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Educação Matemática Debate

Digital video production: an invitation to creativity in Mathematics classes

Abstract: The promotion of creativity in Mathematics lessons fosters an environment conducive to the development of active participants in their knowledge construction process. The approach to mathematical content through video production offers significant potential for teaching and learning. The study, of a qualitative nature, sought to reflect on how video production can stimulate creativity in Mathematics classes. The investigation was conducted at a technical school in the city São Paulo with 29 students from the Integrated Technical High School program. The analysis reveals that the act of producing videos supported the construction of knowledge in Analytical Geometry and that this practice provides an opportunity for a creative approach to the communication of mathematical ideas.

Keywords: Video Production. Creativity. Digital Technologies. Mathematics Education.

Sílvia Mourão Meireles
Centro Paula Souza
São Paulo, SP — Brasil
0000-0002-7270-0132
silviameireles0@gmail.com

Juliano Schimiguel
Universidade Cruzeiro do Sul
São Paulo, SP — Brasil
0000-0001-8552-7984
schimiguel@gmail.com

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Article

Producción de vídeo digital: una invictatión a la creatividad en las clases de Matemáticas

Resumen: Promover la creatividad en las clases de Matemáticas favorece entorno propicio para la formación de sujetos activos en su proceso de construcción del conocimiento. Abordar los contenidos matemáticos a través de la producción de vídeos ofrece un gran potencial para la enseñanza y el aprendizaje. El estudio, de carácter cualitativo, buscó reflexionar sobre cómo la producción de vídeo puede estimular la creatividad en las clases de Matemáticas. La investigación fue realizada en una escuela localizada en la ciudad de São Paulo con 29 alumnos del curso de Secundaría Técnica Integrada. El análisis revela que producir videos favoreció la construcción de conocimiento en Geometría Analítica y que esta práctica proporciona oportunidad para un abordaje creativo de la comunicación de ideas matemáticas.

Palabras clave: Producción de Vídeo. Creatividad. Tecnologías Digitales. Educatión Matemática.

Produção de vídeos digitais: um convite à criatividade nas aulas de Matemática

Resumo: A promoção da criatividade nas aulas de Matemática contribui para um ambiente propício para a formação de sujeitos ativos em seu processo de construção de conhecimento. A abordagem dos conteúdos matemáticos por meio da produção de vídeos oferece amplo potencial ao ensino e à aprendizagem. O estudo, de natureza qualitativa, buscou refletir como a produção de vídeos pode estimular a criatividade nas aulas de Matemática. A investigação foi realizada em uma escola técnica na cidade de São Paulo, com 29 estudantes do curso Médio Técnico Integrado. A análise revela que a ação de produzir vídeos favoreceu a construção do conhecimento em Geometria Analítica e que essa prática oportuniza uma abordagem criativa na comunicação das ideias matemáticas.

Palavras-chave: Produção de Vídeos. Criatividade. Tecnologias Digitais. Educação Matemática.

1 Introduction

In many countries, educational policies aim to develop curricula focused on the

transmission of knowledge accumulated historically by humanity, recording its relevance for scientific, technological and social progress. However, the gradual development of society has given rise to new curricular guidelines that go beyond scientific knowledge, recognizing the need to include in the curriculum other knowledge that is equally fundamental for the comprehensive development of human capabilities (Gontijo et al., 2018).

The *Base Nacional Comum Curricular* [National Common Curriculum Base — BNCC] establishes ten general competencies to be developed by students throughout the stages of Basic Education (Brasil, 2018). Among them, the following stand out:

> Exercise intellectual curiosity and use the approach specific to science, including research, reflection, critical analysis, imagination and creativity, to investigate causes, develop and test hypotheses, formulate and solve problems and create solutions (including technological ones) based on knowledge in different areas (Brasil, 2018, p. 9).

This normative document proposes, for High School, in the area of Mathematics, the promotion of actions that stimulate and awaken students' reflection and abstraction processes, strengthening a creative, analytical and deductive way of thinking. In order to achieve these objectives in this area, students need to develop abilities related to investigation and problem-solving, using their own ways of reasoning, representing concepts, arguing and communicating. With the support of collective discussions and validations, they can learn concepts and develop increasingly elaborate procedures and representations (Brasil, 2018).

