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Teachers' perceptions on the consequences of the COVID-19 pandemic in Basic Education[1]

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ABSTRACT

During the past centuries, the use of digital technology has advanced impacting personal relationships. Electronic devices allowed that during the pandemic caused by Sars-Cov-2 there was a search for continuity in teaching, bringing new challenges to students and teachers. The article reports on the impacts of remote teaching during the pandemic in the perception of 45 Basic Education teachers. For this, a semi-structured questionnaire was applied aiming to explore the ways found by them to adapt to the modality, how their pedagogical practices were resized, and to investigate the teacher-student relationship. The results showed that, in general, there was a greater demand of time for class preparation and less interaction between teachers and their students. In addition, a difference was observed between the teaching in public and private schools. The conclusion is that there were many impacts caused by remote teaching during the pandemic requiring a rethinking of education for the coming years.

KEYWORDS: Remote Education. Education 4.0. Pedagogical Practices.

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A Percepção de Professores sobre as Consequências da Pandemia da COVID 19 na Educação Básica

RESUMO

Nos últimos séculos, o uso da tecnologia digital avançou, impactando as relações pessoais. Os dispositivos eletrônicos permitiram que durante a pandemia causada pelo Sars-Cov-2 houvesse busca pela continuidade no ensino, trazendo novos desafios aos alunos e professores. O artigo relata os impactos do ensino remoto durante a pandemia na concepção de 45 professores da Educação Básica. Para isso, foi aplicado um questionário semi-estruturado, visando explorar as maneiras encontradas por eles para se adequarem à modalidade, como foram redimensionadas as práticas pedagógicas e investigar a relação professor-aluno. Os resultados apontaram que, de modo geral, houve maior demanda de tempo para a preparação das aulas e menor interação entre os professores e seus alunos. Além disso, foi observada diferença no que tange ao ensino das escolas públicas e privadas. Conclui-se que foram muitos os impactos causados pelo ensino remoto durante a pandemia da COVID 19, necessitando repensar a educação para os próximos anos.

PALAVRAS-CHAVE: Ensino Remoto. Educação 4.0. PráticasPedagógicas.

Teachers' Perceptions on the Consequences of the COVID-19 Pandemic in Basic Education

RESUMEN

En los últimos siglos, el uso de la tecnología digital avanzó, impactando las relaciones personales. Los dispositivos electrónicos permitieron que durante la pandemia provocada por el Sars-Cov-2 se buscara la continuidad en la enseñanza, trayendo desafíos a los estudiantes y profesores. El artículo reporta los impactos de la enseñanza remota durante la pandemia en la concepción de 45 docentes de Educación Básica. Para eso, se aplicó un cuestionario semiestructurado buscando explorar como se adaptaron a la modalidad, como redimensionaron las prácticas pedagógicas e investigar la relación profesor-alumno. Los resultados mostraron que, en general, hubo mayor demanda de tiempo para preparar las clases y menor interacción entre los docentes y estudiantes. Además,

se observó diferencia con respecto a la enseñanza de las escuelas públicas y privadas. Se concluye que fueron muchos impactos causados por el aprendizaje remoto en 2020, lo que requiere un replanteamiento de la educación para los próximos años.

PALABRAS CLAVE: Enseñanza Remota. Educación 4.0. Prácticas Pedagógicas.

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Introduction

In December 2019, in the city of Wuhan, China, a new variant of the coronavirus was discovered, Sars-CoV-2, resulting in the COVID-19 pandemic. This required several changes throughout society because, in addition to being very contagious, its transmission occurs by inhalation or through direct contact with salivary droplets containing the virus. Due to the pandemic, the entire population needed to keep social distance for over a year to avoid contagion from this virus (DUTRA *et al*., 2020), which led to a readaptation in the way of life and in educational institutions so that the educational process became possible in this period.

The emergency remote education which occurred due to COVID-19 pandemic was authorized by the Ministry of Education since according to the § 4th present in Section III of the Elementary Education of the Law of Directives and Bases of National Education, "Elementary education will be in-person course, and distance education will be used as a complement for learning or in emergency situations" (BRASIL, 1996). Thus, the alternative for schools was the implementation of teaching through the intensified use of different educational technologies, the so-called Education 4.0. However, the diverse teaching conditions in the country's school institutions, added to the multiple realities of Brazilian families, made such process difficult in many schools, especially the public ones. Besides the inequality evidenced among Brazilian schools, it

was still difficult to break down barriers and adapt to the new reality, such as the preparation of teaching materials that could be used in the remote model and new formats of evaluation structures.

