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REFLECTIONS ON YOUTUBE VIDEOS AS A PROPOSAL FOR TEACHING AND LEARNING MATHEMATICS FOR THE 1ST YEAR OF ELEMENTARY SCHOOL

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ABSTRACT

This study intends to reflect on the use of some YouTube videos, in the teaching and learning of mathematics in the 1st year of elementary school – initial grades. And with that, to present that technology can and should be used for pedagogical purposes and not as a transmitter of images. To this end, the videos address themes of the mathematics discipline and the National Common Curriculum Base (BNCC). And for this, the exploratory methodology and bibliographic research were used as theoretical support, in addition to a basic questionnaire to capture the students' perceptions. The importance represented in the research brings the current scenario of communication and information technologies that are presented as elements to be considered in schools given the continuous process of diversity today in the school environment and that cannot be left unconsidered.

Keywords: National Common Curricular Base. Diversity. Resource. Series.

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INTRODUCTION

In recent years, the amount of research presented related to the issue of teaching and learning in its most different themes has become expressive, but this does not mean that there are no new approaches that fail to contemplate the way education progresses. And in this sense, new research permeates society through observations, trials, errors, successes, interactions, etc. With this, it is perceived that there are no molds that should be followed, but rather objectives that seek ways of teaching, because the diversity presented in today's society requires this "model" of seeing the other as unique and at the same time inserted in the group. From this perspective, videos enter among individuals as a tool that is already ready, in this case, used here YouTube, but that also with a simple touch it is possible to create videos in different forms and formats.

In the justification that education follows a continuous process and that in recent decades technology has been bringing profound innovations in various aspects, not to mention the facilities provided, it is essential to get out of the comfort zone and the existing tools. According to Moran (2015), education needs to be aware of the changes and then involve the student in methodologies that will use interdisciplinarity and through projects make the hybrid aspect be used. The answer is in agreement with the author in making the classes more challenging, and making the student learn at his own pace and that when sharing with his classmates he comes to want more, being a mixture of desire and need.

In the same way, getting out of the routine can give classes gain a new life and arouse the interest of students, as technology is an additional attraction mainly because of its convenience of leading from one point to another and so on. And the possibilities of dynamics that can be created make the range of uses of technological tools, such as videos, expand. All this is due to the speed with which the internet works and makes the rigidity that we previously had in traditional classrooms, exceed the limits of learning. This is corroborated by Moran (1995) who states that video has a pedagogical potential, given its visual presentation and ability to penetrate people's minds.

With this in mind, the present work resulted from research with students in which it was sought to reflect on the use of *YouTube videos* as a proposal for teaching and learning in mathematics for students in the 1st year of elementary school. Thus, observe the interaction that occurs in *YouTube videos* previously chosen for the research; the conformity of these videos with the National Common Curricular Base, and finally, map the

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use of videos in classes as a pedagogical resource. The research was exploratory and with bibliographic support to gather important data for future research.

Finally, the work is structured in three parts related to the theoretical framework, the first of which seeks to make a brief overview of the concept of technology and the insertion of the videos. The second part presents a short overview of YouTube videos, their relationship with education, mathematics in the 1st year of elementary school, and the application of the BNCC. And finally, the context of teachers as responsible for inserting videos in teaching and learning.

Following the order, there is an explanation of the methodological procedures for conducting the research, linked from the data collection and the participating agents. Then, the presentation and discussion of the results obtained, and; finally, the final considerations of the work. It is important to emphasize that no research is exhausted, as there are other possible biases to work with, as well as it is natural that one research originates from others.

THEORETICAL FRAMEWORK

A LOOK AT TECHNOLOGY AND VIDEOS

When someone mentions the word technology, something linked to computer science immediately comes to mind, digital, however Veraszto et al (2008) declare that it is necessary to remember that the history of humanity began with techniques that have been transformed over time, that is, that in the changes of times society was built and this process came full of complex modifications. And that it is important to mention the techniques, according to Veraszto (2004) because in each era man had different ways of manifesting himself, which then presented an equally differentiated participation in the progress of society. Thus, the relationship between technique and technology emerged, because according to Veraszto (2004) the history of techniques is linked to the work and production of man, in this way, there is a thin line that separates technology from technique.

