coronavirus (2019-nCoV) among students, and social isolation is the best way to ensure that the school population will not contract covid-19 (Santos Junior, 2020). The objective of the study is to describe through literature about the relationship of education with new technologies during the covid-19 pandemic in the state of Amazonas.

METHODS

This research had two moments in its elaboration. The first, based on the method of bibliographic review of the literature available on the subject, sought to create the theoretical foundation that brings elements of analysis and reflection on remote learning and its emergency adoption in the country. The search occurred in the following databases: Google Academic, Periodicals, SCIELO (Scientifie Electronic Library Online), Ministry of Education (MEC), National Education Council (CNE) and Brazilian Institute of Geography and Statistics *(*IBGE). As inclusion criteria was established articles published in Portuguese and English, between 2017 and 2021 and exclusion criteria were: Articles whose subjects, titles and objectives did not fit the proposed, repetitive articles, in other languages.

RESULTS & DISCUSSION

The initial selection of studies was made by reading the titles and abstracts of all the studies found. Following the inclusion and exclusion criteria, from the reading of the titles and abstracts of the 30 articles, 5 articles were selected. According to Table 1, it was observed that the articles addressed have in common the difficulty of remote classes, besides being analyzed in the relationship of remote teaching with learning in times of pandemic. The articles listed come to confirm that the platforms available for remote teaching have shown levels of adequacy relative to what is expected for the emergency moment. For Almeida (Almeida, 2017), reports that teachers have the privilege of having access to digital technologies for integration into the educational environment, through the teaching platforms made available by the MEC, to which all teachers in the private and public network have free access. Obviously, the educational institutions will have to adapt to the new learning technologies. We know that digital technologies are the basis for the learning process, and teachers will have to be trained to be able to pass on all the didactic knowledge developed during the training to their students. According to Borges & Carvalho (2021), teaching platforms currently available are: Conecta, Google Classroom, Meet, Virtual Learning Environment (VLE), Television broadcasting, Radios among other media. Thus, technology will have to do its utmost to cope with so many accesses, computer servers worked ten times more than they had been working, because the amount of access has grown a lot. The educational institutions were not prepared for remote learning and many students had difficulties, the access platforms did not expect so many students, and so there were some slowdowns, connection drops, and they did not expect a large number to m*et al*l the online learning requirements, but in the midst of this emergency moment it can be said that the technologies are essential for social interaction based on digital communication networks, where their integration into education will be inevitable (Borges, 2021). For Junior *et al*. (2020), the emergence of virtual environments amid the pandemic brings with it a change in teaching methods, where the teacher will have to understand this information, to be able to stimulate the student to create information in different ways, which allows access to new ways of organizing learning. In addition, the teaching platforms in most of them have an easy understanding of how to work and teach. However, these teaching platforms allow teachers to have an autonomy to adapt and insert the didactic content and also have a feedback of this learning. According to Guimarães (2014), the learning process should be accepted and worked on by all teachers, where they can develop their skills through shared action and reflection, with a view to promoting a culture, where schools need to review their structures and decrease the defensive way teachers react to digital technologies, developing professional communities with habits of inquiry, reflection and leadership in a continuous process of (learning to teach). In the words of Pereira (2020), the guidelines have to be clear, how to work with computers, laptops, tablets and smartphones. At the same time, this recognition of how to deal with digital technologies and their equipment in order to have access to learning platforms, teachers will have a positive expectation that they can impact their use and grouping in the students' school results, moreover, the teachers' knowledge will be essential to be able to measure the positive effects of digital technologies available in public and private networks. The table presents some of the main difficulties and constraints in the consistency of digital technologies in the educational context (Table 2). Thus, the interaction of digital technologies in remote learning, has been faced with widespread difficulties by teachers, the excuses of not having time to enter the teaching platforms. Still, the teachers also presented difficulties and acceptance of digital technologies in their daily lives, and in the actions training and access to these teaching platforms. Despite this, the lack of interest in learning was observed by most professionals, due to lack of money and interest in adapting to new digital technologies (Nascimento, 2020). The Amazonas State Education Secretary (SEDUC-AM) and the Amazonas State Education Council (CEE-AM) followed the governmental determinations regarding the suspension of school activities and, by means of Resolution N. 30/2020, of March 18th, 2020, established the special regime of non-attendance classes in the Amazonas State Education System as a preventive measure against the spread of covid-1915. On March 19, 2020, through Decree No. 42,087, it was established the suspension of classes in the state public school system in all municipalities of the state, for a period of 15 days, totaling 30 days without classes. However, according to Article 3 of Res. 30/2020, during the special regime period of nonattendance classes, the school unit managers are responsible for:

> I - Plan and prepare, with the collaboration of the teaching staff, the pedagogical and administrative actions to be developed during the aforementioned period, in order to provide study and learning material that is easily accessible, disseminated and understood by students and/or their families; II - Disseminate the aforementioned planning among members of the school

community; III - Prepare specific material for each stage and type of education, with ease of execution and sharing, such as video lessons, podcasts, content organized on virtual teaching and learning platforms, social networks and email. IV - Ensure the registration of student attendance, through reports and monitoring of progress in the proposed activities; V - Organize assessments of the content taught during the special regime of classes not face to face, to be applied at the time of return to face classes (OLIVEIRA; ALENCAR, 2020, p.2)[16].

Classes as per Ordinance 311/2020- GS/SEDUC, through the Project: Aula em Casa (Home Classroom), whose goal was to provide continuity to the pedagogical activities planned for the school year of 2020, without interrupting the school year (Oliveira, 2020; State Secretariat of Education, 2020). According to the Brazilian Institute of Geography and Statistics (IBGE) (IBGE, 2020), more than 4.3 million Brazilian students entered the pandemic without access to the internet, either because they lacked the money to contract the service or to buy a device, or because the service was unavailable in the

Table 1. Summary of articles on the relationship of education with new technologies in the period 2017-2021

AUTHOR/YEAR	TITLE	METHODOLOGICAL BASES	RESULTS	CONCLUSION
ALMEIDA[9].	Digital technologies and teaching work: relations and paradoxes	Bibliographic Studies	Among the results achieved, we highlight, on one hand, the need to invest in teacher training for the use of the DTICs, the need to reflect on the many investments made in equipment and made available to teachers, and, on the other hand, the lack of incentive and availability of dedicated hours for teachers to use these technologies or plan their classes, and also the lack of knowledge of the DTIC "as teaching resources" by teachers and students.	We conclude that there is a need for further studies for a better analysis of the fact that technologies used for educational purposes broaden the possibilities for the teacher to motivate his/her students, although, as found in the empirical material, students and teachers need a media and information literacy.
BORGES; CARVALHO[10].	The implementation of the google classroom virtual learning environment in professional courses in remote emergency education	Quanti-qualitative approach.	The results indicated that the vocational courses present young students who live in the outskirts of the metropolitan region of Belém, who have access to classes mainly by smartphone. The students and teachers presented difficulties in handling the platform at the beginning of the use of the virtual learning environment.	Professional education contributes to the formation of qualified people for the formal market. In this sense, it was possible to observe that young people from the outskirts of the metropolitan region of Belém are seeking an opportunity in this market ever earlier. The changes imposed on society because of the pandemic have implied many challenges, adaptations, and flexibility in the classroom education system.
JUNIOR et al.,[11].	Online teaching in times of pandemic (covid 19): an exploratory study on teaching practice	Exploratory Research	Digital technologies are fully embedded in our daily lives, in all sectors. Everyday, we are challenged to appropriate a series of applications and informational resources for our social interaction. Therefore, mastering these resources is no longer a differential, but a requirement.	The data obtained from the teachers point out the difficulties encountered in the transition to this new model and, on the other hand, the recognition of the importance of improving for this new reality, besides the limitations (both teachers and students) inherent to the infrastructure and digital knowledge, fundamental for the insertion in this new educational context.
PEREIRA[12].	The Devastation of work: the labor class in the pandemic crisis. In M. A. Bridi. Telework in pandemic times and the objective conditions that challenge the working class	Bibliographic Review	Global society carries risks that are also and increasingly global. The COVID-19 pandemic that broke out in 2020, for example, has required all countries toall countries, with common measures across states. One of the most important recommendations one of the most important recommendations, that of social distancing, posed the question of how to continuework at a distance.	Telecommuting is configured as one of the modalities of flexible work, which now extends to the worker's home. Although it is presented as a panacea, the problems are of several orders: related to health, since they do not always count with ergometric equipment; cultural barriers, for which companies tend to have difficulties in giving up the physical control of work; the difficulty of separating the company's work from domestic chores and childcare; among others.
BIRTH[13].	The continuing education in the constitution of the teaching professionalism: a look at the final years of the public school system of Distrito Federal	Documentary analysis	Therefore, the analysis and interpretation of the results should consider the movement, historicity and contradictions experienced by the subjects. By articulating and synthesizing all the possible contents resulting from the process of analysis undertaken since the survey of the pre- indicators, this stage is the one that most distances itself from the empirical and approaches the concrete reality, that is, the meanings that the subject constitutes for the reality in which he/she is present.	This research originated from the intention of analyzing the relationship between continuing education and teaching professionalism in the final years of elementary school. Its scope was to understand the meanings attributed by teachers of the final years of the public school system of the Federal District to the processes of continuing education experienced by them, in the process Of building their teaching professionalism.