The new educational routine impacted both the students' lives and the teacher's work routine, as well as the relationships between educator and student. In this context, the present article discusses the conception of Basic Education teachers regarding the impacts of remote teaching during the COVID-19 pandemic in order to understand the biggest difficulties encountered by teachers and students, in the view of the teacher, as well as the challenges that will be present in everyday school life in the coming years.

Conceptual reflections

To keep up with the various contemporary evolutions and transformations, education had adapted itself several times. Meeting the needs demanded by the Fourth Industrial Revolution[5] and the new technological era, the use of digital technologies has been revolutionizing the teaching and learning process and increasing the use of digital media within schools what has culminated in the emergence of the so-called education 4.0 (FÜHR, 2018), which has as its main objective the formation of proactive and creative individuals. Melo and Oliveira (2019) point out that it is necessary to encourage in students, attitudes like time flexibility, using the development of skills such as discipline, organization, proactivity, entrepreneurship, innovative spirit and knowing how to manage time and have productivity. Such attitudes are part of the difficulties encountered in today's youth and can be developed with the help of educational technologies.

Over the years education has been organizing and working increasingly around these technologies, causing students who are now in

[5] The Fourth Industrial Revolution is the emergence and insertion of digital technologies of information and communication causing relevant changes in the current society (SHWAB, 2019).

Basic Education to become more and more users of new Digital Information and Communication Technologies (TDIC) (COSTA *et al.*, 2015). For living, though, surrounded in a world by so many technologies and for frequently using digital media they are called digital natives, being recognized as native speakers of digital language (FRANCO, 2013). However, two points need to be highlighted: (1) most teachers are not so skilled with technologies and, therefore, they will need to be willing to adapt to the use of ICTs (CASTRO *et al.*, 2015); (2) although students who are enrolled in basic education today are considered digital natives, it is necessary that they are guided by teachers regarding its conscious use (SILVA; CORREA, 2014), helping them in the reconstruction of knowledge.

According to Mometti (2020), it was necessary to make changes in teaching practices and, especially, to include the digital world in the planning of classes and content covered in the face of COVID-19 pandemic. Given the situation found in education during the pandemic crisis, teacher training must be rethought, so that teachers are better adapted to the use of digital media (MOMETTI, 2020). According to Theodoro*et al.* (2015), educational institutions responsible for the training of future teachers need to analyze and discuss the obstacles that appear in the various learning situations, researching which are the best teaching methods that meet not only the demands of the curricular contents but also a complete training regarding a more connected world.

In this context, Lemes and Santos (2021) also highlight that education cannot ignore the need to outline strategies and methodologies so that teachers are prepared for the new reality and that they have adequate training so that students can act in the future according to the needs required by the globalized world. According to the Common National Curricular Base, it is necessary that the student is increasingly prepared to act in a society that is constantly changing with the more intense use of technologies that will probably be part of future jobs (BRASIL, 2018).

The use of different pedagogical tools should be procedural, covering not only the presentation of curriculum content, but also the various forms of evaluation, since the main purpose of the evaluation act should be the search for continuous improvement of learning and should not be limited to the classroom, attending to bureaucratic aspects without the concern of what to do with the results that will be obtained (GRIZENDI *et al.*, 2008).

The use of new educational technologies, besides being tools for the construction of academic knowledge and evaluation models, should be implemented with the objective of preparing students for the changes in the world. However, the COVID-19 pandemic has caused the implementation of several teaching methodologies based on the use of technology to occur quickly and without planning, which makes it difficult or even impossible to create a proper digital culture among young people, diminishing the potential of digital tools. Another point to be considered is that the internet network infrastructure in Brazilian homes is still precarious, which has made it difficult to implement remote teaching for students in some schools.