And according to the same author, man, through his intellect, created tonics for the most varied events, straining the quality of life of society. It was through this process that man began his development, creating more and more extensions of this knowledge to mobilize new "inventions", so to speak. Thus, Veraszto et al (2008, p. 77) state that: "We also have to consider that technology is conceived as a function of new social demands

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and requirements and ends up modifying a whole set of customs and values and, finally, is added to culture." Thus, technology results from the fruits of innovation that occurs within society in the search to improve man's life. The question of positive and negative factors of these innovations are points that require control and must be observed along the way.

Thus, according to Veraszto et al (2008), the path of conceiving the concept of technology is long, however, they conceptualize it as a set of knowledge that man has created throughout his history, to satisfy his needs in a personal and collective way. Perceiving videos as tools originated from knowledge, which according to Layton (1988) came as a means of solving practical problems, relating know-how to what. In other words, it can be exemplified as the videos originated from a knowledge, which in turn was created by being linked to a reason, which could be roughly so that a deaf mute could see himself producing a video, symbolizing his language of Libras, through gestures such as verbal language. It is clear how important it is to make one learn to interpret the language of images and sounds.

Technological knowledge is then a knowledge of how to make, know how to do and improvise solutions, and not just a generalized knowledge based on science. For technology, it is necessary to know what is necessary to solve practical problems (know how to do what for), and thus, develop artifacts, tools that will be used, with purposes, but without forgetting the sociocultural aspect in which the problem is inserted (Layton, 1988). According to Vargas (2001), it is something that cannot be bought or sold, but a knowledge acquired by theoretical and practical education through research.

Video is a technological resource that allows students to experience the sensations of images, sounds, interacting with today's society that focuses on digital content. This is what Walsh (2010) calls multimodality, in which expression takes place through orality, writing, gestures and sounds.

Based on the multimodality cited by Walsh (2010), it is understood that videos, due to their social and also historical use, are presented within verbal language and in turn bring an interaction that points to the construction of meanings, as previously mentioned, showing symbologies that go beyond traditional learning schools. It can be exemplified and reflected on the diversity that we have today in classrooms, with students presenting different syndromes, and some even under study because they do not have a means of diagnosing. And depending on the disability presented, it will be difficult or even impossible to make the student hold his attention in minutes, perhaps in hours. Rojo (2012) links the

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issue of multimodality to multiliteracy, which he defines as the ability to read images. In other words, this issue is important because, in addition to reading and writing, one must take into account the "cultural multiplicity of populations and the semiotic multiplicity of the constitution of texts" (Rojo, 2012, p. 13). This approach of the author points exactly to the issue of linguistics, in which the construction of meanings must be taken into account, because this is what the objectives that need to be married to what is intended to be presented to the students are sought in the videos. And, in addition, he mentions the population that is diverse both in number, number of individuals, and in the matter of culture, which is also expressive.

In general terms, video is a technology that can and should be used in the school context, and its inclusion will enable contact with a new form of language that includes image and audio. The result of this everyday resource is to simplify and reach as many individuals as possible who already use it daily. And its use in education will depend only on the management that the teacher will use in the classroom.

YOUTUBE VIDEOS, EDUCATION, MATHEMATICS, AND THE BNCC

Initially, videos were born in an unpretentious way, as something natural and commonplace in everyday life, something that is seen and heard, in short, a set of interconnected images and sounds to motivate by its ability to seduce when captured by the human brain. And in education, according to Sherin (2004, p. 13) "Video allows you to enter the world of the classroom without having to be in the position of teaching at the moment" In other words, the author refers to the proliferation of videos exposed on the internet and its natural and practical capacity of a tool that in turn ends up capturing elements that work with the effect of feeding the brain as a kind of nutrient.