From this perspective, this study discusses collaborative actions supported by the use of digital technologies in the learning of Mathematics, in particular, it encourages and investigates the production of videos with mathematical content by students. According to Ianelli and Silva (2023), the use of videos in classrooms has become increasingly present, whether through joint production with students or as a guidance tool.

For Souza, Reis and Belo (2024), in the current context, the population's broad access to increasingly advanced smartphones allows us to glimpse in pedagogical approaches a valuable path for the production of videos as a mathematical activity that does not require sophisticated equipment. Research conducted by Domingues (2020), Neves (2020), Fontes (2019) and Oechsler (2018) investigated the educational potential of digital technologies, highlighting teaching methodologies that encourage students to produce videos.

In addition to these studies, video festivals focused on mathematical content have gained notoriety, including the *Festival de Vídeos Digitais em Educação Matemática* [Digital Video Festival in Mathematics Education], held annually since its first edition in 2017. According to Neves (2020), videos that express mathematical ideas stand out as a technology that activates the senses in the construction of knowledge. Hearing and vision are stimulated by the combination of images, sounds, music, scenarios and body expressions, enabling the understanding of mathematical ideas to occur not only through deductive and analytical processes, but also through sensory perception.

In line with this expectation, Oechsler (2018) advocates that the production of videos by students stimulates autonomy, making them protagonists and active agents of their learning. This process allows them to conduct their research and decide how to approach the content in a way that provides meaning to the viewers.

From Fleith's (2001) perspective, a school environment focused on developing the creative potential of students and teachers must have learning as a central element to drive change. Furthermore, the learning process must be understood as the result of the interaction

Educação Matemática Debate
v. 9, n. 17, p. 1-14, may. 2025

between three factors: the student, the teacher and the school curriculum.

In this context, this study aims to reflect on how video production can stimulate creativity in Mathematics classes. In addition to this introduction, the article is organized as follows: section 2 presents a brief scenario on video production in the context of Mathematics Education; section 3 discusses aspects of creativity in Mathematics classes; section 4 presents the methodological aspects and, in sections 5 and 6, the results and considerations of this investigation are discussed.

2 The potential of video production as a pedagogical tool

Videos are commonly used to practice humor, make propaganda, express affection and conduct electoral campaigns, in addition to gaining more and more space in educational environments. However, in these contexts, they face some resistance, attributed to the strong presence of orality and writing, as well as the history of action of traditional media, such as the blackboard, chalk, pencil and paper (Borba, Souto and Canedo Junior, 2022).

In this scenario, the approach to mathematical content through the focus of video production by students offers broad potential for teaching and learning. This practice not only favors the exploration of a diverse range of mathematical processes and content that make up the curriculum (Welmer and Cardoso, 2024).

With the emergence of fast internet and easy access to equipment for recording audio and image, videos have become a fascination for various audiences. This popularity is largely due to the diversity of editing methods available, which facilitate and promote greater interaction between those who produce and those who watch the videos (Aguiar, Sales and Neres, 2024).

For Borba, Silva and Gadanidis (2020), including digital video in teaching contexts is important, since it is the way in which the current generation communicates and has fun. In this sense, incorporating video in teaching contexts aligns pedagogical practices with contemporary forms of communication and entertainment, making learning more relevant and stimulating student engagement.

Oechsler (2018) reflects on communication and the meanings implicit in the act of communicating. For the author, in educational contexts, communication is a dynamic and non-static process that depends on the intentions of its participants in wanting (or not) to produce meaning. According to the author, messages can be transmitted through different means and modes, and each choice of mode and medium tends to promote transformations in learning.

