

Education and creativity in times of pandemic: possibilities for action in a non-traditional school

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ABSTRACT. This article presents an analysis of the development of children's creative potential in learning processes within a school that adopts a collaborative teaching model. The research was conducted in the context of Emergency Remote Education during the Covid-19 pandemic. Creativity is understood as a psychological, social, and cultural process, and the study investigated the processes of idea generation, evaluation, refinement, and adoption for problem-solving by students. The investigation was based on non-participant observation of virtual classes. The records of these observations were analyzed using thematic analysis. The findings indicate that problem-solving, collaboration, and collective knowledge construction permeate students' developmental processes, interacting with cognitive and environmental factors that may either inhibit or foster creativity, depending on each individual's engagement. It is concluded that, even during the period of social isolation – when virtual interaction was the primary means of communication and instruction – creativity was able to transform how individuals relate to the world, to others, and to themselves. Thus, despite many limitations – or perhaps precisely because of them – children became more open to novelty, were able to overcome challenges of the moment, and prepare themselves for future situations.

Keywords: teaching; pandemic; creativity; creative self-efficacy; communication; collaboration.

Educação e criatividade em tempos de pandemia: possibilidades de ação em uma escola não tradicional

RESUMO. O presente artigo apresenta uma análise do desenvolvimento do potencial criativo de crianças em processos de aprendizagem de uma escola que adota um modelo colaborativo de ensino. A pesquisa foi realizada num contexto de Educação Remota Emergencial, durante a pandemia da Covid-19. Compreendendo a criatividade como processo psicológico, social e cultural, foram investigados processos de geração, avaliação, aprimoramento e adoção de ideias para solução de problemas, por parte de estudantes. A investigação se baseia na observação não participante de aulas virtuais. O registro de tais observações foi abordado com base na técnica de análise temática. Foi possível identificar que a solução de problemas, a colaboração e construção coletiva do conhecimento perpassam os processos de desenvolvimento dos estudantes, assim como interagem com fatores cognitivos e ambientais que podem ser inibidores ou facilitadores da criatividade, dependendo da atuação de cada um. Concluiu-se que, mesmo durante o período de isolamento social, no qual a interação virtual foi a principal forma de comunicação e de condução das aulas, a criatividade pôde mudar a forma como os indivíduos se relacionam com o mundo, com os demais sujeitos e consigo próprios. Sendo assim, mesmo com tantas limitações, ou justamente por causa delas, as crianças puderam se tornar mais abertas ao novo, superar dificuldades do momento e se preparar para situações futuras.

Palavras-chave: ensino; pandemia; criatividade; autoconfiança criativa; comunicação; colaboração.

Educación y creatividad en tiempos de pandemia: posibilidades de acción en una escuela no tradicional

RESUMEN. Este artículo presenta un análisis del desarrollo del potencial creativo de niños en procesos de aprendizaje de una escuela que adopta un modelo colaborativo de enseñanza. La investigación se realizó en el contexto de la Educación Remota de Emergencia, durante la pandemia de Covid-19. Entendiendo la creatividad como un proceso psicológico, social y cultural, se investigaron procesos de generación, evaluación, mejora y adopción de ideas para la solución de problemas por parte de los estudiantes. La

investigación se basa en la observación no participante de clases virtuales. El registro de estas observaciones se abordó mediante la técnica de análisis temático. Se pudo identificar que la solución de problemas, la colaboración y la construcción colectiva del conocimiento atraviesan los procesos de desarrollo de los estudiantes, así como interactúan con factores cognitivos y ambientales que pueden ser inhibidores o facilitadores de la creatividad, dependiendo del desempeño de cada uno. Se concluyó que, incluso durante el período de aislamiento social, en el cual la interacción virtual fue la principal forma de comunicación y conducción de las clases, la creatividad pudo cambiar la forma en que los individuos se relacionan con el mundo, con los demás y consigo mismos. Por lo tanto, incluso con tantas limitaciones, o precisamente debido a ellas, los niños pudieron volverse más abiertos a lo nuevo, superar las dificultades del momento y prepararse para situaciones futuras.

Palavras chave: enseñanza; pandemia; creatividad; autoconfianza creativa; comunicación; colaboración.

Received on March 4, 2024.

Accepted on May 8, 2024.

Published in September 23, 2025.

Introduction

In 2020, we were faced with the adverse situation brought about by Covid-19 and the sudden changes resulting from the social isolation adopted in Brazil and worldwide as the main measure to contain the spread of the disease (Faro et al., 2020). The suspension of in-person classes in schools was one of the measures implemented by governmental authorities, leading many educational institutions to adapt to the new reality and conduct their activities remotely (Ministry of Education, 2020). Neves-Pereira and Alencar (2018) identify uncertainty and transformation as defining features of the 21st century, presenting numerous challenges and problem situations for a wide range of individuals. Beghetto (2023), in turn, when addressing the challenges of human-computer collaborative interaction, sees uncertainty as a source of opportunity, since it often motivates actions aimed at resolving doubts and related problems. As a result, new thoughts and actions may emerge as products of creativity – not only in response to the specific circumstances the author refers to. Indeed, the same author argues that schools should play a key role in preparing young people to face the complexities of their future societal roles – both professional and social – through collaborative curricula and related practices (Beghetto & Madison, 2022). The proposition, therefore, is that schools explore pathways capable of preparing individuals to deal with a variety of situations, many of which may be so unexpected as to be considered adverse.