YouTube videos, according to Fischer (2008) began to appear around February 15, 2005, and was created by two former eBay® employees Steve Chen and Chad Hurley (Fortes, 2006), it is a North American sales and auction site that since 2001 has had the Brazilian site MercadoLibre as a shareholder. These two creators had the objective of sharing their travel videos and surprisingly the site took such a proportion that millions of people started to watch it and became a brand, which according to Fortes (2006) in July 2006 reached the mark of 100 million videos watched. And according to the author, each day an average of 65 thousand new video files are made available to be watched. Oliveira (2024) states that the origin of the name came from the word tube that refers to television,

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and thus, you tube would be something like "you on the tube", or "you on TV" (Caetano; Falkembach, 2007). According to Caetano and Falkembach, YouTube was bought by Google[2] in November 2006 for US$ 165 billion and since then it has been a subsidiary of Google.

YouTube is a very useful platform where videos are stored publicly where you can enjoy a variety of videos in the form of a variety of subjects, themes, and content. The developer created an entire technique from its origin as a tool made available for the general population. But for ordinary people, it is possible to make videos in various formats and then post on the platform that will generate a link that can be accessed by anyone who wants to use them. The videos, in addition to being of a varied nature, allow users to make their comments about them. In education it has been widely used, due to its character and power to capture learning, although it is not the solution to the problems of many students, it can generate a decrease in illiteracy. It is a way to democratize a reality present in the daily lives of thousands of people, and, in addition, its capture is well accepted by people in general.

According to Moran (1995), videos resemble entertainment, and therefore, it has a certain conformism when used in classrooms, as it resembles something new, curious and fun, nothing like an obligation of a class. In all disciplines it is necessary to find ways, means to propose activities that do not weigh on the students' heads, before we had the idea of learning based on the traditional, paper, pen, pencil, teach, transmit, copy, memorize, now it is important to take into account the technological tools, the diversity that is presented, that is, to have new perspectives of the other, over the other. The teacher's task has intensified, since it is necessary to get into the student's head, the curriculum has changed, now the teacher occupies many functions and professions, but the main one is to be a kind of mental plastic surgeon.

In this new occupation of mental plastic surgeon, mathematics is an organ that needs to be well cared for, after all, it has long been seen as a monster in the student's life, from elementary to high school. From this perspective, the teacher of the initial grades must present this discipline as pleasant, curious, and attractive. Here begins the student's journey, in the 1st year of elementary school the mathematical monster has the possibility of using new technological tools, here applied through a proposal of videos. It is normal to find subjects that students will like more or less, as there is identification with content. In

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this idea, Danyluk (1998, p. 14) refers to mathematical literacy as learning to read and write the language of mathematics in the first grades the notions of arithmetic, geometry and logic. For this author, it is possible to place mathematics within literacy, that is, the mathematical context is presented within a text that can be written or not. Mathematics as well as the Portuguese language, for example, are interconnected, this is the interdisciplinary character that can always be inserted in education.

At this stage of literacy, play is essential, as it is the basis of the imagination that is part of the child's world, so it is possible to incorporate teaching and learning into the world of the child's creativity. And according to Braumann (2001. P. 25) "children are conditioned from an early age not to like Mathematics, because they have countless examples of people they esteem and who also do not like, and they boast about it". Based on this view mentioned above, it is important to prevent ideas of this type, but that mathematics like other disciplines are part of a normal context, which is nothing different from the others. Because according to the author, the possibility of the opinion of others can end up placing the child in a world of beliefs that can harm learning.

In this context, we have the BNCC (2018), which is the normative document that defines the essential learning that students must follow throughout the stages and modalities of Basic Education within each area of knowledge, as shown in table 1 below:

Table 1: Basic Education in Brazil (modalities and areas of knowledge)