Complementing this reflection, Oechsler (2018) reports that the approach to mathematical content through traditional inputs, such as pencil and paper, is qualitatively different from that which relies on the use of software. The author argues that the production of mathematical knowledge is directly related to the technology used, arguing that changes in the chosen medium can alter the meaning of the messages. Thus, instead of looking for the most effective means to share a message, it is important to fully explore the potential of each available resource. Regarding the use of videos, it is worth noting that

> we are not arguing that videos are the best medium for promoting student learning, but rather that by exploring the potential of videos in all their forms (sound, image, gestures, speech, writing, among others), there is a chance that students who did not show signs of learning (both as producers and viewers) in other media will demonstrate them here, by exploring different modes and reaching each one in their best form of learning. We know that some people learn better by seeing an image, others by reading a text, and others by writing

Educação Matemática Debate
v. 9, n. 17, p. 1-14, may. 2025

> what they have heard. By exploring these potentialities in video, we can reach a greater number of people than if we only used one mode — writing, for example (Oechsler, 2018, p. 91).

The word *communication* has long been associated with curricular areas that did not include Mathematics. However, recent research has shown that, at all levels of education, students need to learn to communicate mathematically. To this end, it is important for teachers to foster a spirit of questioning, encouraging their students to reflect and express themselves (Cândido, 2001).

According to Cândido (2001), the predominance of silence, understood as the absence of communication, is ability common in Mathematics classes. The apparent focus on mechanical calculations, the emphasis on procedures and the language used in teaching Mathematics are some of the factors that have made communication infrequent. However, in Mathematics, communication plays an essential role in helping students build connections between their informal and intuitive concepts and the abstract and symbolic language of the discipline.

Thus, Cândido (2001) emphasizes that

> if students are encouraged to communicate mathematically with their peers, with the teacher or with their parents, they will have the opportunity to explore, organize, their thoughts, new knowledge and different points of view on the same subject. Thus, learning Mathematics requires communication (p. 15).

Communication, therefore, is strictly related to the production of videos by students. For Borba, Souto and Canedo Junior (2022), this practice is an innovative approach, capable of transforming the classroom environment and Mathematics Education itself. These authors emphasize that the students' voice becomes central, since they assume the role of authors when creating digital videos that communicate mathematical topics of their choice.

In the same sense, Fontes (2019) proposes reflections on the importance of student communication through media, highlighting that videos can be an ally of the teacher in the teaching and learning processes. For the author, the expressive presence of videos in the daily lives of young people allows the combination of various communicative elements, articulating information, text, sound, images, graphics, sensations and bodily expressions that can facilitate communication.

In addition to encouraging the communication of thoughts and knowledge in the classroom environment, it is important to expand these practices with the community in which the students are inserted. The media and the media can facilitate interactions at different levels of education, and these tools can be a strategy that encourages students to become more autonomous and engaged in both educational contexts and society (Fontes, 2019).

Encouraging activities focused on video production helps overcome teaching practices limited to developing calculations and memorizing mathematical content. The process of creating videos encourages research and authorship, so that students revisit existing knowledge and achieve new learning. This path favors the communication of mathematical ideas and the construction of knowledge (Meireles and Schimiguel, 2024).

In this sense, Domingues (2020) investigated different perspectives on the *Festival de Vídeos Digitais e Educação Matemática*, presenting a literature review on studies conducted from the perspective of video production. This author presents a summary of terms that are

Educação Matemática Debate
v. 9, n. 17, p. 1-14, may. 2025

similar in these studies, such as mathematical learning, collaborative work, transformation of classroom practices, autonomy, creativity, changes in the image of Mathematics, research, communication, dissemination, among others.

According to Welmer and Cardoso (2024), the production of videos in teaching and learning favors the exploration of a wide variety of mathematical content that makes up the curriculum. To this end, they emphasize the importance of this integration being done consciously, with the aim of improving the learning process and not dazzling students with visual effects without pedagogical intention (Welmer and Cardoso, 2024).

In light of what has been presented, providing students with the opportunity to approach mathematical content through video production reconfigures the dynamics of classes, since they have the opportunity to explore, delve deeper into and revisit various concepts.

This strategy can facilitate the understanding of numerous subjects in a more dynamic, interactive way and with the support of digital technologies, which enriches teaching. Thus, the emphasis on video production represents an innovative strategy that provides the opportunity to communicate mathematical ideas so that students can consolidate knowledge in a dynamic way and share it.

The following section presents reflections on creativity, especially considering that video production establishes an intrinsic connection with the creative process.

