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# Path of Dialogue: a bioethics experience in primary school

*Marta Luciane Fischer* [1], *Thiago Rocha da Cunha* [2], *Matheus Edilberto Roth* [3], *Gerson Zafalon Martins* [4]

**Abstract**

In Brazil, the educational experience in bioethics focuses mainly to higher education in undergraduate and postgraduate levels. In recent years, there is growing recognition of the importance to develop the learning of bioethics from elementary school. The recommendations do not concern the inclusion of bioethics as a formal discipline in basic education, but as an area to be worked interdisciplinary and transversely in the context of whole, humanistic and critical education of children and adolescents. This study aims to present and to analyze an educational experience in bioethics in elementary school called the "Path of Dialogue" which used method inspired by peripatetic Aristotelic practices. This experience indicates that a relatively simple activity, supported primarily by human resources, provides satisfactory results in the approach of bioethics to basic education and promotes dialogue between the academia, society and school, promoting the moral improvement of all involved.
**Keywords:** Bioethics. Education. Teaching.

**Resumo**

**Caminho do Diálogo: uma experiência bioética no ensino fundamental**

No Brasil, a experiência educacional em bioética volta-se, sobretudo, ao ensino superior, nos níveis de graduação e pós-graduação. Nos últimos anos há crescente reconhecimento da importância de desenvolver o aprendizado da bioética desde o ensino fundamental. A recomendação não diz respeito à inclusão da bioética como disciplina formal, mas como área a se trabalhar interdisciplinar e transversalmente no contexto da formação integral, humanística e crítica de crianças e adolescentes. Este estudo tem como objetivo apresentar e analisar uma experiência educacional em bioética, que envolveu o ensino fundamental, denominada "Caminho do Diálogo". O projeto utilizou método inspirado nas práticas peripatéticas de Aristóteles, funcionando como atividade relativamente simples, subsidiada essencialmente por recursos humanos, propiciando resultados satisfatórios na aproximação entre bioética e educação básica e promovendo o diálogo entre academia, sociedade e escola, de modo a instigar a reflexão e favorecer o aprimoramento moral de todos os envolvidos.
**Palavras-chave:** Bioética. Educação. Ensino.

**Resumen**

**Camino del Diálogo: una experiencia bioética en la educación básica**

En Brasil, la experiencia educativa en bioética está presente, principalmente, en la educación superior, en los niveles de grado y posgrado. En los últimos años, se dio un creciente reconocimiento de la importancia de desarrollar el aprendizaje de la bioética desde la escuela primaria. Las indicaciones no se refieren a la inclusión de la bioética como una disciplina formal, sino como un área a ser trabajada de modo interdisciplinario y transversalmente en el contexto de una formación integral, humanista y crítica de los niños y adolescentes. Este estudio tuvo como objetivo presentar y analizar una experiencia educativa en bioética para la escuela primaria, llamada "Camino del Diálogo". El proyecto utilizó el método inspirado en las prácticas peripatéticas de Aristóteles, funcionando como actividad relativamente simple, sostenida principalmente a partir de los recursos humanos, proporcionando resultados satisfactorios en la aproximación entre bioética y educación básica, y fomentando el diálogo entre la academia, la sociedad y la escuela, de manera tal que se promueva la reflexión y se favorezca el perfeccionamiento moral de todos los involucrados.
**Palabras clave:** Bioética. Educación. Enseñanza.

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**1.** **Doutora** marta.fischer@pucpr.br – Pontifícia Universidade Católica do Paraná (PUCPR) **2.** **Doutor** rocha.thiago@pucpr.br – PUCPR **3.** **Mestrando** mat_heuser@hotmail.com – PUCPR, Curitiba/PR **4.** **Especialista** gerson@portalmedico.org.br – Sociedade Brasileira de Bioética, Curitiba/PR, Brasil.