A study conducted in 2019 by the Brazilian Institute of Geography and Statistics (IBGE) highlighted how the use of the internet by the Brazilian population underscores the socioeconomic inequality among students. This is because 98.4% of private school students had access to the internet, while of public-school students only 83.7% had access (IBGE, 2019). During 2019, more than 4 million students in public institutions had no access to the internet, evidencing even more the inequality among students. Therefore, socioeconomic inequality, which became even more evident during the pandemic, was a major obstacle to the implementation of quality remote education, making school education more distant from the reality of many students, mainly due to the absence of resources and lack of autonomy of teachers during this period (OLIVEIRA *et al.*, 2021).

Also considering the importance of establishing close relationships in school spaces (FREIRE, 1997), the use of technologies without prior and coherent planning, without adequate teacher training for such can be a triggering factor of social isolation made by and through screens.

Methodological approach

A survey was conducted with 45 teachers of Basic Education who belong to the database of the group "Development and Innovation in Science Teaching" of the Universidade Federal Fluminense (DIECI UFF), all of them being Science or Biology teachers, given that DIECI's work is focused on science teaching. To this end, a questionnaire with discursive and objective questions was constructed and validated by three teachers on the Google Forms platform. Then, the research was submitted to the Research Ethics Committee on March 23, 2021, with CAAE number 44419821.7.0000.5243, and approved on April 22, 2021.

The research group DIECI UFF made available a list with teachers' e-mails, and thus the Free and Informed Consent form was sent. After signing it, the sent questionnaire did not require identification, in the form of a hidden list, making it impossible to identify the guests and to see the contact details of the other participants. The data acquired by the survey were analyzed by means of spreadsheets and graphs using Microsoft Excel and Microsoft Word, Windows 10 version.

Presentation and discussion of results

The research had the participation of all teachers requested, with a total sample of 45 teachers. The profile survey showed that 40% were between 31 and 40 years old, more than 60% were female, 40% of the interviewees had between 6 and 15 years of teaching, and 42.2% worked in the public school

system. In addition, more than 60% of the teachers reported working with 6th grade classes in Elementary II, 2nd and 3rd grades in High School.

In the context of remote teaching imposed by the pandemic, teachers started to use more technological resources. However, 51.1% of the participating teachers said that they already frequently used technology in their classes before the pandemic began, with videos as the most used resource (90%), some of which were developed by the teachers themselves. Slides were the second most frequently cited technology after videos. It is noteworthy that most of the survey participants are between 31 and 40 years old, i.e., they are not part of the digital native generation (PALFREY; GASSER, 2011), that may imply greater use of materials such as videos and slides, which are "older" and therefore more familiar and accessible to teachers.

Despite highlighting the use of technologies in the classroom before the beginning of remote teaching, almost 50% of the teachers pointed out that the biggest difficulty encountered in the online teaching model was adapting to digital platforms, being more present in teachers aged 60 or older (100%) and between 41 and 50 years old (87.5%). The complexity in adapting to the new digital reality may be explained by the fact that these teachers are not considered native speakers of digital language. The teachers who already mastered the technologies probably did not have so much difficulty and were possibly able to meet the needs of each student in an individualized way, which does not even represent 10% of the interviewed teachers. In this way, Mometti (2020) points out that the use of technology in the classroom has brought to education developments in terms of teacher training. Considering that some practices related to remote teaching may remain present in the educational systems, it is necessary that the public or private education systems help teachers in continuous training so that they are prepared for the reality of the use of technologies in their classes, as well as this training needs to be present in the various graduation courses (LEMES; SANTOS, 2021).

Regarding the teacher-student interaction, which for Freire (1997) is an important process for the development of learning, 84.4% of the interviewees between 20 and 60 years old reported that they had difficulties in interacting with students during the pandemic period and some teachers (17.7%) revealed that technologies moved them away from their students. The few interactions with other young people were probably one of the factors that influenced socialization, which also reflected in the interaction of the teacher with the student, since this phase of life is fundamental for individuals to be able to establish relationships (OLIVEIRA, 2021). In addition, the pandemic influenced the increase in anxiety and stress levels, even in individuals considered healthy, besides accentuating the symptoms of those who have pre-existing psychiatric disorders (SHIGEMURA *et al.*, 2020).