It was within the context of a global pandemic that we brought forth the discussion on creativity, a construct highlighted by numerous authors as essential for coping with everyday challenges (Kaufman & Glăveanu, 2022; Formiga Sobrinho, 2020; Lubart & Thornhill-Miller, 2019; Lubart, 2018; Neves-Pereira & Alencar, 2018; Alencar & Fleith, 2009). The school environment emerges as a potentially rich space for new experiences and learning processes capable of positively influencing the development of children's creativity and cognitive skills (Castro, 2006; Vygotsky, 2012). In order to investigate this phenomenon, the present study was conducted in a nonprofit associative school located in the central region of the Federal District, Brazil. The institution includes Early Childhood Education and the initial years of Elementary School and is distinguished by its associative management model, which is autonomously carried out by families and other school stakeholders – educators, pedagogical and psychological coordinators, support staff, and administrative staff – who organize themselves into committees and decision-making bodies (Pulino, 2001). The Association aims to implement a non-traditional teaching methodology and remain open to the collective and democratic construction of its foundations. Furthermore, the school's pedagogical approach is guided by collaborative projects, the topics of which are chosen by the children themselves in collective idea-generation sessions. These interactions, adapted to the school setting and primarily involving children, can be described as brainstorming sessions – a technique in which participants are encouraged to share all their ideas without fear of criticism (Baruah & Paulus, 2019; Alencar & Fleith, 2009; Osborn, 1963). Such projects provide opportunities to engage with different fields of knowledge in a collaborative, multidisciplinary, and interdisciplinary manner, not only during elementary education but also in later stages of schooling.

In this context, Emergency Remote Education (ERE) adopted during the Covid-19 pandemic posed significant challenges for both education and the development of children's creativity. After all, social interactions and learning experiences were substantially altered by the suspension of in-person classes. Thus, the aim of this study is to investigate how the pedagogical actions adopted during the period of remote

education by a school employing a non-traditional teaching methodology may influence the exercise and development of students' creativity. The following sections present the theoretical framework of the study, the research method, the findings, and their analysis.

Theoretical framework

Creativity is still commonly defined based on the virtually inevitable components of novelty and appropriateness or usefulness (Patston et al., 2021). Its association with problem-solving (Kozbelt et al., 2010) remains a key aspect of research in the field, alongside perspectives on ways of thinking and communicating with others (Beghetto, 2023). Problem identification or formulation (Runco, 2023) should also be granted equal importance, as emphasized in a study on curricular experiences aimed at broadening the understanding of collective and collaborative learning among students (Eteläpelto & Lahti, 2008). These modes of learning are essential for the exercise of creativity, as we will demonstrate when discussing the findings of the study, which will be presented in light of the theoretical concepts and reflections outlined in this section.

Benedek et al. (2021) questioned conceptions of creativity that attribute importance solely to the traits of creative individuals, without considering the situational context of their actions. The same critique applies to conceptions of creativity that are predominantly focused on products, disregarding factors related to the trajectory of individuals involved in creative processes – the moment in which they express themselves, the place where production occurs, and the way in which the outcomes of creative actions reach their audiences. Approaching creativity without taking these factors into account can easily lead to the neglect of elements that, over time, shape certain productions (Baas et al., 2015) and exert a decisive influence on their quality and impact across different segments of society that may benefit from the creative outcomes.

One way to avoid the aforementioned pitfalls is to seek creative achievements within the specificities of each domain of expression (Beghetto, 2017), as understanding creativity depends on contextual factors and conditions unique to each area in which it is expressed. Thus, creativity is simultaneously influenced by personality traits, but more significantly by the potentialities and limitations of the environment, as well as by the uniqueness of specific settings – such as the educational environment examined in this article – and by the actions of individuals within dynamic contexts of interaction with others. The importance of social interactions lies primarily in their capacity to create space for change, which is a consequence of human development processes (Zittoun & Gillespie, 2020; Van Geert, 2019). The intensity of these changes also depends on how communication unfolds (Formiga Sobrinho & Glăveanu, 2017). Communication is always grounded in the materiality of the body, which places individuals in contact with materials (Bardt, 2019), with other individuals, and with environments throughout the course of human development. It is also expressible through different forms of language, the mediation of which becomes essential for understanding creativity in the educational domain – particularly during the period of ERE.

Creativity can also be defined in terms of its functioning. In this sense, rather than using the term merely as an adjective to categorize products, it is important to approach creativity as a psychological, social, and cultural process that emerges primarily through the interaction of multiple factors (Glăveanu, 2012, 2020; Formiga Sobrinho, 2020). Considering it as a psychological process is essential to understanding the creative abilities or performances of certain individuals, including everyday examples – not just disruptive or revolutionary ones (Green et al., 2023). This perspective also emphasizes the importance of individual authenticity in understanding creativity, as an authentic individual possesses the autonomy to express their own ideas and feelings without needing to tailor their expression to others' expectations. Runco (2023) highlights authenticity as a fundamental criterion for understanding human creativity, even arguing that any potential form of machine creativity would, by definition, be artificial. In educational settings and in relation to other human beings, it is important to emphasize the school's role in fostering autonomy and, consequently, authenticity. However, conceiving of creativity solely as an internal attentional process is not sufficient for understanding it in contexts such as education – contexts that can serve as examples or even models of how creativity manifests (Beghetto & Kaufman, 2014), with emphasis on the circumstances in which creativity is expressed. Thus, research on creativity can primarily contribute to enhancing creative performance within educational environments..