3 Creativity in Mathematics classes: reflections on a possible path

In a context of intense transitions, it is important to reflect on the education of children and young people in an unpredictable society and, at the same time, analyze how creativity can contribute, or not, to people facing the multiple challenges of the contemporary world (Neves-Pereira; Alencar, 2018). These authors reiterate that

> education is about nurturing, caring for, generating, developing, promoting, and transforming people who are able to live in their sociocultural contexts and who are equipped with resources not only for survival, but especially for adaptation, innovation, and creation (Neves-Pereira; Alencar, 2018, p. 4).

The term *transformation* emerges as a central element in this debate. According to Neves-Pereira and Alencar (2018), creativity, before any theoretical definition, is a human value essential for existence. Survival strategies are directly related to the way humanity faces daily difficulties and challenges.

According to Alencar and Fleith (2008), the importance of creating an environment that is favorable to the development of creativity has been increasingly recognized by educators from various countries. Constant social changes indicate that educational institutions should not limit themselves to the mere transmission of content and techniques, since these practices, by themselves, do not ensure the adaptation or success of the individual in a world characterized by rapid changes and unprecedented progress.

In this sense, D'Ambrósio (1989) already warned that the school process focused on Mathematics did not promote situations that led students to be creative or motivated to solve a problem through curiosity. The author reveals that, in school mathematics, there is a clear lack of actions that favor investigation, exploration, and discovery — important elements for the development of creative processes.

The integration of technologies in the educational context has a significant impact on the school environment, leading to the adaptation of new teaching styles. This transformation,

however, is not limited to the integration of digital tools: it represents a comprehensive change in the characteristics of teaching work and in the dynamics of the classroom. It is in this aspect that the influence of technology proves to be transformative (Rocha, 2021).

The advancement of research on creativity in mathematics teaching has enabled a new perspective on the classroom, recognizing it as a fertile space for the formation of active subjects in the construction of their own knowledge. In addition, this environment contributes to the development of essential abilities for acting in complex contemporary social relations (Gontijo et al., 2021).

In a scenario permeated by technologies, the traditional approach of transmitting knowledge from a single source, as is usually the case in schools, from one to many, is changing. The current context requires that this dynamic be gradually replaced by a more collaborative model, in which social networks and the vast databases available on the internet play a central role. In this new paradigm, information and knowledge are not only transmitted, but also constructed collaboratively. To this end, creativity is a fundamental element in all areas of knowledge (Gontijo et al., 2021).

Rezende et al. (2016) present a study on the relationship between information and communication technologies (ICT) and creativity in the context of Education. These authors argue that, in educational contexts, innovations called conservative are based on practices that rely on new digital technologies to develop tasks that could be performed with the same functionality as traditional instruments.

There are several examples of conservative innovation in the history of educational technology. In these cases, the emphasis is on the medium rather than the content, which results in only an aesthetic change in pedagogical practices (Rezende et al., 2016). In view of this, it is essential that the adoption of technological resources in education be accompanied by teaching strategies that promote and stimulate creativity.

Following the perspective of Rezende et al. (2016), another important aspect to be evaluated in the integration of digital technologies into teaching contexts refers to the pedagogical objective that is intended to be achieved and whether the attributes of these technologies favor the achievement of these goals. Although some practices supported by digital technologies can increase the level of student motivation, they do not always contribute to the development of creativity (Rezende et al., 2016). Thus, the insertion of digital tools requires planning and pedagogical intentionality, since their potential to stimulate the development of creative behaviors directly depends on the way they are used.

According to Pais (2018, p. 24), “the valorization of more significant teaching strategies requires overcoming reproductive practices with dynamics through which students can develop their creativity”. The author highlights that this valorization is a topic of interest for improving Mathematics teaching, arguing that the methods and strategies adopted should promote appropriate dynamics to intensify multiple possibilities of student interaction with knowledge.

Also according to Pais (2018), practices that valorize students' actions dispel the idea that doing Mathematics involves a pre-elaborated process, in which knowledge can simply be transmitted. On the contrary, learning contexts in this area demand an active and dynamic construction, involving exploration, investigation and problem-solving.