Modalities of Basic Education		
Early Childhood Education	**Elementary School**	**Middle school**
• Kindergarten from 0 to 3 years old • Preschool 4 to 5 years old	• Early Years 1st to 5th Grade • Final Years 6th to 9th Grade	From the 1st to the 3rd year organized with the traditional subjects (Mathematics, Portuguese Language, Chemistry, etc.) plus the inclusion of training itineraries.
Areas of knowledge		
Early Childhood Education	**Elementary school (initial and final grades)**	**Middle school**
Focused on the integral development of children, without division of specific disciplines, but covering aspects such as: - Interactions and games; Body and movement Oral and written language.; Visual arts and music; Nature and society and Mathematics	1. Languages and their technologies: Portuguese Language, Art, Physical Education, English Language (from the 6th grade onwards). 2..Mathematics and its technologies: Mathematics (focusing on numbers, measurements, algebra, geometry, statistics, and probability). 3. Natural Sciences and their technologies: Sciences (divided into biology,	**Traditional areas** 1. Languages and their technologies: Portuguese Language, Literature, Art, Physical Education, English Language.2. Mathematics and its technologies: Mathematics (working with advanced content, including preparatory for the job market and national exams)3. Natural Sciences and their technologies, Biology, Physics, Chemistry.4. Applied

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	physics and chemistry contents - also focusing on associated technologies) 4. Applied Human and Social Sciences: History, Geography and Religious Education (non-denominational approach)	Humanities and Social Sciences, History- Geography, Philosophy, Sociology 5.Religious education (Depending on the context and choice of schools within government regulations) **Formative Itineraries in High School: guarantee a broad and integral education, preparing students for challenges and practical situations of daily life.** Life Project Technical and Professional Training Curricular Integration

Source: author of the article, Jan./25.

Table 1 presents the division into modalities and areas of knowledge of Basic Education, which allows the curriculum to be organized according to the continuous and harmonious development of the human being (BNCC, 2018). And yet, the BNCC (2018) advocates the importance of adapting the curriculum according to the region and its context, as well as the age group and the student's in. In addition, competencies and skills must be privileged to ensure a comprehensive education that takes into account the socio-emotional aspect, critical thinking, equal access and articulation between contents.

In the 1st year of elementary school, mathematics has in the BNCC (2018) a planned organization in axes and thematic units that have as guidelines to guide the development of competencies and skills. The mathematics discipline inserted in the 1st year of Elementary School aims for the student to understand the importance of numbers in their daily lives, so counting, groupings, quantities, orders and symbols are taken into account. These basic ideas prepare the student for logical thinking and more complex content in the next stages. For this reason, Danyluk (1998) states that mathematical literacy is the most important part of this stage, as it will make the student familiar with basic and early elements of his life.

And after ten years of YouTube it is possible to unite your videos with education, in the various disciplines and still adapt the BNCC in your context. It is a perfect union of teaching and learning.

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THE TEACHER'S CONTEXT IN VIDEO LEARNING

The importance of the teacher in the teaching-learning process is indisputable, because according to Sancar and Deryakulu (2021) he is the professional defined as the process of accumulating skills, values, and personal qualities. He also points out that it is important that teachers have practical knowledge, and that their training teachers in the academies provide this learning. Because theoretical knowledge is useless without learning in the classroom. Similarly, Ling and Leonard (2021) conducted a study on teacher training, and confirmed that it is not only students who learn from videos, but teachers as well, since they think about the diverse possibilities of using them. Sherin and Han (2004) corroborate this justification, as a result of a research on videos and teachers in which the response was an increase in the possibilities of using videos, since there was interaction between groups of teachers and a greater concentration on the details of the videos presented to the groups.

In general, teachers, as well as the population, have the use of videos in their daily lives, whether for enjoyment or even professionally. Thus, it is not surprising that this use will be used as a way to enrich learning. Such use requires special dedication from the teacher, because according to Resende (2015, p. 65) well-selected audiovisuals "serve as support to provoke debates and discussions in the classroom, in addition to arousing interest in the content covered and motivating the investigation of new themes".

Resende (2015) exemplifies that YouTube is a tool that does not want to take the place of other forms of knowledge, but came to add to the existing ones of educational content. And with that, join the planning and the teacher's action in the classroom. Corroborated by Libâneo (2007, p. 309), who states "the main objective of schools is the learning of students, and the necessary school organization is the one that leads to improving the quality of this learning".