The lack of relationships establishment associated with depressive and anxiety disorders directly affected the interest of the students, further provoking the teacher to use new teaching methodologies. Thus, 80% of the research participants pointed out that in order to maintain and/or raise the students' interest, they chose to use short video classes, and many reported a preference for live classes, called synchronous, because these made it easier to have direct contact with the students, even though the screens, and they became more dynamic and productive. Moreover, in discursive answers about the use of new strategies during the remote teaching, some teachers reported that they used memes, recorded parodies and did telecast experiments to try to compensate for the absence of labs. Because they have playful aspects, these tools are seen as great alternatives to improve the students' performance in some contents that are considered difficult to learn (CAMPOS *et al.*, 2003).

In addition to adapting to digital platforms, the choice and understanding of methodologies that would help relationships and awaken the students' interest, the teachers pointed out as a complicating factor the high demand of time to prepare classes. Of the research

participants, only 4.4% reported that it took less time to prepare materials for remote use than for face-to-face use, since besides preparing the classes, the teachers needed time to adapt to the platforms, adapt their planning, and post the materials. The lack of time reported by many interviewees is one of the main consequences of the working conditions of Brazilian basic education teachers. Jacominni and Penna (2016) emphasize that the accentuation on the social devaluation of the teaching work, consequently the low salary, causes teachers to increase their working hours, resulting in insufficient time to adapt to digital platforms and to explore technological tools.

From the point of view of 62.2% of the interviewees there were positive situations in remote teaching, such as the importance of the students' adaptation to the remote modality with the use of educational technological tools, because despite being born in a digital age, most students only used social networks as digital media and often without the necessary criticality that the virtual world demands. However, they indicated that the biggest negative point of the pandemic for the teaching and learning process, was the increase in the gap between public and private education. The research suggests an increase in social and educational inequality in the country, since a large part of the private institutions were able to adapt classes quickly, while many of the students in public schools did not have the minimum resources necessary for classes to continue remotely. According to Cunha*et al.* (2020), some families do not have enough apparatus for the connection, at the same time, of everyone who needs it, being the priority of those who work; other students depend on neighbors to get internet access and several other situations that prevented the presence and participation of students during remote teaching.

The negative points of the pandemic and, consequently, of remote learning identified by teachers are corroborated by the difficulty of students to access the material made available by teachers, since 62.2% of

respondents reported that more than half the class had difficulty accessing it. In addition, 91.1% of the teachers highlighted that internet access was a major obstacle for students to access the material and almost 98% of the respondents consider that internet access was a relevant factor for lower student performance. In the year 2019, many students, mainly from public schools, did not have access to the internet, and possibly several of these young people remained unconnected or had little during the pandemic, which made remote teaching difficult or impossible (IBGE, 2019).

Still in line with the diversity of the public served in the remote modality and relating the education network in which the teacher works with the level of structure that the students have at home, it is possible to verify a great socioeconomic inequality among the students. Out of the teachers interviewed who work in public schools, more than 45% said that almost no student would have at home the same structure that the school provides. While of the teachers who work in the private network, almost the same percentage emphasized that most students had the same structure in both places. When comparing the school network in which the teachers work with the biggest obstacles encountered by the students, according to the teachers, more than 89% of the students from both networks had problems with the Internet. In this way, it can be assumed that the quality of the Internet directly affected the teaching of the students from both networks. Of the respondents, more than 78% who work in the public network reported that their students had little or no access to electronic devices. While in the private network, less than 35% of teachers believe that students had little or no access to electronic devices, further highlighting the social inequality in the school context.

The absence of home digital infrastructure, such as the lack of Internet and/or electronic devices prevented, according to the teachers participating in the research, many public-school students from attending classes, performing activities, etc. This situation, imposed by remote education, further reinforces the existing inequality among students and,

according to many teachers, has made the gap between public and private education even wider. Thus, education in this period was a very distant reality for many students, especially in public schools, due to the absence of media resources (OLIVEIRA *et al.*, 2021).

Aside from the difficulties related to connecting to online classes, other structural problems were raised by more than 42% of the teachers who teach in public schools, such as access to meals that were offered by the educational institutions, a relevant factor for good school performance, in addition to the lack of obtaining books and other materials to support the study. According to research conducted by the theUnited Nations International Children's Emergency Fund (UNICEF), remote teaching has made it impossible for several students to have access to a variety of materials and activities that were only possible with face-to-face teaching(UNICEF, 2020), which probably caused greater demotivation among students.