From a sociocultural perspective on creativity, the creative process is defined by action, interaction, and communication (Glăveanu, 2020; Lubart, 2018; Formiga Sobrinho & Glăveanu, 2017), and it generates meaning based on knowledge that, although expressed individually, has been developed socially (Glăveanu,

2012). This aligns with Vygotsky's theory of the cultural construction and expression of the mind. When the social and cultural environment – here exemplified by the school context – offers students opportunities to identify, direct, record, and communicate problems whose solutions may impact their lives and those of others in society (Beghetto & Madison, 2022), the likelihood of developing creative potential increases. This is because students can engage in collaborative creativity (Baruah & Paulus, 2019; Eteläpelto & Lahti, 2008; Lubart, 2018; Moran & John-Steiner, 2004), which involves, under the guidance of teachers and with support from involved family members, drawing on their own and their peers' knowledge and skills to take action, seek new perspectives, and generate new ideas – as well as to evaluate and refine them toward implementation. By acting in this way, students may experience situations that contribute to the development of confidence in engaging with tasks, solving problems, and communicating results – initially, to their classmates. After all, one alternative for schools to support students' academic and personal success is to provide opportunities and experiences that foster creative self-efficacy, understood as the belief in one's ability to think or act creatively in carrying out activities within a given domain of expression (Karwowski et al., 2019). By promoting the development of autonomy and creative self-efficacy, schools may motivate students to engage in solving problems they themselves identify and consider relevant – whether in subjects such as mathematics (Posamentier & Krulink, 2014), or in other disciplines or practices related to diverse learning processes within these subjects.

Vygotsky proposes that creative imagination is influenced by both the quantity and quality of an individual's lived experiences, as it is a process through which real experiences are assimilated in order to create a new product in a given situation (Mozzer & Borges, 2008; Vygotsky, 2012). In parallel, within Vygotsky's historical-cultural psychology (2012), creativity is understood as a psychological process that “develops alongside other higher functions such as imagination, thinking, memory, and play” (Mozzer & Borges, 2008, p. 1). For Glăveanu (2012, 2016), creativity is primarily defined in terms of action – the individual's doing – which complements Vygotsky's approach by emphasizing the integration of thought and action through play or other practices, such as those found in work or educational environments. Thus, once again, this psychological process is not separate from the culture in which it is embedded. Rather, it is situated in the relationship between self and other, mediated by symbolic and cultural artifacts that shape diverse dynamics of interaction (Glăveanu, 2012, 2016; Mozzer & Borges, 2008; Neves-Pereira & Alencar, 2018; Vygotsky, 2012).

Based on the understanding that creativity is a process that can be developed and begins in childhood (Alencar & Fleith, 2009; Mozzer & Borges, 2008; Vygotsky, 2012), numerous studies have sought to identify which school and pedagogical practices can facilitate – or hinder – the development of creativity in children (Beghetto & Madison, 2022). Among the practices that facilitate creativity, we can highlight students' active participation in their learning process, open dialogue, collaborative pedagogical approaches, more flexible deadlines, and the development of student autonomy (Alencar & Fleith, 2009; Beghetto & Kaufman, 2014). On the other hand, some practices may inhibit creativity, such as rote learning and knowledge reproduction; the belief that there is only one correct answer to each question; the disregard for imagination and fantasy as important dimensions of the mind; and a curriculum structure that ignores critical thinking (Alencar & Fleith, 2009). During the period of ERE, other factors already identified by Alencar and Fleith (2009) as inhibitors of creative action may have been intensified. These include: non-individualized instruction, which hinders meaningful feedback and close monitoring of the learning process, as well as the development of creative self-efficacy (Karwowski et al., 2019) and authenticity (Runco, 2023); the lack of guaranteed access to all proposed materials; and the potential absence of family support – which may have an even greater impact in the context of early childhood education. It is important to note that these factors do not act deterministically in the development of each individual's creativity, as not all students experience circumstances in the same way (Beghetto & Kaufman, 2014). However, each factor may, in conjunction with others, play a significant role in a given domain of expression or context.

Glăveanu (2020) highlights another shift prompted by the pandemic: the need for psychology to broaden its study of human mobility. Whereas in Vygotsky's time, experiences and social interactions were lived in person, in the 21st century, these interactions also take place virtually, mediated by technology. During social isolation, for many people, virtual interactions became the main – and at times, the only – means of communication and movement (Glăveanu, 2020). This context of change may have served as a starting point

for many creative actions. It is worth noting that various technological tools were already being used to supplement teaching and learning activities in different schools. With the onset of ERE, these tools shifted from supporting roles to central elements of educational processes, accompanied by enhancements in their structure and modes of use, which became significantly more intensive. Vygotsky (2012) posits that the human need to adapt to one's environment is one of the psychological drivers of creativity. In relation to the research presented in this article, this refers to the creation of ways to maintain: (1) the remote delivery of lessons, since the available technological resources could enable the continuation of such activities; and (2) above all, the quality of education. However, since no specific planning was in place to address the conditions of social isolation, both teachers and students – as well as the children's families, as will be discussed later – had to continue learning and adapting in the course of using their computers and other technological devices, all while dealing with numerous challenges and constraints outside the school environment. In other words, as time went on and results were continually evaluated, improvements could be made. This made the challenge even greater, considering that teachers were already striving to make even regular classes more meaningful for students (Posamentier & Krulink, 2014), amid the many other stimuli that learners encounter in their out-of-school activities.