In the same way, the teacher is the main one in the teaching-learning process and through the existing technological tools, he will seek ways to present the contents and help in innovation in the classroom. For Libâneo (2007, p.310), "the teacher's professional practice comprises at least three attributions: teaching, acting in the organization and management of the school and the production of pedagogical knowledge".

According to Moran (2000, p. 23), "one of the great challenges for the educator is to help make information meaningful, to choose the truly important information among so

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many possibilities, to understand it in an increasingly comprehensive and profound way and to make it part of our reference"

Also, according to Moran (2000, p. 56): "there will be a greater integration of technologies and methodologies for working with oral, written and audiovisual. We will not need to abandon the forms already known by telematic technologies, just because they are fashionable. We will integrate new and familiar technologies. We will use them as a facilitator of the process of teaching and learning participatively". Thus, the interaction of learning between student and teacher is important, as this is what will make the difference.

METHODOLOGICAL PROCEDURES

To carry out the research and reflect on the use of YouTube videos related to the mathematics discipline of the 1st year of elementary school, exploratory research was chosen, due to its investigative character, as well as understanding the behavior of the human being in the context presented. In the area of education, it is common to observe, reflect to understand and/or interpret the data found. According to Lösch and Ferreira (2023), the exploratory study has the scope of, from the context, investigating and contemplating qualitative data and not quantifying possible solutions. And for support, necessary bibliographies were used, to justify the analysis of the collected data.

The research was carried out with a 1st year elementary school class, composed of 26 students, twelve girls and fourteen boys, with ages ranging from six to seven years old. The school is a municipal public school, located in the city of Campo Bom/RS, in the metropolitan region of Porto Alegre. It is important to note that the school is full-time, operating from 7:30 am to 4 pm, with 186 students divided into classes from 1st to 5th grade of elementary school.

The subject chosen was mathematics, with the reflection of how it can be taught in the 1st year of elementary school in order not to cause the famous belief that it is bad and the various facets of most people when they boast that mathematics is difficult. After all, the 1st year of elementary school is the crucial stage for breaking prejudices. In this case, videos would be the theme, but precisely those on YouTube, since children always look at it and have instant access. The subject was chosen after three videos viewed, all of a pedagogical nature. Below in table 2 are the videos with their access links, subject and titles listed by YouTube.

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Table 2: Videos with thematic axes

Links	Subject	Video title
https://www.youtube.com/watch?v=M5zyA0nrDS8	• Reading, writing and comparing natural numbers.	M5zyA0nrDS8 1st grade C - Reading, Writing and Number Comparison 08/06/2020
https://www.youtube.com/watch?v=ZxP27EHZBzg	• Ascending and descending count	Ascending and descending order | Mathematics | Time to Study
https://www.youtube.com/watch?v=RV5B5BnzzZU	•Routine counting.	1st year class day 01 10 routine count

Source: Prepared by the author, Jan./2025.

After choosing the videos, the students watched each of the videos at different times, lasting 30 minutes each, followed by some questions. To answer the questions about the videos, each one who wished to answer was asked to raise their hand. To this end, the steps followed were:

1. The first orientation was to look carefully the first time, observing what subjects each of the videos brought; if they understood the matter; what drew attention in the videos; if it was quick, time-consuming, if they would like to see more videos like this; in short, what could they say about the videos or something that the teacher did not ask. And most importantly, that they write down what they would like to answer or even if they had any questions.
2. In a second and third moment, each of the videos was played again.
3. And finally, a survey of answers was made from the first orientation. It is important to note that there was no confusion, even though the videos are presented in sequence, perhaps because the content presented has an order, such as presenting the natural numbers and knowing that they increase and decrease, and all this is part of everyday life.

PRESENTATION AND DISCUSSION OF RESULTS

According to Moran (1995), the videos should be presented little by little and then follow a guide of questions in small groups to start a debate and draw conclusions about them at the end. However, in this research, the students answered the questions randomly without dividing them into groups, because the intention was to explore their visions of comprehension and understanding, and because they were small students, they lacked the maturity to work in a few minutes in groups. Thus, only some of the answers were recorded, in this case those that differed, in a table about each of the videos presented.