**Correspondência**
Marta Luciane Fischer – Pontifícia Universidade Católica do Paraná. Programa de Pós-Graduação em Bioética. Rua Imaculada Conceição 1.155, Prado Velho CEP 80215-901. Curitiba/PR, Brasil.

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Bioethics, which emerged from the work of Potter in 1970, was characterized as an interdisciplinary area between the human and biological sciences, with the objective of facing the ethical problems arising from the rapid technological development, to which the solutions could no longer be restricted to traditional moral codes [1]. Although Potter stressed the need for action in the environmental sphere, advocating bioethics as the science of survival [2,3], the political, economic, and scientific context of the time limited the field to issues related primarily to medical sciences and and biotechnology. Despite the initial hegemony of this reductionist approach, during the 1980s and 1990s Potter kept on reflecting about values and ethical behaviors related to global decisions in the social and environmental fields [2,3], gradually being accompanied by other thinkers, such as Singer [4], Engelhardt [5], Mori [6] and Berlinguer [7], who broadened the bioethical reflection, addressing issues beyond the strict scope of health.

Currently, bioethics shares several theoretical foundations and methodological approaches. The perspective adopted in this study characterizes bioethics as particularly able to identify ethical principles, moral agents and patients, as well as vulnerabilities, providing spaces for deliberative action to reach practical, consensual and fair solutions, obtained through dialogue and consideration of the arguments among all players involved. Thus, it seeks to value and respect the diversity of moral positions in the face of problems related to health and life in its broadest manifestation [8].

It is in this context of different perceptions about the very definition of what would be the field of bioethics that the institutionalization of education in the discipline is inserted [9]. A guideline that can be adopted to reach this goal is based on the report of the International Commission on Education for the 21st Century [10], which defines the following as pillars of the educational process: learning to know, learning to do, learning to live and learning to be. These guidelines seek to break the tradition of the teacher as the one who unilaterally teaches before the learner, who only learns.

This approach was incorporated into the official Brazilian documents on education, such as the National Curriculum Guidelines (Diretrizes Curriculares Nacionais, DCN) [11], curriculum normalizers for higher education curricula, and the National Curricular Parameters (Parâmetros Curriculares Nacionais, CPN) [12], for primary and secondary education. Although bioethics is not explicit in these documents as an area of knowledge, its interdisciplinary characteristic and critical reflexive approach lead to the belief that it can contribute to the exercise of transversal disciplines related to human rights and citizen education [13].

In Brazil, the educational experience in bioethics focuses mainly on higher education at the undergraduate and graduate levels [5]. Courses such as medicine [14,15], biomedicine [16], nursing [17], biological sciences [18,19], clinical engineering and several others for teacher training [20-22] include bioethics in their curricula with the aim of, in addition to technical qualification, encouraging a humanitarian behavior in the face of contemporary dilemmas related to students' civic work performance [15,22]. As the teaching of bioethics can not be restricted to a standard didactic model [18] due to its interdisciplinary nature, several methodologies are proposed, focused on active learning processes. Among these pedagogical approaches, the exposition of problem situations [15,22,23], internet forums [24,25], the use of films [16,26], the production of blogs [27] and alternative production workshops [22] stand out among others.

Regarding primary education, authors such as Dumaresq, Priel and Rosito [28] discussed how to insert bioethical issues, highlighting the need for institutional encouragement, constant updating and training of teachers, and promotion of inter- and transdisciplinary actions involving the entire school [28]. These skills would be particularly appropriate to contribute to an education committed to social justice, in accordance with the assumptions of Paulo Freire [29].

Considering, therefore, the difficulties and the importance of the insertion of bioethics in basic education [26,30-34] for the development of the reflection by children and adolescents, this work analyzes the educational experience in bioethics called "The Path of Dialogue", which involved the elementary level. The action was promoted in 2015 by the Graduate Program in Bioethics (Programa de Pós-Graduação em Bioética, PPGB) of the Pontifical Catholic University of Paraná (Pontifícia Universidade Católica do Paraná, PUCPR), with the support of the Brazilian Society of Bioethics (Sociedade Brasileira de Bioética, SBB), in the context of the activities of the XI Brazilian Congress of Bioethics (XI Congresso Brasileiro de Bioética). The teaching-learning process was inspired by the "peripatetic" method, as adopted by Aristotle in his

"lectures", carried out in open-air walks through the gardens of Athens [34].

