

**BRAZILIAN EDUCATION FOR YOUTH AND ADULTS: A REFLECTIVE REPORT
OF AN EMERGENCY REMOTE BIOLOGY TEACHING CONTEXT**

***EDUCAÇÃO BRASILEIRA DE JOVENS E ADULTOS: UM RELATO REFLEXIVO DE
UM CONTEXTO EMERGENTE DE ENSINO DE BIOLOGIA REMOTO***

***EDUCACIÓN BRASILEÑA DE JÓVENES Y ADULTOS: UN INFORME REFLEXIVO
DE UN CONTEXTO DE EMERGENCIA DE ENSEÑANZA REMOTA DE LA
BIOLOGÍA***



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ABSTRACT: Youth and Adult Education (EJA) in Brazil faces historical challenges, especially in the teaching of Biology. Difficulties intensified with the global pandemic due to SARS-CoV-2, which imposed social distancing and the emergency migration to remote teaching. In this scenario, the research addresses reflections on innovative solutions for teaching Biology, using active methodologies and interactive resources. The research aims to identify perspectives and challenges related to remote teaching, in cell biology classes taught to EJA students, as well as to expose criticisms and reflections of this teaching scenario through the vision of an active teacher. Critical reflection on this experience allowed the identification of good practices and the construction of a more effective Biology teaching model for EJA, providing quality education for young people and adults from different social classes, building a fairer and more equitable future.

KEYWORDS: SARS-CoV2 pandemic. Remote Learning. Education for Youth and Adults. Biology teaching. Brazilian education.

RESUMO: *A Educação de Jovens e Adultos (EJA) no Brasil enfrenta desafios históricos, especialmente no ensino de Biologia. As dificuldades se intensificaram com a pandemia global devido ao SARS-CoV-2, que impôs o distanciamento social e a migração emergencial para o ensino remoto. Nesse cenário, a pesquisa aborda reflexões para soluções inovadoras para o ensino de Biologia, utilizando metodologias ativas e recursos interativos. A pesquisa tem a finalidade de identificar perspectivas e desafios relacionados ao ensino remoto, nas aulas de biologia celular ministradas para alunos da EJA, bem como expor críticas e reflexões deste cenário de ensino através da visão de um professor atuante. A reflexão crítica sobre essa experiência permitiu a identificação de boas práticas e a construção de um modelo de ensino de Biologia mais eficaz para a EJA, propiciando uma educação de qualidade para jovens e adultos de diferentes classes sociais, construindo um futuro mais justo e equitativo.*

PALAVRAS-CHAVE: *Pandemia de SARS-CoV2. Aprendizagem Remota. Educação para Jovens e Adultos. Ensino de biologia. Educação brasileira.*

RESUMO: *La Educación de Jóvenes y Adultos (EJA) en Brasil enfrenta desafíos históricos, especialmente en la enseñanza de la Biología. Las dificultades se intensificaron con la pandemia mundial por SARS-CoV-2, que impuso el distanciamiento social y la migración de emergencia a la enseñanza remota. En este escenario, la investigación aborda reflexiones sobre soluciones innovadoras para la enseñanza de la Biología, utilizando metodologías activas y recursos interactivos. La investigación tiene como objetivo identificar perspectivas y desafíos relacionados con la enseñanza remota, en las clases de biología celular impartidas a estudiantes de la EJA, así como exponer críticas y reflexiones sobre este escenario docente a través de la visión de un docente activo. La reflexión crítica sobre esta experiencia permitió identificar buenas prácticas y construir un modelo de enseñanza de la Biología más efectivo para la EJA, brindando educación de calidad a jóvenes y adultos de diferentes clases sociales, construyendo un futuro más justo y equitativo.*

PALABRAS CLAVE: *Pandemia de SARS-CoV2. Aprendizado remoto. Educação para Jovens e Adultos. Enseñanza de la biologia. Educação brasileira.*

Introduction

Currently, Brazilian education has been shown to be average in many formal teaching spaces and, looking more closely, it is clear that it is not being fully effective in offering quality basic education. Furthermore, as an aggravating factor, there is a historic moment of global pandemic that began in 2020, which directly affects basic education, both in teaching and learning and in the lack of social interaction provided by schools (Silva; Rangel; Souza, 2020).