Another concept that emerges strongly in discussions on the development of creativity is flexibility. Lubart (2007, p. 28) defines it as “[...] the ability to perceive a single object or idea from different angles, the sensitivity to change as the capacity to break away from an initial idea in order to explore new paths.” This concept is also closely related to openness to experience, as it enables experimentation and change (Morais & Miranda, 2021). Castro (2006) argues that imagination and creativity are not inferior to reason or memory; rather, all of these functions nourish each other, as children's cognitive development is also shaped by the quantity and quality of their experiences. For this reason, it is essential that the school environment be “[...] appropriate and stimulating for the child's cognitive and sociocultural development” (Castro, 2006, p. 59), so that children can develop personality traits such as flexibility and openness through their actions and interactions. In this sense, we discuss creativity within the context of Brazilian education, understanding it as both a cognitive and sociocultural process, since it is the product of human action and social interaction (Formiga Sobrinho, 2020).

Method

Participants

The research was conducted with a 2nd-grade elementary school class, consisting of 4 educators and 14 students, at a private school in the Federal District of Brazil. All educators and students in this class participated in the study. The class was led by two teachers with degrees in Education, one intern pursuing a degree in Psychology, and one intern pursuing a degree in Social Work. The students had an average age of 7 years. All research participants signed an Informed Consent Form or, in the case of the students, an Assent Form. All identities were kept confidential. The study was approved by the Research Ethics Committee of the Institute of Human and Social Sciences at the University of Brasília, under registration number 34791220.2.0000.5540.

Material

A total of 11 non-participant observations of synchronous meetings were conducted between October 28 and December 2, 2020, totaling 14.5 hours of observation. The classes were observed via the Zoom videoconferencing platform and were not recorded, as not all parents and/or guardians authorized the use of video images. The observations included: 7 collective synchronous sessions, with an average participation of 10 students and an average duration of 90 minutes; and 4 small-group synchronous sessions, with 4 students participating in each session and an average duration of 60 minutes. Thus, 10.5 hours were spent observing collective synchronous remote sessions, and 4 hours were spent observing small-group synchronous remote sessions.

Procedure

The participating class was selected upon recommendation from the school administration. An invitation was sent via email to the teachers and interns, who granted permission for their classes to be observed. Once

the educators accepted the invitation, the next step involved contacting the students' parents or guardians – via email and phone – to request authorization for the children's participation in the study, including the submission of the Informed Consent Form and the Assent Form. At the beginning of the first observation, the researcher introduced herself and the research project to the students, who also provided verbal consent to participate.

Data collection was carried out through notes taken during the observed classes, in which relevant statements and events were recorded. The observations focused not only on the interactions among the children, but also on their interactions with educators and family members. Additionally, interactions among the educators themselves were observed at certain moments before and after the sessions, particularly during the organization of activities. This approach provided insights into the overall functioning of the school, based on the actions of the various individuals involved in its educational processes.

The use of the observation method (Lakatos & Marconi, 2003) allowed for the collection of diverse records for subsequent analysis and discussion, grounded in the theoretical framework and potentially confirming or challenging the conceptualizations presented. The focus of the observation was on the communication established with the students, including content delivery, efforts to encourage participation, and the handling of questions and responses related to the activities. The objective was to examine the strategies employed to conduct remote classes and to keep students engaged and motivated.

The data obtained through the observations were subjected to thematic analysis (Braun & Clarke, 2006; Silva & Borges, 2017). This method involves the following steps: (1) transcription of the collected content; (2) organization of the material into categories, such as observations or interviews; (3) identification of themes or meaningful patterns relevant to the research; (4) thorough reading of the content; (5) categorization of the content into thematic units that relate to broader categories or subcategories of meaning, which are then associated with more general themes; (6) coding of the content using mind maps or tables that indicate connections between the categories and related themes; and (7) analysis and interpretation of the data, taking into account the relationships between themes and subthemes, the socio-historical context, and other influencing factors. Following these steps, two central axes of the research were identified: problem-solving and collaboration and collective knowledge construction.

Results

The proposal of the Association's Pedagogical Team for ERE included: synchronous sessions adapted to the reality of each class and kept short, with a maximum duration of 90 minutes; five weekly remote activities with flexible deadlines; and two recorded video lessons to accompany some of the weekly activities. This structure already demonstrates the adaptation of those involved in planning and implementing educational activities, and can be understood as a product of efforts to solve unexpected problems – requiring, from the outset, both flexibility and openness. Flexible deadlines for submitting assignments proved to be virtually unavoidable during that period, in which everyone's routines were altered by social isolation and educational activities had to take place in the home environment, mediated by a computer or smartphone – often shared with another family member. Given that the content and duration of the activities were already modified, the same adjustment applied to deadlines for their completion. In this context, such adaptations can be seen as factors that promote creativity. As Beghetto and Kaufman (2014) point out, the environment plays a crucial role – so much so that it can largely determine whether creative potential is encouraged or suppressed.