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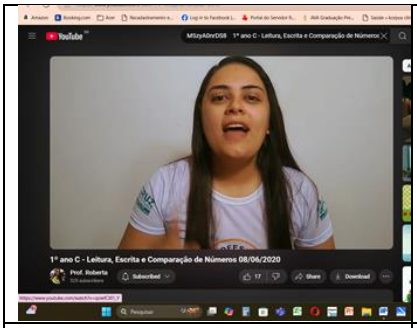
Figure 1. Images of the selected videos



Video 1

Video 2

Video 3

Source: Author of the article, Jan/2025.

As previously mentioned, the videos were presented in a sequence, the initial thought was that confusion might occur, given the age of the participants due to the lack of understanding of how the explanation of the contents would happen. However, the surprise, there was a debate between them, exchange of information about what one video brought and the other complemented. Based on the guidelines given in the methodological procedures, the work followed, with the following answers:

Video 1 Responses
: "The music in the video is cool and fun..." "The teacher showed the numbers, but I already know..." ;" It talks about numbers, but it has a book of numbers?.." "We could see more videos like this!" "Music could play more!" "Because I had books to read, but there are no numbers!"
Video 2 Responses
"I loved the ladybugs in the video!" "We saw the numbers increasing and decreasing" "It reminded me of our queue by size!" "The ladybugs go up and down"! "They looked like the stairs of the school!" "Very colorful"
Video 3 Responses
"This one has no music!" "It also has numbers!" "But it also shows the numbers we learned from the teacher!" "The teacher looks nice" "Very short this video, right!"

After the brief presentation of the students' speeches, it was possible to ascertain some considerations, the first being that in all the videos it was detected that they were numbers, which shows that the verbal and visual language were well represented in the three videos. This adds to what Moran (1995) reports that a didactic video should be worth the audiovisual aspect. In the answers to videos 1 and 3, the student speaks of the music,

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because in video 1 the teacher presents the content based on a created song, while in video 3 there is no music. The music in video 1 hooks the student to understand the content by pulling on the audio and image. Video 3, although very explanatory, does not present musical ability. Video 2, despite not having been spoken, also does not have a song as part of the content, however the colors of the images make the party, holding the student's eye. Once again, it is proven that according to Moran (1995, p. 3) "audiovisual language develops multiple perceptive attitudes: it constantly solicits the imagination and attributes to affectivity a role of primordial mediator, while written language develops more rigor, organization, abstraction and logical analysis."

The student's view in video 2 when he says that the ladybugs go up and down, compared to the stairs at school, to the queue they use to organize themselves refers to a daily school routine. These perceptions are precisely what the BNCC wants to combine conceptual elements with the diary. Another interesting point is that in video 1 the teacher combines the content with a story told on an island, in which objects introduced inside it are added, and at the end, she leaves as a suggestion a book that tells the story of numbers. Therefore, one of the students asks why he is seeing something written when it is all about numbers. And this is what Danyluk (1998) refers to when talking about multiliteracy, understanding it by reading numbers. It is also observed that at this stage a division between disciplines begins, as if they could not mix, a vision that the student carries throughout his journey in basic education. And finally, the teacher's expression in video 3, when the student says that she looks cool, this image is also important in this presentation. Not forgetting that it was observed that the video was a course, in fact of the three videos, 3 was the shortest with about two and a half minutes. Time is also important and should be considered when standing in front of a screen.

FINAL CONSIDERATIONS

After the present research, the importance of using didactic videos at all educational levels is evident. And even more, if we take into account that television is a striking presence in most Brazilian homes, exerting a great influence on the way we read the world.

Digital culture is important in education and must be presented to the student, but the dosage of this presentation must be measured and objectified to become a benefit for student and teacher. It was a fact that three simple videos prepared by teachers at different

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times managed to attract students at this stage, the answer being the audiovisual, and the joining of the images with the audio combined into one.

Research of this type would have a lot to say if the time for development were longer, however there will be no shortage of opportunities for more and better to be done. It is certain that once it doses technology, classroom, teacher, student, school and all the tensions that may exist, education can deal with all the diversities and adversities that exist and may exist.

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