Based on this, when analyzing public institutions, especially municipal and state schools, a more unfavorable situation appears, mainly due to the sometimes-insufficient funds for students' families, as well as inefficient investment on the part of the government (Gil; Pessoni, 2020). In this sense, the low income of students in this teaching modality is an aggravating factor in the students' learning process, as well as the scenario of EJA's physical or virtual classrooms, where there are students of different ages, including elderly people who are not yet familiar with the use of digital information and communication technologies (Usher; Hershkovitz; Forkosh -Baruch, 2021).

In this case, the development of learning in EJA can still be considered relatively superficial, lacking professional interventions that aim to improve the learning process of these students, taking into account the entire social situation they experience. (Maraschin; Ferreira, 2020). Therefore, the use of information and communication technology needs to be more interactive and contextualized, in order to provide possible contributions to improving teaching in EJA through Emergency Remote Teaching (ERE) (Bacheti *et al.*, 2020).

In this context, teaching professionals have studied, analyzed and reflected on ways to intervene and improve ERE (Albó *et al.*, 2020; Misirli; Ergulec, 2021). Thus, for both Regular Education and EJA Education, educators research this scenario, with the aim of intervening with relevant contributions for the effective training of critical citizens and politicians, even in such a challenging time.

That said, this work aims to identify perspectives and challenges related to remote teaching, in cell biology classes taught to EJA students. Furthermore, it is also intended to expose criticisms and reflections on this teaching scenario through the vision of a teacher working in Regular Education and Youth and Adult Education.

Literature review

EJA, Youth and Adult Education, is a teaching model developed from the need to offer opportunities for people who, for some reason, did not complete primary and/or secondary education at the appropriate age. It is an action to encourage young people and adults (Ventura; Cruz; Marques, 2020). Thus, this approach respects the characteristics of these students and provides educational opportunities suited to their interests, living and working conditions through courses and tests for this education, differentiating them from Regular Education, especially in the case of remote education (Artuzi; Da Fonseca; *et al.*, 2021).

According to data released by the Brazilian Institute of Geography and Statistics (2018), it is estimated that there are 11.3 million illiterate people in Brazil, which corresponds to 6.8% of the population, who over the age of 15 cannot read or write. Despite this, almost half, 48.1% of the Brazilian population (aged 25 or over) did not complete primary education. The rate is higher in rural areas and 79.6% of Brazilians in this age group have not completed primary education. Even so, 27% of the population completed at least secondary education and only 16.5% of the population completed higher education, making it necessary to intervene in government measures and encourage the education of this population whose studies were interrupted.

The objective of EJA is to offer high school completion services to young people and adults who drop out of school and wish to resume their studies, proposing the democratization of education and providing basic education opportunities for everyone in Brazil (Da Silva, Freitas, de Almeida, 2021). Therefore, working with EJA implies training new skills, preparing students to deal with different languages and technologies, and to deal with new dynamics and challenges in educational processes (Pereira; Espindola; Costa, 2020).

Generally, it can be considered more tiring to carry out the teaching role with high school students in the EJA model. This is because, in many cases, EJA students have greater difficulty in constructing concepts, which is why they are disappointed, as they are unable to learn different content, making it a challenging teaching and learning environment (Bacheti *et al.*, 2020).

Furthermore, in 2020 there was an aggravating situation in the country's educational context, including in the EJA modality. Due to the current global context in relation to the COVID-19 pandemic, social separation has become a basic method to slow down the disease transmission curve (Golinelli, *et al.*, 2020; Da Silva Tupan, 2021; Espírito Santo, 2021).

Although this action reduced the transmission of the virus, it also promoted a transformation of all sectors and activities, even reaching the educational environment (Da Silva, *et al.*, 2020).