According to Souza*et al.* (2020), the insufficient investment in public education is an aggravating factor of school dropout and it is probably one of the main factors that led more than 84% of the interviewees who work in the public network to state that their students felt unmotivated or lost interest in school, since there was no real investment by the public authorities in infrastructure so that the students could participate in remote education. Furthermore, with the onset of the pandemic and the consequent increase in unemployed people, many students had to start working in order to meet their basic needs, which made it difficult or impossible for many of them to study. Added to the lack of time, many of these young people felt even more unmotivated, which led, last year, to an increase of more than a million in the number of children and young people who dropped out of school, according to a survey conducted by UNICEF (UNICEF, 2020). The high dropout rate coupled with the low commitment to studies suggest that the educational scenario in the coming years will demand a lot of attention from managers and educators, in addition to the need to establish educational strategies

that can overcome the damage caused in students who live their school days during such an abrupt change in the teaching model.

In regards to the evaluation methods used during remote teaching, 66% of the interviewees believe that they were not adequate to evaluate the students' knowledge for many reasons. The main topic used by the teachers was the students' dishonesty, since many of them didn't take the tests and other activities individually, thus masking their learning and making it impossible for the teachers to verify the students' real knowledge. The results of the research show how the students are not concerned about learning the content, but rather in getting satisfactory grades, a culture established for decades in the education system. Thus, it is necessary to reflect on the evaluation processes that occur in schools, considering that evaluations should stimulate the student to think and be an opportunity to reflect on the knowledge obtained (SILVA *et al.*, 2014).

The ineffectiveness of the classificatory assessments in the context applied caused 91.1% of the teachers participating in the research to change their way of evaluating during remote teaching, and 71.1% of them chose to evaluate their students continuously. During this continuous educational process, students should be encouraged to build their own knowledge so that they do not become reproducers of information (SILVA *et al.*, 2014). Thus, with the aim of analyzing the most real possible result of the knowledge built by students during the remote education, many teachers chose to stimulate their students daily, through application forms, assignments, educational games, etc., which can be considered a model of continuous evaluation and that deserves attention for future times when students will attend the full-time classroom school.

Final considerations

The social isolation necessary to contain the pandemic caused by Sars-Cov-2 required the use of technological resources during classes and

the construction of new ways of teaching and learning. Although they were great allies in the teaching and learning process during the remote teaching, they required great effort from the teaching staff to keep the classes going. The lack of time to prepare materials was a factor highlighted by the research participants and may be related to the teacher's devaluation that causes them to work in more than one school system and thus have difficulty posting the materials, for example.

In conjunction with the lack of time, the difficulty in adapting to digital teaching platforms may be a reflection of the fact that teachers are not part of the digital natives group, suggesting the need for initial and continuing education that provides greater contact with the active technologies of the so-called Education 4.0. Thus, the absence of technology implementation in undergraduate courses and the lack of support from school institutions for the use of digital media probably contributed to the teachers' inability, increasing the difficulties in preparing classes. Accordingly, it is necessary that managers and educators consider the more effective implementation of continuous evaluation processes, which provide greater effectiveness in terms of student involvement in their learning.

Despite the efforts of the teaching staff, the absence of the physical space of the school structure caused many changes in the students' routines. According to the data obtained, many students did not have access, in their homes, to the same structure that the school provides, and this may be one of the factors that influenced the increase of unmotivated students. Added to this, with the growth in the number of unemployed people, many young people needed to work to maintain their basic needs and, therefore, had to abandon school. Thus, it is necessary a careful study of how the educational systems will prepare to serve students in the coming years, both those who have suffered less with the impact of remote learning in terms of access to remote classes and those who had little contact with the educational environment and even abandoned it.

Hence, for remote teaching to have less impact on the daily lives of teachers and students, it would be necessary to adapt teacher training, as evidenced in the data collected, and prepare the school environment as well as the students and their families. In addition, to provide the necessary support for the continuity of the classes for those who did not have access to the basic resources required by remote learning, such as internet and electronic devices. Thus, the combination of these factors would make it possible, in some way, to minimize the damage caused by distance learning.

The difficulties encountered by teachers and students during the pandemic had major impacts on student learning. However, more studies are needed to assess the real impact of remote education on the increase in socioeconomic inequality and dropout rates.

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