In this conception, the student's cognitive development is recognized by observing the degree of interactivity in the face of a problem situation or the understanding of a mathematical concept. In this approach, the student's cognitive development is evidenced based on the degree of interactivity in the face of problem situations and the understanding of mathematical concepts.

Educação Matemática Debate
v. 9, n. 17, p. 1-14, may. 2025

In banking education, announced by Freire (1987), communication is synthesized by the educator who makes *announcements* and *deposits*, patiently received by the students so that they can memorize and repeat them. According to Freire (1987, p. 33), "educator and student are archived to the extent that, in this distorted vision of education, there is no creativity, there is no transformation, there is no knowledge". Freire's pedagogy advocates overcoming teaching practices based on the perspective of accumulating knowledge. To this end, it is necessary to restructure the learning objective, which must go beyond the assimilation of content and provide the development of human, social and intellectual capacities.

In view of the above, it is important to emphasize that, in order to effectively encourage creativity, it is essential to pay attention to two aspects that constitute this process: qualified teacher training to offer creative teaching and the construction of practices that favor students' creativity (Neves-Pereira and Alencar, 2018). The authors emphasize that

> training a creative teacher, capable of organizing a school environment that mediates the creative process and who masters strategies to promote creativity, requires a concentrated effort that extends from the initial training of this professional to the provision and continued training, where content on creativity should be prioritized (Neves and Alencar, 2018, p. 7).

Returning to the topic of video production, Francisco Junior and Benigno (2018) emphasize that in these processes, students take on the role of scriptwriters, producers, and actors, in a journey that favors creativity and playfulness. In this context, the video should lead the student to a process that favors the integration of languages and concepts, which results in a playful action for the appropriation of knowledge. In this way, the relationship between the product, the video produced, and the process of its construction refers to the possibility of building knowledge.

Thus, the creativity of students in Mathematics classes, when encouraged by the production of videos and the use of various digital technologies, can transform the way concepts are understood and applied. Traditionally structured and rigid learning environments tend to inhibit this creativity. However, by communicating mathematical ideas through videos, students can explore different forms of visual representation, making learning more accessible and personalized. In addition, this practice strengthens autonomy and redefines how mathematical concepts are approached.

The following section presents the methodological approach that underpinned this investigation.

4 Methodological procedures

This study refers to applied research with a qualitative approach. According to Garnica (1997), such research is more appropriate for educational contexts, especially Mathematics Education. For this author, qualitative approaches do not deal strictly with principles, laws and generalizations; instead, they focus on quality and elements that are significant to the researcher. Also according to Garnica (2001), qualitative research is characterized by fluidity, making it impossible to fix rigid parameters, since it interacts with the context and, in this interaction, undergoes changes.

As for the objectives, it is characterized as exploratory research. According to Lösche, Rambo and Ferreira (2023, p. 3), "in the qualitative approach, exploratory research — or exploratory study — aims to understand the phenomenon studied as it presents itself or occurs in the context in which it is inserted". This research is classified as a case study. From Ponte's

Educação Matemática Debate
v. 9, n. 17, p. 1-14, may. 2025

(1994) theoretical perspective, a case study is an investigation that is intentionally dedicated to a specific situation, conceived in a unique way in many aspects, seeking to discover specificities and unique characteristics.

The investigation was carried out in a technical school in the city of São Paulo, with a class of 29 students in the third year of the Technical Course in Secretarial Studies, in the Mathematics curricular component. The theme investigated was the study of Circles, an object of knowledge provided for in the course plan of the discipline, belonging to the context of Analytical Geometry and which was being studied at the time the activity was proposed. The videos produced configured data collection instruments.

Initially, the teacher, also the author of this work, presented the proposal of producing videos as a partial evaluation instrument for the two-month period. There was a consultation in order to assess the interest and agreement of the students in participating and the idea was well received and fully accepted. Then, the students were instructed to form groups of five or six members. At this stage, the evaluation criteria were presented, consisting of four elements:

- clarity in the argumentation of mathematical concepts;
- creativity in the presentation of the video plot;
- quality of technological resources;
- video length between 4 and 10 minutes.

The interval between the presentation of the proposal and the completion of the video was set at 20 calendar days. As a recommendation, the teacher made herself available to answer questions during class time, since the task was designed to be carried out outside the classroom environment.

