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DADA ART AND PROPORTIONALITY: AN APPROACH TO HOMOPHOBIA

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Abstract: Introduction: Dada art and mathematics allow new ways of relating themes based on language, problematizing homophobia through proportionality. Objective: to present a problem situation in the work “Homophobia is a crime” analyzing the relationship of mathematics, Dada art and language in order to awaken curiosity, creativity and knowledge through proportionality. Methodology: Uses in the work “Homophobia is a crime” by Elizangela Maria and the rule of three to show how this interaction between these sciences occurs. Results and Discussion: Using the rule of three, it is possible to observe that words and numbers strongly criticize violence and mortality of the LGBTQ+ community, showing when Dada art and proportionality are intertwined to build a critical knowledge about a social problem. Final Thoughts: Author criticizes violence against the LGBTQ+ community and works critically with homophobia through the connection between mathematics and Dada art. **Keywords:** Dada art, mathematics, proportionality and language.

INTRODUCTION

Mathematics and art reinvent the classroom, enhancing creativity and the exercise of thinking. The problems, formulas and concepts that are related to this science that seeks exact results for practical problems, when this instrument that does not reproduce these aspects equal to textbooks, but innovates in bringing the complexity of the abstract of artistic works, what is said to be illogical, difficult to understand for something that addresses mathematical themes that can enchant and arouse curiosity to know different areas of knowledge, among them the simple rule of three.

The rule of three is widely used to resolve questions of proportionality in many branches

of mathematics. Its practicality in solving exercises avoids huge calculations, making logical reasoning a practical tool for problem interpretation (ALMEIDA, 2015). When this method merges with Dada art, we can boost playfulness and create a new look at art and mathematics education. In this meeting, disordered Dadaism brings art together with mathematics to create – innovate – to know.

Dada art comes as an anti-art movement, against the traditional model, especially the European avant-gardes. It is reflected around the war, in a world without much hope. It condemns art, but art is made, a new art, against everything and everyone. It contradicts art, but does not deny its forms, its expressiveness, a laboratory of experimental techniques in artistic making. It does not intend to please and educate, on the contrary, it insults. One sees an art that is both polemical and conscientious (TRINGALI, 1990).

According to Tringali (1990) “The work of art is understood as a product of chance, without psychic interference, neither conscious nor unconscious. You can choose the process of building the composition, but the result is unpredictable, chaos.” In this chaos that Dada art finds itself, it becomes innovative when it encounters mathematics. An abstract, expressive and social composition.

In art you can see a lot of mathematical content, and even create art through mathematics (CHAVES, 2008). This junction makes mathematics expand its paths to a science that goes beyond numbers, dialoguing with art and language, working on a subject as current in our society as “homophobia”. This theme that affects, hurts and causes damage, mostly irreversible to the LGBTQ+ community, mathematics and Dada art are dedicated to bringing a reflection within a problem situation bringing violence and the mortality rate as two magnitudes that are related constantly within a Dadaist work,

“violence and death” will interact with art, poetry and mathematics to problematize and raise awareness of the homophobia that haunts this community.

This work aims to bring a problem situation about homophobia, working mathematical aspects such as proportionality to demonstrate within the work “Homophobia is Crime” by Elizangela Maria that dialoguing with mathematics, Dada art and language it is possible to work in a playful way proportionality, in addition to to educate students about homophobia. Seeking to present a new approach to proportionality in mathematics in order to show the interaction of language with numbers, turning a mathematics class into a citizenship class that can expand, create, innovate and break paradigms such as prejudice, discrimination and homophobia.

METHODOLOGY

A qualitative approach is used, exploring in a problem situation about homophobia, the relationship between mathematics and Dada art, between wordplay and senses, bringing the simple rule of three to a new perspective when it interacts with art, problematizing homophobia, especially the two magnitudes such as violence and the mortality rate of the LGBTQ+ community. Not emphasizing a quantitative assessment, but the relationship between numbers and art in the world of the senses.

Here the numbers are the list of words that bring the facts in the artistic work, which can serve as a new way of knowing and understanding the simple rule of three, related to homophobia. In this context, the words show their expressiveness and the numbers show a new way of teaching and interpreting with a critical eye on the theme of the Dada work “Homophobia is a crime” by Elizangela Maria.

In everyday life several phenomena work through proportionality principles are useful for interpretation in the real world. This extremely interesting concept, due to its way of relating magnitudes, based on the fundamental property of proportions. This property guarantees that if, two ratios are equivalent, their triples a, b, c, d , being a to b, c to d , as b and d different from 0, if only if, the product of the extremes is equal to the product of the means, represents a proportion in its terms involved (ALMEIDA, 2015).