Although the experiences of teaching in bioethics are traditionally focused on undergraduate and graduate studies, it was considered important to verify the receptivity of students from the basic stages of teaching to these questions. The hypothesis to be tested was that the contact helps the sensitization of this age group in relation to the social and environmental responsibilities that will involve their daily life in adulthood, allowing them to become protagonists, actively acting as professionals and citizens for the construction of a more fraternal and fair society. This assumption is in line with the analysis of students' perceptions about bioethics training at undergraduate and graduate levels [14-27], which highlight the importance of stimulating critical thinking and the incorporation of ethical attitudes, which will be the basis for the teaching of principles, concepts and norms associated with bioethics [30-34].

## The concept

The Path of Dialogue was envisioned literally as a "path" on the University campus, connecting twelve "trees of life", each representing a theme in bioethics to be developed with the students. The fruits (represented by apples made of plastic bottles) contained concepts and values that are important to the understanding of and reflection about the theme. The phrase "tree of life" incorporates meanings from several spheres, from religions to science, in which the evolution of living beings is represented.

In the ecological context, the tree represents the foundation and the pillars of ecosystems, being the means of promoting nutrient cycles, seasonal and annual biological cycles, affecting all other forms of life. In the symbolic dimension, the tree refers to the interconnection and interdependence between human beings and nature, rescuing archetypal insights shaped by our ancestry [30]. In the context of bioethics, the tree of life was considered the bridge between the knowledge of values (the base) and the transformation of behaviors (cycling) into attitudes that respect all forms of life on the planet.

In the context of the activity, the fruits were illustrated as attitudes, beliefs and values that feed societies. Thus, innumerable cultural, biological, psychological and social factors contribute to the composition of the "fruits", which can be beneficial to some, not to others, generating vulnerabilities. For this reason, the bridge, the dialogue, the reflection, the look for others all come with the proposal to build means for the trees to gain strength and reproduce through the fruits.

## Methods

The Path of Dialogue was performed by 10 PPGB doctors, 30 PPGB master's degree students and 70 undergraduate students from health sciences and social and applied sciences. Each tree had the participation of one doctor, two master's degree students and four undergraduate students who acted, respectively, as supervisors, mediators and monitors.

The activity was planned during four months, through the methodology of active participation focused on determining the contents and conceptual operation of the tree, including the handcraft production of the plastic bottle fruits. Supervisors and mediators performed bibliographic research, debates and reflections to define arguments for and against the moral conflicts illustrated in each tree, also making the posters with images and sayings to illustrate the themes. Likewise, the operation of the activities was defined and planned jointly, including the walk route, the ways to identify the path, the reception of the students and the availability of gifts (telescopic collapsible cup).

The twelve trees were distributed according to the identification with sectors of the institution, three nuclei having been defined. The first nucleus was located on the far right of the campus, composed of the trees of "spirituality," "family," "quality of life," and "nutrition." The second one, which housed the "natural resources", "vulnerability", "health" and "biotechnology" trees, was located behind the Belém River, an important waterway in Curitiba, which is completely polluted now. On that side of the campus, there are research laboratories and the technical school, which has borders a "favela" (slum). The third nucleus, located on the far left, with the trees of "research with humans and animals", as well as "biology" and "education", is composed of academic blocks where the classrooms and laboratories are concentrated. The cells referring to "research with humans" and "research with animals" also included visits to museums as a motivator for reflection [35].