Considering that the educational institution where the research took place offers an institutional email address to students, administrative staff and teachers, the teacher in charge suggested that the video be sent to the YouTube platform as unlisted, since this activity was the first practice focused on the production of original videos. For this reason, it was decided not to disclose the images of the participants. Thus, the link to each work was sent directly to the teacher's institutional email.

Five videos were produced and, after delivery, the teacher provided individual feedback to each group. In the final stage, the videos were shared in the classroom, configuring a moment to share ideas, centered on the content and creative approaches that supported the productions carried out.

5 Results and discussion

In this section, brief considerations are presented on each of the five videos produced. It is worth noting that the theme of Analytical Geometry, especially the concepts related to the Circumference, was under study when the proposal was presented.

The first video presented is 4’47”. It can be seen that the arguments for the mathematical concepts were communicated in clear and objective language, including a moment in which the step-by-step process for solving the proposed problem is presented in a very intuitive way. The strong point of this video is the integration of the GeoGebra software to elucidate the geometric interpretation of the topic in question.

According to Pais (2018), teaching methods and strategies should encourage students to develop Mathematics, which requires the search for dynamics that enable interaction with knowledge. From this perspective, the research teacher makes frequent use of the software in classes and, although she did not request the presentation of this resource, the students were

Educação Matemática Debate
v. 9, n. 17, p. 1-14, may. 2025

creative and chose to record the screen and indicate ways to access GeoGebra. This action elucidates and highlights the creativity of the group and reveals the autonomous appropriation of digital tools, using them in a meaningful way in a new learning context.

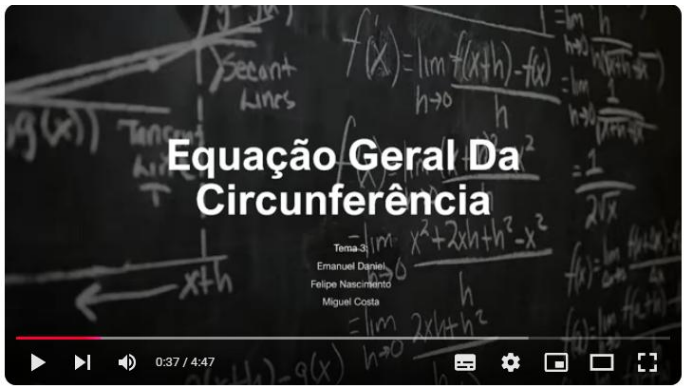

Figure 1: General equation of the circumference (Research data, 2023)
https://www.youtube.com/watch?v=h3EoXVkfBsQ

Figure 2: Reduced equation of the circumference (Research data, 2023)
https://www.youtube.com/watch?v=eY_6YupTtwc

In the second video, lasting 8'38", the students present the concepts of the current theme and, in the presentation of an exercise, carry out a detailed exploration of the notable *products*, enriching the argument. In Neves' view (2020, p. 24), "the production of a video reveals stages formed by cycles of theoretical or technical deepening, followed by moments for organization and synthesis of the ideas that will be expressed in the audiovisual format". In this sense, it is clear that students need to revisit and appropriate the mathematical concepts to synthesize and communicate them effectively in the audiovisual format.

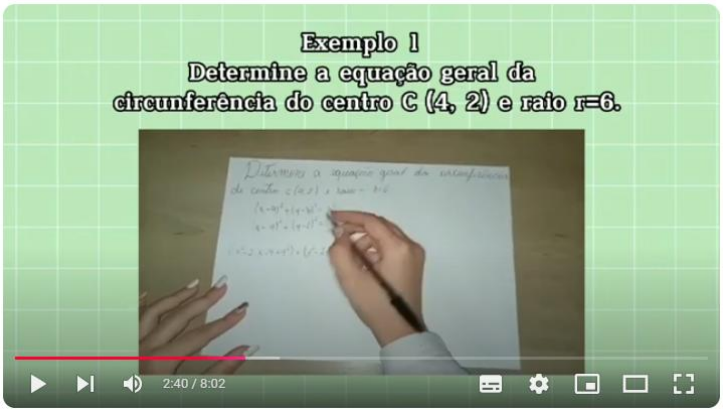

Figure 3: General Equation of the circumference given center and radius (Research data, 2023)
https://www.youtube.com/watch?v=Mv2aEyawC_c