It is important to conceptualize the simple rule of three as a method that involves four values, one of which is an unknown, from three known values determining the fourth value. So we can analyze if they are two quantities directly and inversely proportional. Table 1 shows in a generic way how this happens through a proportionality table.

magnitude x	magnitude y
X1	Y1
X2	Y2 (unknown)

Table 1: Relation of quantities in the simple rule of three

Source: Authors, 2022.

Another important aspect is the proportionality relationship between the quantities being related. They can be two quantities that are directly proportional when one of them increases and the other consequently increases or the two quantities that are inversely proportional when one of them increases and the other decreases (CRESPO, 2005).

These concepts are essential for the interpretation of the relationship of Dada art and the simple rule of three, in the sense of understanding the theoretical relationship that is built through this method. It is important to point out that this artistic work

In this work, the author relates violence and death, when she says “Violence spreads”, in “7 paths”, “from pain, fear, prejudice, acceptance, discrimination, intolerance, and sexual violence”, she uses this expression to say homophobia there are “paths” (violence) that in many cases take “35 souls” lives of innocent people because of their sexual orientation or gender, but that can take “even much more” the numbers are never exact, how many people have suffered some kind of violence because of these aspects, but they did not report it. It is at this moment that these quantities interact. Violence can kill, this goes beyond numbers, statistics. Mathematics comes in to express within the rule of three simple “3 acts” (violence) among “7 ways” (ways that violence can occur) can take the lives of innocent people. As the author concludes “fighting cry”, “becomes X my boys”, that is, lives lost due to homophobia must be remembered as acts that must be fought to avoid victims of cruel violence.

In a first reading of the work, the connection with the rule of three may appear distant, as the Dada work allows several interpretations depending on the reader’s perspective. Understanding what the author wants to expose is not always easy, but in “homophobia is a crime” the creativity in connecting words bringing to mathematical thinking, is an innovative point within the artistic making, makes Dada art with mathematics a universe that can explore different themes social.

In this universe of interactions, Hannah Höch’s influence can be seen, in “Homophobia is a crime”, the use of image collage, something very common in her artistic works, criticizing the popular culture of her time, the role that women had in society. In “Homophobia is a crime” you can see the collage of images, especially words, exploring the issue of homophobia and violence in the 21st century.

One aspect that draws attention is the use

of the definition of proportionality and the rule of three, initially, it shows this equivalence in the numbers that are interconnected with the words violence and death. The formality of the definition becomes something playful, because it allows observing this concept within art.

In figure 2, where the proportion between the magnitudes violence and death rate is set up, the resolution of the equation presents the rule of three constructed from this interpretation, this image shows in a didactic way this relationship, in which it is possible to visualize that they are directly proportional, because if violence increases, consequently, the mortality rate increases, the opposite is true.

$$\begin{array}{ccc}
 7 & \text{---} & 35 \\
 & \swarrow \quad \searrow & \\
 3 & \text{---} & x
 \end{array}$$

$$x = \frac{35 \cdot 3}{7} = \frac{105}{7} = 15$$

Figure 2: Setting up the proportion between the magnitudes violence and death and solving the equation

Source: Authors, 2022.

Returning to the resolution, the “x” that the author addresses, which mathematically is the unknown of the question, is equal to 15, a value that represents the decrease in people killed by violence. This decrease is the daily search of this community, when the author says “Parada Gay, Our work of art”, one of so many ways that the movement manifests itself to say “Goodbye this boring homophobia”.

This message conveyed that the decrease in the mortality of the LGBTQ+ community

does not mean an end to homophobia and the damage it causes, because 15 people were still lost to violence, victims of the violence that is in the “city”, “street” and “inside your house”, that is, our society. If this community does not resist through the “fighting cry”, at the gay parade, inside the classroom, inside their home, homophobia will continue to generate violence and death. Respecting the sexual orientation, gender and identity of each individual is to do something different in a Brazilian society that kills the most LGBTQ+ in the world.

This Dada work that uses the collage of images and words, applies mathematics through the rule of three to make people aware of the violence that the LGBTQ+ community suffers in our society, seeking to make the math class also a language and language class. citizenship, respect for the LGBTQ+ community. The student’s perspective on the content can go beyond methods to solve an issue that involves the simple rule of three, but with the support of Dada art and language it is possible to work on the student’s awareness, respect, equality, sexuality and imagination in classroom.

According to Camargo (1994), “In making art, a person uses his body, his perception, his concepts, his emotion, his intuition – all this in an activity that does not divide it into compartments, but, on the contrary, integrates the various aspects of personality” (p. 14). If art and mathematics is an approach that values this interaction that Camargo (1994) describes, the work “homophobia is a crime” makes it possible for the simple rule of three and art to become the beauty and live criticism in the artistic work. Its proposal is to integrate mathematical theory with the world of the senses that art makes so present with language. The student does not see a method of calculating, with so much formality, but something that is so present in his daily life,

involving history, Dada art and homophobia.