Problem-solving

Flexibility is identified both as a trait of a creative individual (Alencar & Fleith, 2009; Lubart, 2007; Morais & Miranda, 2021) and as a characteristic of an environment conducive to creativity (Beghetto & Kaufman, 2014; Lubart, 2007). This quality was evident in a lesson in which the proposed activity involved a board game. When it was noted that one student did not have dice at home, their classmates offered three alternative solutions: writing numbers on slips of paper and drawing them randomly; creating a spinner; and printing the numbers to assemble a die. Faced with this problem, one can observe a multiplicity of ideas and the diversity of responses – clear indicators of flexibility, not only on the part of the students and teachers, but also embedded in an environment that supports and encourages this type and variety of response.

Another occasion that illustrates flexibility was during a game of *adedanha* (a word game similar to Scattergories). On that day, the children were allowed to consult the book *Alfabeto do Cerrado* (Cerrado's

Alphabet), which they had created after collectively selecting the Cerrado biome as the theme for their class project at the beginning of the 2020 school year. They were also expected to provide answers related to the collective project they were concluding, which focused on Brasília and the Cerrado. When the letter “O” was drawn, one student said, “[...] if you put two Cs together, it becomes an O.” Everyone was surprised and paused the activity to discuss their classmate’s observation – even though it was not a logical or expected response for the proposed task. This comment was voiced and welcomed by both peers and educators, thanks to the relaxed and playful atmosphere established in the class and the school’s broader philosophy, which embraces a collaborative model of governance and teaching.

An environment such as this – especially relevant in the challenging context of social isolation and ERE – proves conducive to creativity, as there is not a single correct answer to be given. The evaluation of responses, in turn, takes into account different perspectives and the values internalized by students throughout their school experience or, in parallel, in other social contexts. When the letter “G” was drawn, one student responded, “[...] gato do mato [wildcat] [...]” and another replied, “Gustavo, who used to be in our class.” In this example, the student adapted her answer to the activity: while “Gustavo” is not directly related to the chosen theme, the reference to a former classmate named Gustavo – who had studied at the school, located in Brasília – offered a meaningful and contextually grounded response. This illustrates the student’s adaptability in the face of an unexpected situation, as well as the flexibility to consider different perspectives – demonstrated not only by the students but also by the educators..

The combination of different ideas by the child is grounded in their accumulated prior experience – here related to pedagogical and social knowledge – and serves as the foundation of creation (Vygotsky, 2012). Moreover, by accepting this response, the teachers demonstrate their willingness to value the students’ cognitive styles, focusing not merely on correctness, but on each student’s unique way of processing knowledge to formulate and express their answers. By leading the class in this way, the teachers also contribute to the development of creative self-efficacy and autonomy, as this was a non-standard response that, in a different context, might have become the target of ridicule among peers. In doing so, the teachers act as facilitators of diverse learning processes and of the development of students’ creativity – both at the individual and collective levels.

Another example can be seen in one student’s response to a word search activity during a small-group synchronous session (Figure 1). The teachers began by discussing with the children how they had been taking care of themselves – physically, mentally, and emotionally – during the pandemic. Following this discussion, they shared a word search on the screen for the children to collaboratively solve, looking for words related to feelings and self-care, which were central themes in the class’s ongoing collective project. One student surprised the group by finding the word *arte* [art], which had been unintentionally and unconventionally included by the teachers. In the previous class, the group had identified art as a strategy for taking care of oneself and others, and both educators and classmates accepted the answer as valid. It is important to highlight that the fact that a child identified art as a form of self-care is already notable. Equally significant was the way the response was received and valued by both the teachers and peers. Therefore, not only the way the problem was solved, but also the way the solutions were welcomed by all members of the group, characterizes the educational environment studied as one that fosters students’ creative expression. This is also due to the type of interaction fostered among them, enabling the learning goals of teachers, academic subjects, and the school itself to be met – while simultaneously preparing children for future educational stages.

Collaboration and collective knowledge construction

As previously noted, the school’s decision-making and planning processes are carried out in a collective and collaborative manner. One example of this was a dedicated session aimed at listening to students’ opinions about the online classes, the weekly activities, and the agreements established with the group. These agreements, referred to as *combinados*, were intended to promote positive interactions within the new virtual learning environment. During this session, the teachers asked which *combinados* were or were not being followed, how the meetings could be improved, and whether the students had suggestions – such as ideas for cooking activities to be done together. Activities like *adedaonha* (a word game) were included based on the students’ input during this feedback session, which focused on evaluating how the ERE model was being implemented during the Covid-19 pandemic. This school’s approach – designed at all levels as an open space

for new ideas – extends to its educational practices and work with children. The collective synchronous meetings aimed to strengthen bonds between children and educators, while also promoting active and respectful listening, and creating a psychologically safe environment that allowed for risk-taking, mistakes, and the freedom to create (Morais & Miranda, 2021).