This team developed the third video with a duration of 8’02”, presenting clear communication and accessible language for the mathematical object under study. It is noted, however, that this production incorporates moments in which some concepts were presented on paper, using a pen, which corroborates the perspective of Fontes (2019), who states that communication in Mathematics classes is often carried out through oral and written language. Although the incentive to produce videos seeks to encourage students to use digital resources to communicate mathematical ideas, it is observed that these participants limited themselves to reproducing traditional school practices.

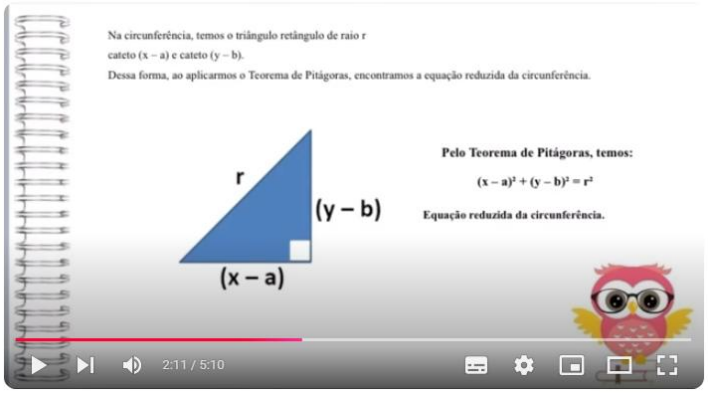

Figure 4: Relationship between the Reduced Equation of the circumference and the Pythagorean Theorem (Research data, 2023)
https://www.youtube.com/watch?v=2uzaCsieiXk

The fourth production is 5’11” long and begins with a brief introduction that differentiates a circle from a circumference; then, connections are made with everyday objects that resemble these two geometric figures. In this video, the presentation of mathematical concepts was carried out in a convincing manner, with connections between characteristics of the Pythagorean Theorem and aspects of the Reduced Equation of the Circumference.

According to Cândido (2021), in the context of Mathematics Education, whenever a group is asked to share or verbalize the procedures adopted, it gives them the opportunity to modify prior knowledge and construct new meanings. As a result, students reflect on the concepts and procedures involved, appropriate them and revisit what they did not understand, expanding their understanding.

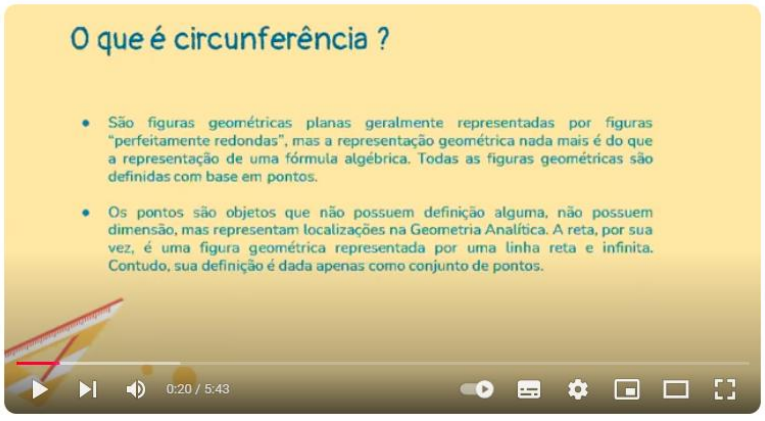

Figure 5: Definition of Circumference (Research data, 2023)
https://www.youtube.com/watch?v=O16QoDHw8RQ

The fifth video presents specific characteristics for this analysis, since the content covered does not align with the expected objectives. It is observed that, although the students were instructed to approach the video in the context of Analytical Geometry, they used the concepts of Plane Geometry.

In the feedback, the teacher tried to understand the reason for this divergence, and the participants mentioned that they did not pay due attention. In addition, it was highlighted that the basis for conducting the research was not adequate. Thus, the following excerpt was mentioned: *"points are objects that have no definition whatsoever"*. This information could be better contemplated by the alternative definition: *"points are objects without dimension or shape"*.