According to Pereira (1982) “Art, the exercise of art, is, therefore, an ideal field for the training of every human being. Through it, within it are the child, the teenager and the adult that we are and that live inside us.” Respecting the coexistence that each individual has, an artistic work like this undoes the thought that mathematics is just an exercise with numbers. It goes beyond, for the formation of the citizen respecting the time and space of each individual.

Learning mathematics with art enjoys a new kind of learning that relates to words, images and thoughts. Unite themes, create new perceptions about the world, enhance the meeting of the collage of images, forms that unite the signs, glue, look and listen. With this, it provokes the practice of the interaction of sciences as a way of learning, and experiencing ways of seeing, among them, homophobia.

An interesting point (SLOVSMOSE, 2001) addresses when citing Frankenstein (1989) that incorrectly used mathematical information leads to discrimination. On the other hand, when mathematics is dedicated to problems in the social sphere, it is a tool that provides students with a critical look at the world and its interactions.

In this sense, a critical look at the teaching of mathematics requires a departure from the concept of neutrality, a science of “accuracy” and “rationalism”, which is not focused on social issues, especially homophobia. This conception of neutrality is incomplete, as mathematics is a science that questions and seeks changes in all areas in which it can dialogue. Since within the teaching of mathematics the student needs to be aware and committed to the social problems in their society. These commitments are not neutral, they can generate a good learning of numbers and mathematical thinking itself, with this mathematics helps to form values and critical

thinking about the problem. It also generates a critical attitude of the person in the face of the problem.

Looking at mathematics critically in the social sphere is to allow a concept such as proportionality, so common to solve mathematical problems, to interact with Dada art. Bring the “homophobia” problem into dialogue with proportion used in the simple rule of three. At that moment, the importance of questioning, highlighting, problematizing and criticizing, makes the student a critical being in what he is studying.

The proportion used to relate the magnitudes of violence and mortality rate of the LGBTQ+ community gains a new character in teaching and learning, as it transforms the numbers and their relationships within the studied method into a reflection of the damage that homophobia can bring to society, instigating the student. thinking about how this is around you.

The simple rule of three as a critical tool in art creates new ways of teaching content. It is not simply solving a mathematical question through a method and interpretation of the context of the utterance. Working on the connection of words, images, the theme, the solution of the question, becomes an artifice to provoke the reader, to instigate reflection on the problem.

For Slovsomse (2001) “In Critical education, it is essential that problems relate to fundamental social situations and conflicts, and it is important that students can recognize problems as “their own problems””. This recognition is to call the student to debate, to discuss within the classroom: concepts, causes, how to combat homophonic attitudes. The importance of bringing this discussion into the classroom can change this conception.

The Report of the Education Department of the Brazilian Association of Lesbians, Gays, Bisexuals, Transvestites and Transsexuals -

ABGLT(2016) shows that students who are part of the LGBT community when reporting their experiences in the educational environment about their sexual orientation, identity and gender, 68 % of participants have already been verbally abused at the educational institution. This demonstrates that the school has become a “stage” for violence, if this space is essential to combat social differences, in search of an education “for all”, without differences in color, sexual orientation, identity, gender and ethnicity, bringing to classroom this debate through Dada art and mathematics, presents a new perspective “for a school without homophobia” and respect for human rights.

FINAL CONSIDERATIONS

The work “homophobia is a crime” demonstrates that Dada art and mathematics together go beyond formulas, an image, words, being the live criticism of homophobia. This creation innovates and awakens between the simple rule of three and Dada art, a new perception for a possible way of teaching a method so common in mathematics relating Dada art, mathematics and homophobia.

The message that the author leaves through the interpretation of the text using the simple rule of three, is the reflection that the numbers together with Dada art and the expressiveness of the words, is the “fighting cry” for a society without homophobia, a society that respects the diversity, sexuality, gender. This portrays that art and mathematics are always in interaction to discuss, express and portray social problems.

The proposal of an activity that integrates mathematics and art, will make the classes much richer, more pleasant and interesting; arousing the attention and interest of students in mathematics in a playful and creative way. The main purpose of this work is the teaching and learning of mathematics through art, where barriers that prevent students from

knowing and appreciating and relating better these important areas in human life are broken down. In this context, we see a mathematics beyond numbers, in harmony with language and art. Therefore, learning follows paths of encounters of these sciences, enhancing playfulness and the exercise of thought; providing forms of questioning to teach, learn and know.

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