### *Action*

The activity was carried out on September 14, 2015, with over 350 students from three elementary schools of the public school system of Curitiba and metropolitan region. Each group was greeted with a brief presentation of the activity, with a brief explanation of what bioethics is and its importance in promoting the dialogue for the resolution of ethical conflicts. It also highlighted the importance of guiding values for the dialogue, particularly respect and appreciation of the differences of others.

Since there was the intention to study and report this educational experience, the students were told that they would be part of a research study. It was clarified that their parents had previously received and signed a free informed consent form (FICF) for the participation of the children in the research and explained what a consent form (CF) was. This would allow them to exercise their autonomy to decide whether or not they accepted to participate in the study. The trees were distributed in three nuclei, depending on the location on the university campus, and the students were divided into groups, which would go to at least one tree from each nucleus. As they followed the monitors during the walk, even if they did not stop at a certain tree, the students were in contact with sayings, images and installations, in order to awaken the perception to the questions addressed by bioethics.

### *Dialogue*

At each tree on the way, the mediators cast a dilemma on the students, who should look in the fruits for the values, concepts and ideas that formed arguments favorable or contrary to a given position. In this way, we tried to encourage children and adolescents to reflect about right and wrong, fair and unfair, placing the fruits on the respective sides of the tree, forming a garden.

### *Assessment*

In order to evaluate the action, all monitors (undergraduate students), mediators (masters students), supervisors (teachers of PPGB PUCPR) and teachers from elementary schools who accompanied the students were invited to answer an online questionnaire, available for a few weeks after the event, by the *qualtricis* system.

The questionnaire presented options for assigning values from 1 to 10 to evaluate topics such as: organization, counselors, mediators, monitors, student participation, self-assessment regarding prior and post-action knowledge, and importance of action in professional and personal training, as well as the report of the points considered positive and negative in the action.

After the activity, as explained to the parents in the consent form and in the consent of the children themselves, the teachers invited the school students to write an essay about the activity. These works were collected two weeks after the action. The PUCPR Research Ethics Committee approved the study, the parents signed the FICF and the children and adolescents the CF. These documents are archived in the Núcleo de Estudos do Comportamento Animal (Nucleus of Animal Behavior Studies) laboratory.

The values attributed by the performers of the action were compared through the ANOVA statistical test followed by the Tukey test, having the homogeneity of the sample as the null hypothesis and considering a 95% significance level. The essays were categorized through the technique of inductive thematic analysis, i.e., with the qualitative categorization defined in the treatment of the data. [37].

## Results

The respondents of the evaluation instrument (8 supervisors, 30 mediators, 67 monitors and 8 teachers from the participating schools) presented assignments of values greater than 8.0, similar in the evaluation items of: 1) general evaluation, 2) organization; participation of: 3) counselors; 4) mediators; 5) monitors and; 6) school teachers. There was a discrepancy regarding the lower allocation of value for the items "assessment of the organization" and "participation and contribution of the students" by the group of monitors. In the self-evaluation, the monitors and school teachers, when compared with counselors and mediators, attributed low values for previous understanding of bioethics, but with subsequent increase of knowledge after participation in the activities. The evaluation of the students by the four groups studied showed that they considered prior knowledge about bioethics low; however, they classified students' participation and understanding of the proposal as high (Chart 1).