When it comes to the behavior of teachers in conducting their teaching practices, Fleith (2001, p. 2) highlights two important points: "considering error as a stage in the learning process" and "encouraging the student to observe other points of view". It is believed that, in the task investigated, the feedback provided an opportunity to carry out these two actions.

In a more generalized analysis, it is observed that the participants in this investigation made satisfactory arguments regarding the concepts of Circumference. The perception is that the message communicated in each video indicates that there was adequate research on the subjects covered, at the same time that these students revisited concepts already acquired in previous years.

Since this was the students' first experience in authoring videos, no authorization was requested for the rights to images. Therefore, the participants were instructed not to disclose them. Thus, the narrative was predominant in all videos. For future productions, it is intended to request authorization for the use of images for academic purposes from those responsible and to expand the production scenarios.

Returning to the four criteria established for the video evaluation process — clarity in the argumentation of mathematical concepts, creativity in the presentation of the plot, quality of technological resources and duration between 4 and 10 minutes — it is clear that the five videos met these requirements.

It is noteworthy that the team that produced the fifth video did not contemplate the theme of Circumference within the scope of Analytical Geometry. Nevertheless, the approach taken in the context of Plane Geometry presented the concepts correctly. In this scenario, we refer to Garnica (2001), for whom

> the freedom of action in qualitative research — guided by sensible regulations and evaluation parameters that should be discussed and established by the community —, which we defend here, will allow the necessary deepening and will guarantee the breadth of understandings that the investigations make possible (p. 47).

The qualitative context that led to the analysis of this research favored the understanding of the mathematical ideas communicated by the students' narratives. In this diagnosis, the exploration of meanings and the way in which the participants appropriated the digital resources were valued.

Thus, connections between creativity and autonomy were noted in the creation of the requested videos. The development of these tasks provided the students with moments of cognitive engagement and, consequently, contributed to the construction of mathematical knowledge.

6 Considerations

The study aimed to reflect on how video production can stimulate creativity in Mathematics classes. The analysis of the students' narratives reveals that the action of producing videos enabled learning in the context studied, favoring the construction of knowledge.

Additionally, it allowed the digital technologies used in the productions to be applied for pedagogical purposes.

By getting involved in the production of videos, students had the opportunity to explore a wide variety of digital tools and resources, which contributed to the development of technical and creative abilities. In addition, this approach transformed the way in which mathematical content can be approached, since, in the creation process, students were encouraged to explore a range of dynamic resources.

It is worth highlighting that the teacher plays an important role in the development of strategies that can stimulate creativity in Mathematics classes. For this reason, overcoming practices centered on the transmission of knowledge and encouraging research and the appreciation of autonomy should be considered. Furthermore, it is evident that encouraging the production of videos promotes critical reflection and fosters creativity in the approach to mathematical content, since practices supported by the production of videos by students can transform the classroom environment.

According to Cândido (2001), at a time when the discussion about the place and meaning of competencies and abilities in basic education is gaining prominence, it is hoped that student education will foster the development of abilities that go beyond specific knowledge. For this author, among the various abilities involved in the scope of mathematical learning, communication values the appropriation of languages to learn meanings and transforms them into new learning.

In the view of Borba, Souto and Canedo Junior (2022), video emerges as one of the most predominant means of communication in the 21st century. Linked to this factor, it is worth noting that, currently, it is not just an entertainment tool. When used with well-defined objectives, it can favor learning processes, especially in the scope of Mathematics Education.

The valorization of more meaningful teaching strategies demands overcoming practices of mere reproduction, in favor of methods in which the student can develop his/her creativity (Pais, 2018). This author emphasizes that creative production is the result of the subject's effective involvement with the object of study.

In this sense, it is worth noting that encouraging the production of videos promotes critical reflection, research and autonomy in the approach to mathematical content. This practice gives students a voice and actively includes them in the learning process.

As a proposal for future work, we intend to explore creativity in the production of videos focusing on contemporary social issues, valuing mathematical expression and promoting dialogue, as well as connections between teaching contexts and society.

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