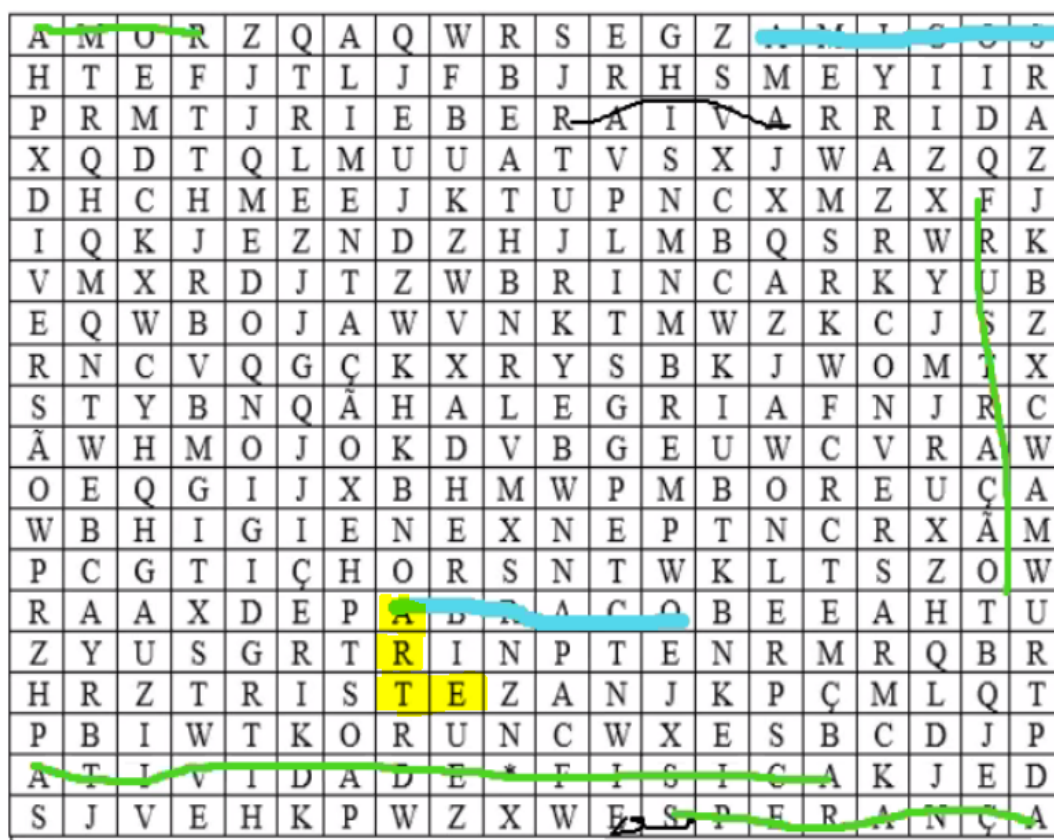


Figure 1. Word search activity with the word 'arte' [art] highlighted in yellow.

The school's longstanding practice of encouraging family participation in classes and related educational activities was intensified during the period of ERE. For example, a clay workshop was led by a student's mother, and a cooking activity was facilitated by another student's grandmother. The children themselves reported enjoying the opportunity to meet members of their classmates' families, and activities related to everyday practices proved to be unique opportunities for such interactions. Throughout these practices, the communication style expressed by educators and family members – both through their actions and speech – promoted collaboration rather than competitiveness among the students. For instance, during a cooking activity, one child was having difficulty until her father helped with the ingredients and gently suggested that she listen more carefully to the teachers instead of trying to finish faster than her peers. The child later said: "At first it was a disaster, now it's a victory." Several authors (Alencar & Fleith, 2009; Beghetto & Kaufman, 2014) emphasize the importance of an environment open to dialogue and collaborative activities for the development of creativity. This can be observed not only in the school's management model, but also in the activities facilitated by the teachers – demonstrating the educators' engagement with the school's approach, as well as the students' and families' commitment to it..

However, family participation can also present challenges in the children's learning process. For example, one of the teachers noted that the presence of family members is not always necessary and can, at times, become a form of supervision. In certain activities, some children do not need assistance, yet a family member remains close by, trying to solve the difficulties on their behalf. Such behavior may hinder the development of the child's autonomy, as well as their creative self-efficacy and authenticity – both of which are identified as important factors for fostering creativity (Alencar & Fleith, 2009; Castro, 2006).

Another example of joint construction – a recurring practice at the school – is that the class's collective project is chosen by the students themselves. One of the observed synchronous sessions aimed to decide on the name of a project focused on self-care and care for the environment. A wide-ranging discussion was held,

in which all ideas and suggestions from the students were welcomed, followed by a final vote. The chosen name was Cuidando do DF (Taking Care of the Federal District), as one student pointed out, “[...] each of us is in a different part of the DF.” Her suggestion was based on two previous contributions from classmates – “Taking Care of the School” and “Taking Care of Brazil” – and also on the reasons other students had given for rejecting a previously proposed name. As a result, a new and more widely accepted name was created. This example illustrates the student's ability to combine ideas and suggest a solution that expresses the cultural and social identity of the group (Neves-Pereira & Alencar, 2018), the school, and the physical – and symbolic – space in which she, her peers, their families, and the educators are situated. It also demonstrates the selection of topics that are relevant to the students, as they reflect the geographical reality of their lives, and the refinement of ideas through ongoing peer communication over the course of each session, and throughout a sequence of lessons conducted during the study and the pandemic more broadly. Therefore, both the thoughtful selection and refinement of the final product require reference points, a supportive environment for expressing ideas, and sufficient time for evaluation and improvement.