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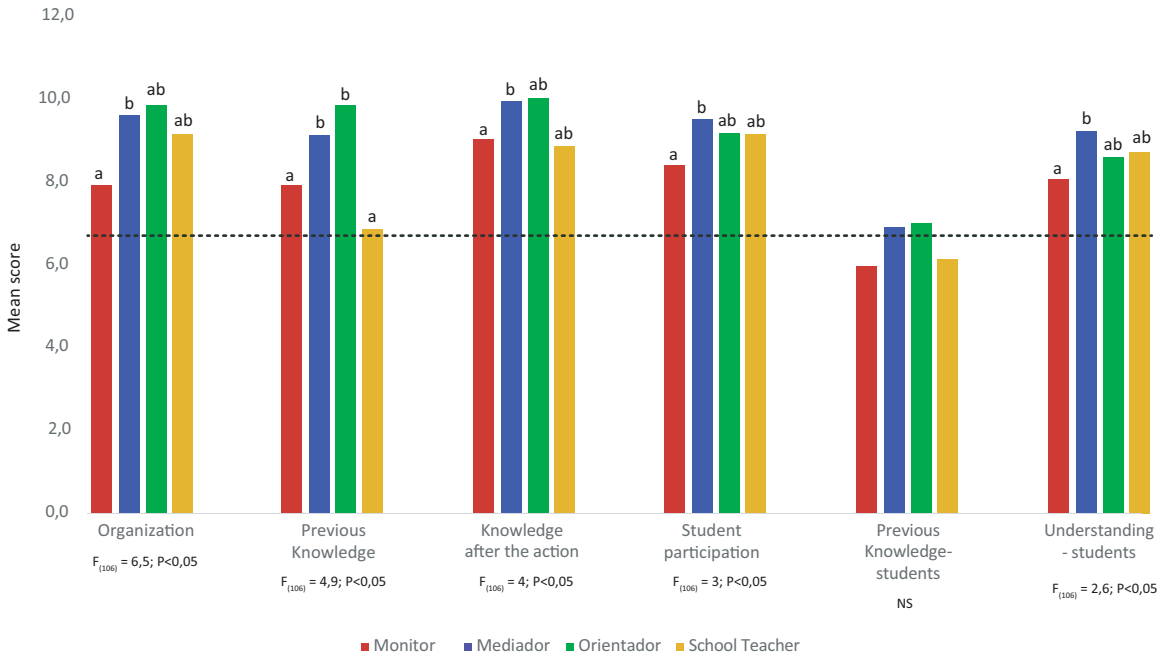
Chart 1. Mean score attributed by counselors, mediators, monitors and school teachers to the organization, self-assessment of previous knowledge and knowledge acquired after the action, as well as the evaluation of elementary school students regarding participation, prior knowledge and understanding of the action




## *Positive Aspects*

Supervisors and mediators highlighted the following points as positive: integration between masters students, undergraduate students and the community (35%), consolidating extension activities; personal gratification in the development of the activity (22%); and the concrete application of themes until then only dealt with in the classroom (43%). The monitors, on the other hand, emphasized the importance of the topics covered (28.5%), the promotion of reflection and dialogue (26%), the interaction (21%) and the action as a whole, including the outdoor activity, the use of fruits and trees, and innovation (18%). The positive points highlighted by the school teachers were: teamwork (29%), dynamics (14%), stimulus to debate (28%) and the approach to complex problems (29%), highlighting students' participation in the continuity of the action for taking the discussion of the contents back to the school.

## *Negative aspects*

The organization of the groups (22%), time (16%) and student displacement (16%) were the main negative aspects pointed out by all groups. The Supervisors emphasized, with more emphasis, the little involvement of other instances of the institution (2.2%), as well as the timidity of monitors (2.2%) and students' lack of previous knowledge (18.5%).

The Supervisors also mentioned the participation of the students by school and class, since the students of the morning shift, composed of children and adolescents of the 9th school year, were more timid and lacked more previous knowledge. On the other hand, students of the afternoon shift, who attended the 7th grade, demonstrated their commitment and participation, possibly as a reflection of the environmental education program carried out at the school.

Mediators and monitors pointed out other differences among groups of children and adolescents, apparently related to the "gender" variable. In general, they considered that the most participative students were, mainly, boys (21%), classified as questioning and reflective (45.8%). Mediators and monitors also reported that this group of students became very involved in the activity, to the point of wanting to continue the discussion. However, other children and adolescents appeared unmotivated or dispersed

(22.2%), showing little previous knowledge. They considered that, in such cases, the use of the "apple" resource helped in motivation.