Source: Prepared by the author, 2021.

In this perspective, so that students in the public network were not damaged in relation to the assimilation of content and the school calendar, the state of Amazonas came out ahead of other states in the federation. SEDUC-AM, in partnership with TV Encontro das Águas, on March 23, 2020, started the Special Scheme of Non-Presential

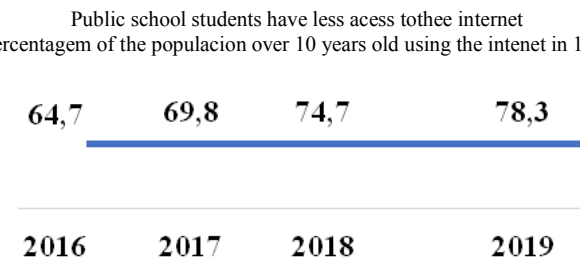
regions where they lived. Data from IBGE reinforces the inequality in distance education between public and private students; 41 million students in the public network do not have access to quality internet, and the statistics confirm the effects of inequality in education with schools closed during the pandemic.

Table 2. Main difficulties and constraints in the consistency of digital technologies in the educational context.

Teacher Challenges	Main Constraints
Time will never be enough for the teacher	Lack of equipment and investment
Apathy to technological knowledge	Inadequate preparation in teacher training
Individual Decision	Formats of actions in class time
Insecurity when using digital platforms	Need for pedagogical foundations how to work with digital technologies
Resistance to new educational changes	Deficient technical support
Lack of basic guidelines on how to handle the teaching programs	Not being aware of the benefits of digital technologies in their daily lives
Evaluation Methods	Reduced your vision and leadership

Source: Prepared by the author, 2021.

Chart. Percentage of students without access to quality internet



Source: Prepared by the author, based on IBGE, 2020.

In March 2019, before the pandemic had taken hold in the country, internet access was already evident, and to complete the picture, we also had infrastructure problems in schools where most have been experiencing some obstacles for the return to classes in the year 2020. According to the *IBGE*, 49% of the municipal education departments indicated high degrees of difficulty with internet access (Folha De São Paulo). The reality of the educational community comes to show that the barriers faced are old, as access to the internet and computers are seen as some of the reasons for the absence of participation of students in the 2020 activities. In the state public school system in the north of the country, 96.4 of the students did not have access to remote classes, nor were they able to deliver the activities carried out in the 2020 school year (UNDIME, 2021). Still, learning is important to minimize the negative effects of emergency temporary distancing, where the schedules stipulated for this teaching modality, requires receptive commitment from the students, because the current scenario tancing and requires attention from the regulatory agencies.

FINAL CONSIDERATIONS

It is concluded that schools are responsible in this process where everyone will be evolving and learning together. The society is together in this fight against the coronavirus and having to keep united, the best adjustments and transcend another stage that is being difficult, but that will leave good teachings and convenience during evolution for those who manifest themselves for transformation and mainly rethink about the different areas ofespecially education. However, the school has the purpose of conducting evaluative activities and records of pedagogical actions and student learning, and observing the development and skills to be achieved by students in exceptional circumstances caused by the pandemic. This period is of utmost importance for everyone involved, as the will to end this covid-19 pandemic prevails, and to remain aware and conscious that the whole teaching process must be adapted for the students' learning success.

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