With regard to references, one art activity related to the Cuidando do DF project aimed to address self-portrait and self-care. The teachers began the lesson by presenting self-portraits by a range of artists – including women, Latin Americans, Black, Asian, and African artists – in a slideshow that highlighted various styles. The students were then instructed to create their own self-portraits by looking at themselves in a mirror and using whichever drawing or painting materials they preferred. The student's contribution regarding the project name may have been facilitated, in part, by the duration of the session, as it extended beyond the usual length and allowed for 90 minutes of conversation focused on the project and the name to be selected. On the other hand, by the end of the session, most of the students were already showing signs of fatigue, irritation, and disengagement, which may have affected the generation of new ideas or the selection of a different name.

Discussion

The school's choice to work with a collaborative project-based methodology provides students, each at their own stage of development (Zittoun & Gillespie, 2020), with opportunities to discover and refine a range of skills important for creative action (Santos et al., 2017). The expression of creativity, in turn, should be understood in relation to the material resources available, as well as the ways in which these are explored through the materiality of the subjects' bodies (Bardt, 2019) – even when their physical actions are mediated by mental operations (Green et al., 2023), which themselves find materiality in the brain's physical structure, or by computers and similar devices, which are also material entities. Creativity must also be understood in relation to: how knowledge acquired through academic disciplines and lived experiences is processed; how creative products or outcomes are communicated to others (Formiga Sobrinho & Glăveanu, 2017); the situational context of the actions (Benedek et al., 2021); the impact on the lives of individuals directly or indirectly involved in the creative process (Beghetto & Madison, 2022); and other factors whose prior influence has also played an important role (Baas et al., 2015).

Analyzing the results in light of the specificities of the educational domain (Beghetto, 2017), particularly for children, we observed that the interdisciplinary approach of the collaborative projects enabled students' creative responses to emerge through their familiarity with the project content and with activities from language classes, such as *adedanha* and word searches. These projects, by encouraging students to seek answers to their own questions through research and memory recall, shift them away from a passive role of merely receiving and memorizing information. Moreover, they empower students to find their own answers, exercise critical thinking by questioning them, and even develop the ability not only to solve problems but also to identify, formulate – or even reformulate – them (Runco, 2023). By seeking their own answers and, more importantly, by presenting results from unique perspectives and being open to feedback and collaboration from others, students also exercise their authenticity, a fundamental trait for the development of creativity.

An education that rejects arbitrary memorization of content must not, however, be one that disregards memory as a cognitive function essential to the development of creativity. Memory and creativity go hand in hand, as the creative process also relies on the individual's accumulated experiences (Mozzer & Borges, 2008; Vygotsky, 2012). These experiences enable the individual to focus attention on certain elements over others

– even during internal memory searches (Green et al., 2023) – which are also influenced by external factors such as the prevailing social and cultural context, or by the individual's unique personal, environmental, or practical trajectory.

Through its educational philosophy, the school studied demonstrates a clear commitment to promoting the cognitive and sociocultural development of children (Castro, 2006). The projects developed by the observed class were carried out collectively and were characterized as collaborative learning activities that have the potential to foster creativity (Baruah & Paulus, 2019; Eteläpelto & Lahti, 2008; Lubart, 2018; Moran & John-Steiner, 2004), in which all participants were encouraged to share ideas and suggestions. The class discussion around the name of the new project can be characterized as a brainstorming session (Baruah & Paulus, 2019; Alencar & Fleith, 2009; Osborn, 1963). After each student shared their ideas, the group collectively evaluated them and selected the final name, with opportunities for combining and refining suggestions, as occurred at various points throughout the project. However, students do not experience activities in the same way, and they may show varying levels of interest depending on the nature of the lesson or subject matter. For this reason, the teacher's role becomes especially important – even in collective activities, there is a need for individualized attention, allowing for constructive feedback to be offered to each student (Alencar & Fleith, 2009; Beghetto & Kaufman, 2014). Environmental factors also play a key role in supporting the communication of ideas and peer collaboration, through the sharing of diverse knowledge that can lead to the refinement of ideas until they are ready for implementation.

Regarding time, the flexibility in deadlines for submitting activities helped reduce pressure on both students and their families. However, the duration of synchronous classes presented a challenge. Even though the sessions were shortened to 90 minutes, students often became tired quickly and showed signs of disengagement in certain situations. This was likely a result of the conditions imposed by prolonged screen exposure, which had already intensified during the period of social isolation and radically transformed the nature of educational activities. These changes required sudden adaptations not only from those designing and delivering the lessons, but also from the students participating in them. In other words, limitations were encountered in adapting to and embracing new experiences. Time revealed its ambivalent role – on the one hand, enabling the refinement of responses, and on the other, contributing to a collective emotional state that could negatively affect both the pursuit of a better project name and the final selection, which may have been driven by a shared desire to simply finish the task. Time-related challenges were also evident in the limited opportunities for individualized follow-up and feedback during ERE, as teachers spent less direct time with students, and virtual classrooms made personal interaction more difficult. To mitigate this impact, the school introduced small-group virtual sessions with only four students. This strategy increased each student's speaking time and made the classes more dynamic, encouraging greater student participation and family involvement.