Although it is not possible to define exactly the reason for the differences, one can conjecture some explanations, especially considering the division by age and gender. It is possible that the more active participation of younger children of the 7th grade results from not feeling as intimidated by their classmates as is usual in this age group. Showing oneself in front of the group, in teacher-led activity, can be considered "harmful" to the image of "authority challenger" that adolescents like to project upon themselves. In the case of the lower participation of girls, they are admitted to be more mature than boys and, in this case, more concerned with their image in relation to the class, or more timid and introverted, less likely to expose themselves to mediators and monitors.

### *The perception of supervisors, mediators, monitors and teachers*

Regarding the topics covered in the trees and the way children and adolescents participated, teachers reported that many students questioned whether animals and humans in museums felt pain, in addition to showing fear of some animals, as well as the possibility of being cloned. The supervisors highlighted situations in which students confronted the proposal of the activity with the untidiness of some sectors of the campus, the complicity of the groups and the conflict of positions. Mediators and monitors highlighted situations and speeches of students, such as:

*"Agreement with the use of animals in class and research, provided they died of natural causes";*

*"The student who identified the mother as vulnerable for not receiving a pension from the father";*

*"While some disagreed vehemently about taking medicine, a child said she would be very happy if she could giver her life for the sister she loved so much";*

*"Feeling very vulnerable in relation to the State governor";*

*"Health is not something one could buy in the market";*

*"Not being afraid of corpses, as he has seen many people killed by violence".*

### *Experience and proposal for action*

Supervisors highlighted the effectiveness of the action in broadening the dialogue with other sectors of society (39%), whose promotion of simple, participatory and deliberative debate helps to promote models for fairer decisions. The mediators agreed on the importance of listening, reflecting, changing the ways of thinking (42%), considering bioethics in everyday life as an effective tool to deal with dilemmas related to the search for balance, in order to offer instruments for citizen intervention and the consolidation of democracy. The monitors reported that the action brought new ideas that could be transposed into their academic and professional life (28%), highlighting the importance of bioethical reflection in group decision making (26%), stimulating responsibility in all forms (21%) and the understanding of its complexity, interconnection and plurality (18%).

All supervisors emphasized dialogue, the multidisciplinary approach, the ability to listen to each other's arguments and to cultivate values. The majority of Supervisors and mediators agreed that the proposal sought to demonstrate that dialogue is the way (58%), to teach bioethics (29%), as well as to point out the importance of this knowledge (8.3%). The monitors pointed out that the purpose of the action was to seek solutions for the themes studied, through the values discussed (54.5%) and respect for others, through listening and reflection (45.5%).

Regarding the perception of the professionals who accompany adolescents and young people daily, the school teachers also understood the activity as a proposal for the development of dialogue, cooperation and ethics between human beings and science (62%).

### *Suggestions*

The written part of the questionnaire allowed for the knowledge about suggestions for improvement of the activity. Among the general suggestions, the following should be highlighted: the need for all students to participate equally in the same trees, the reduction of distances between them and the increase in the duration of each theme. Supervisors and mediators suggested adapting and expanding the proposal, with more actions directed to other elementary and high school grades, and other social segments. The monitors, in turn, suggested better prior training to address the issues.

### *Opinions of elementary school students*

In total, the teachers turned in 150 essays, which were analyzed qualitatively by the research team. From these texts, 52% were produced by female students and 48% by male students, 70% of the 7th grade and 30% of the 9th grade.

Table 1 shows the frequencies of responses relative to the question about what they liked the most about the action, the complaints, the type of comment and the positive result of the action. As for what they liked the most, the main reference was to the specific tree in which they participated. However, they noted how positive it was to learn more about everyday themes, referring to the opportunity to dialogue, to have been heard without judgments, considering that the activity seemed to be "among friends". They also liked the site, complimenting its structure and its beauty, one of them having stressed that it was the best walk of his life; for many, it was the first time they had visited a university and they stated that they would like to return as university students. The snack and the gift.