In this way, Emergency Remote Teaching has become the most viable way to maintain social distancing and promote education for different students. However, EJA students, who already had difficulties with subjects with face-to-face pedagogical monitoring, now face a teaching model in which they themselves need autonomy to learn, causing many to become more insecure and feel incapable of learning (Bacheti *et al.*, 2020).

Based on this, teachers from different disciplines need to develop teaching strategies that facilitate this teaching and learning process (Netto *et al.*, 2020; Toquero; Talidong, 2020). The most common ways to develop remote classes are through videos and *slides*, which often fail to hold the student's attention, especially considering that most EJA students study at night and have an exhausting work routine throughout the day.

Thus, to develop new Emergency Remote Teaching practices suitable for EJA, educators need to understand the students' reality, take into account the students' peculiarities related to their age groups and propose stimulating and dialogical content related to reality (Lellis; Florentino; Costa, 2021). This strategy seeks to break with the usual dispersion of the abstract content of the discipline, and contributes to the effective construction of knowledge (Aquino; Medeiros; Santos, 2021).

To achieve this, it is essential that educators learn to teach with new digital learning resources, with the use of Digital Information and Communication Technologies (ICT) being relevant (Medeiros; Tavares, 2021). In this way, the process of treating the subject as part of students' daily lives, combined with interactive technological resources, makes them more involved with the concepts, causing greater interest in learning, even for Emergency Remote Teaching, providing students with the modality EJA is basic training that prepares them for different social contexts (De Oliveira Lima; Nasser, 2020; Polushkina, Tareva, 2021; Shin; Hickey, 2021).

Methodology

The research is a qualitative investigation and for its development, classes were recorded and transcribed about cells: the basic unit of the body of all living beings, with this thematic unit being proposed for three classes. With this, the sequence of classes was taught to first-year students in the EJA modality, in the biology discipline, which deals with physiology and cellular configuration, without the need for conceptual prerequisites.

Although this content taught belongs to the curricular base of Elementary Education, it is commonly taught in the 1st of the EJA modality. Thus, in relation to the construction of skills and knowledge, the teacher emphasized the understanding of the basic organization of cells and their role as a structural and functional unit of living beings. To implement this methodology, support materials were used, namely computers and electronic devices for teachers and students, as well as Internet access through these electronic devices.

The classes were taught to a class of 28 first-year EJA students from a state school, located in the south of Minas Gerais. Focusing on research, students were questioned to express their opinions regarding teaching at EJA in the pandemic scenario. The identification of the perspectives and challenges faced during the classes was carried out by the professor who authored the work, in reflections to improve his own training, for which all classes were recorded in video format, respecting the integrity of the students.

To develop the classes in this thematic unit, which covers physiology and cell configuration classes, it was necessary to use digital dialogue platforms, such as *Zoom*, *Google Meeting*, *Skype*, among others. Therefore, it was necessary for the teacher to have a computer with internet access and for students to have electronic devices with internet access, such as computers or cell phones (Schlesselman, 2020).

For this, the teacher was previously trained to familiarize himself with the relevant digital tools, such as the Virtual Environment of the Real Laboratory Simulator, the Amino Interactive Social Network, Use of the group creation function on the social network Facebook for discussions and curiosities. In addition, there are Virtual Memory Games using cell organelles, word searches with cell organelle functions, Virtual Cell Drawing, which provides the percentage of similarity between the drawing and the real cell, and also a 3D cell simulator, which allowed visualization and simulation of cell configuration.

Results and discussions

In this context, when analyzing students' opinions regarding EJA, it was noted that many students are optimistic in relation to this teaching modality. For many of them, EJA is the only opportunity to complete their studies, mainly because they work during the day. Some people like EJA because they can complete these steps in less time compared to Regular Education. Furthermore, although the majority of students claim that EJA has quality teaching, teachers confirm that there are many factors that need to be improved for EJA to have a more effective quality of teaching.