Another factor that proved to be ambivalent was family support, which in other contexts may be more indirect but, in this case, became more directly involved. Thus, even through the screens of computers or smartphones, the participation of family members – ideally present even before ERE – was intensified. In other words, family engagement needed to become more direct, with physical presence beside the child, even if behind the screen, in order to sustain the child's engagement and maintain connections with educators, peers, and the school as a whole. However, as illustrated in previously mentioned examples, family involvement in subject-related activities also revealed its limitations. Like the factor of time, it demonstrated both favorable and unfavorable effects on learning and creativity. It is therefore essential to assess which activities genuinely require family support, which children benefit from it, and when and to what extent it should occur. This requires an ongoing evaluative process to ensure that such involvement does not compromise the child's autonomous, self-confident, authentic, and creative engagement. Such engagement can emerge when children face challenges within the school environment that prepare them to deal with other problems they may encounter in their everyday lives (Kaufman & Glăveanu, 2022; Formiga Sobrinho, 2020).

Flexibility, previously identified as important for creative action (Alencar & Fleith, 2009; Lubart, 2007; Morais & Miranda, 2021), should not, however, be confused with disorganization or lack of structure. Beghetto and Kaufman (2014) and Lubart (2007) emphasize that a flexibly structured environment balances structure with student autonomy, providing support, consistency, and both physical and symbolic space for taking creative risks. In this regard, we observed the creation of class agreements as a structuring tool within the virtual learning environment – agreements related to children's active participation, such as keeping

microphones muted while others are speaking, not using colorful virtual backgrounds during class, and coordinating before sending messages in the chat. While the adoption of such rules may initially provoke resistance or discomfort, especially early on, their implementation allows each participant to feel included while also making room for others. This ongoing effort to improve interactions and communication within a new learning environment – even with the introduction of rules that could potentially inhibit expression (or, paradoxically, precisely because of them) – may result in improvements in learning and the development of creative potential.

Therefore, the pandemic context – by practically requiring all individuals involved to work collaboratively – may have been less adverse for a school designed and operated in the way the one studied is. This is because ERE and the resulting need to find solutions for continuing teaching activities intensified interactions that were potentially conducive to the generation and development of new ideas (Baruah & Paulus, 2019), until they could be collectively selected and implemented. Such collective and collaborative engagement became inevitable, regardless of whether individuals were naturally open or flexible. As we have demonstrated, through the exercise of flexibility by educators, students, and their families, it was possible to maintain educational activities and, with some inevitable exceptions, to find ways of making classes more meaningful and enjoyable for students. In this way, an adverse context revealed the importance of combining knowledge and efforts to think and act creatively. And since other adverse scenarios may arise – especially in light of the ongoing consequences of climate change and the challenges posed by technological developments and the exponential growth of artificial intelligence for both education and creativity (Beghetto, 2023) – we must emphasize the importance of effectively integrating creativity education into school curricula (Patston et al., 2021).

Final remarks

During social isolation, for many people, virtual interactions became the primary way of moving through and experiencing the world. It was through the virtual environment that children engaged in psychological movement and encountered new experiences – not only in terms of learning within the educational setting, but also in ways that enabled the development of their creativity. The significance of this final finding lies in the fact that, beyond generating motivation in the classroom and bringing pleasure and meaning to human life, creativity has the power to transform how individuals relate to the world – making them more open to novelty and to differing perspectives. At the same time, the reflection presented here contributes to the still limited (Baruah & Paulus, 2019) body of research on collaborative creativity in education.

With the onset of the Covid-19 pandemic in 2020, the physical environment in which children attended classes and engaged in educational activities was relocated to the home. Yet, creativity remained open to development, allowing new meanings to be attributed to the learning process, bringing greater playfulness to children's development, and helping prepare them for future everyday challenges. The school studied already served as a model of alternative education prior to the pandemic. During that period, despite the adversities faced by all types of schools, its collaborative management model likely facilitated the search for and discovery of solutions to various problems. This was made possible by the existing alignment among administrators, educators, students, and families, who – working together – were able to exercise flexibility, openness, autonomy, and creative self-efficacy in seeking authentic ways to navigate new situations. Nevertheless, it is important to acknowledge the setbacks experienced by education in general, as well as the disruptions to the activities of this and many other schools.

As limitations of this study, it should be noted that the observed classes were not recorded, and due to the timeframe granted for conducting the research at the school, it was not possible to observe the weekly activities sent by the teachers – only the synchronous sessions. Additionally, although some Portuguese language classes were observed, other subjects such as cooking, while involving everyday practices, also have a playful character. As possibilities for future research, we suggest studies that include subjects such as mathematics and involve a larger number of both non-traditional and traditional schools, aiming to investigate creative possibilities within each context. With the aim of contributing to advances in academic research and professional practice across different domains of expression, this study will be shared with the school's Pedagogical Council, which includes teachers, coordinators, and families. In doing so, all parties will be able to reflect on the findings and engage their own creativity in the pursuit of improving their practices. We recommend that future research adopt a similar approach.

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Evaluation rounds:

R1: Two invitations; two reviews received

Manuscript formatting reviewer:

Adriana Curti Cantadori de Camargo

Data availability:

The data are included in the body of the article.