Therefore, the research professor of this work found that one of the difficulties of teaching at EJA for Emergency Remote Education is related to the fact that most students are already working and their daily lives are very exhausting, resulting in less learning time. The lack of motivation is also a factor that hinders the development of teaching activities through online platforms. This negative aspect may be related to the feeling of incapacity and shame on the part of EJA students, for not having completed their studies at a previous opportunity, resulting in low self-esteem. Another aspect that affects the quality of classes is the difficulty in using and unfamiliarity of some older students, enrolled in EJA, with the use of technologies (Ferri; Grifoni; Guzzo, 2021).

Furthermore, in a class of 28 students enrolled, approximately ten students normally attended classes. This fact may be due to the low income of some students who did not have good digital resources to attend classes, such as those with old cell phones that were incompatible with access to rooms created online. Another justifiable fact is the limited access to the internet and poor-quality internet, seriously affecting the possibility of accessing remote classes for all students enrolled in Youth and Adult Education.

Despite the adversities presented, frequent students were satisfied with the classes held remotely (Fhloinn; Fitzmaurice, 2021). This is possibly due to the interactive technological resources used during the teaching of classes, combining with questions about the students' prior knowledge and contextualizing the cell physiology class related to everyday life, with regard to the observable differences between plant cells and animal cells.

To simulate the microscopic observation of cells, the professor used virtual environments in which simulations and representations of real laboratories are carried out, through a website, namely virtuallab.pearson.com.br/Laboratório/Biologia and the simulator “*PhET Interactive Simulation*”. With this resource, students were able to experience and visualize different simulated cells, enhancing student interaction, as a way of facilitating the

teaching of cell biology. Furthermore, the use of online games and simulation involved students in the concepts of cells, exposing and relating cellular physiology with important social applications, such as the role of chlorophyll in plant cells, which, by providing photosynthesis, captures carbon dioxide carbon and release oxygen gas (Whalen, 2020).

Another interactive class that proved to be relevant is the use of applications and websites that encourage writing and discussions, through social networks, such as Amino and Groups created on Facebook. Thus, the method consisted of using social networks to their high potential to facilitate the teaching environment, using cell phones for personal use by EJA students remotely (Whittle *et al.*, 2020; Polushkina; Tareva, 2021; Shin; Hickey, 2021).

In this way, we seek to find ways to stimulate the production of texts and discussions about cells, with socialization between students, contributing to the critical formation of opinion-forming students (Pereira; Espindola; Costa, 2020). Therefore, despite the considerable negative aspects caused by the pandemic, it is still possible to develop interactive classes that stimulate the quality of teaching and learning about physiology and cell configuration through ERE at EJA.

Final remarks

At the same time, education in the EJA modality in Brazil needs more attention so that there is effective teaching in quality basic education. However, to make matters worse, 2020 provokes a surprising moment of global pandemic, which directly affects Youth and Adult Education, both in teaching and learning, and in the absence of social interaction in schools.

Therefore, the most recommended and appropriate form of teaching at this time was to teach classes remotely. However, this teaching model has negative aspects, as it does not include accessibility to all EJA students, either due to the lack of electronic devices or the limited use of the internet by some EJA students. Another detrimental factor is that some older students were unable to familiarize themselves with the use of electronic devices to access class teaching. Furthermore, the exhausting routine of EJA students causes demotivation and lack of interest on the part of some students in this modality.

Despite this, to overcome some of these negative aspects, the professor used active methodologies when teaching classes remotely with interactive resources, such as virtual simulation of a real laboratory, 3D simulation of a cell, use of virtual games and social networks, which contributed to the increased student interest and interactivity during classes. Thus, it is

relevant to infer that despite a pandemic moment that is extremely detrimental to Brazilian education, it is still possible to have teaching methodologies that provide an improvement in the quality of teaching physiology and cellular configuration among students enrolled in the Education for Youth Education modality and Adults, contributing to the equity of the teaching and learning process for students of different age and economic profiles.

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