The greatest complaints were about the little time allocated to the activity, the fact that they did not go to other trees or other places of the university, like the museums of anatomy and zoology, because they would like to have seen "the dead". Only in specific situations did the students report discomfort in speaking, especially about what happened in their homes and when they did not understand what had been said (Table 1).

Most of the comments related to compliment and thanks for the opportunity to participate in the event, although many referred to food (fruits) offered in the break of the activity (Table 1). The 9th grade students presented more reflexive comments, the positive result of the action being inherent to the application of the themes to their reality, with emphasis on bioethics, water and health, and references such as:

*"...learn to assess if they were vulnerable";*

*"...not liking animals do be killed to be exposed in museums";*

*"...how the human being is destroying the planet";*

*"...the made us want to be better, rethink our acts, habits and concepts";*

*..."never thought that the word 'ethics' was so complex and full of meanings";*

*"...we have learned how each person has their opinion at home and how to improve life together respecting others".*

As expected, 7th graders were more attached to the teaching-learning process, showing their surprise about the didactics adopted, which allowed individual free expression. The teaching of the outdoor class also had a positive impact, demonstrating that in both Athens and Curitiba the peripatetic method still affects the sensitivity of the students. The perception of these aspects of the concrete reality led them to express the following opinions:

Table 1. Relative frequency (%) of what students liked the most, their complaints and their comments.

| What liked best | | Complaint | | Comment/positive result of the action | |
|---|---|---|---|---|---|
| Specific tree | 34,5 | Time | 19,4 | Compliment | 54,4 |
| Learning themes | 17,6 | Not going to other trees | 34,5 | Acknowledgment | 24,7 |
| Site | 13,1 | Not going to museums | 25,8 | Regret | 15,1 |
| Zoology Museum | 13,1 | Distance | 6,5 | Complaint | 5,0 |
| Anatomy Museum | 10,6 | Snack | 6,5 | Reflection | 0,8 |
| Snack | 4,0 | Talking about the family | 2,2 | | |
| Gift | 3,0 | Bus | 2,2 | Application to reality | 32,6 |
| Mediators | 3,0 | Did not understand | 1,1 | Attention, kindness, relaxing environment, intelligence | 25,0 |
| Speaking | 1,0 | Killing animals for study | 1,1 | Themes | 18,5 |
| Apple | 1,5 | | | Dialogue | 13,0 |
| | | | | Studying outdoors | 6,5 |
| | | | | Care wit the body | 1,1 |
| | | | | Saving water | 1,1 |
| | | | | No judgment | 1,1 |
| | | | | Vulnerable | 1,1 |

Research

*"…And there were also really cool and nice people, and they also asked us questions";*

*"…we had a different class and it was fun to have a class outdoors";*

*"...I liked it when the bioethics guys picked the apples with sayings written on them and asked us to read them aloud";*

*"...The talks were really relaxed, they made jokes and let us express our opinions and doubts".*

As a positive result of the action, in addition to the application of learning in reality, the fact that several students were impressed being well treated and received with attention, kindness, relaxation and intelligence stands out (Table 1).

## Analysis and discussion of the experience

The action promoted by the Path of Dialogue has a non formal education model of bioethics and its multi, inter and transdisciplinary nature promoted professional and personal changes in professors, masters and graduate students from different areas of knowledge, in the basic education teachers from different disciplines and in students of different ages and grades. The highlights were the integration and joint construction of knowledge, as attested by the actors involved.

The main characteristic of the action was the plurality, both with regard to the training area of the players involved and the themes and values explored. Teaching bioethics is considered a difficult task, since it demands full and broad dedication, but it is not a utopian one [15]. Because of its transdisciplinary and practical nature, bioethics reflection and training activities require active learning methodologies, most of the time challenging teachers to imagine and carry out innovative approaches. [23-30,37].

The Path of Dialogue This brought a new proposal that both stimulates the learner's protagonism and gives space to the creativity of the educator in the quest to substantiate the problem, identify moral agents and patients (and the vulnerable), surveying the arguments of all the actors involved. Concomitantly, it demands the recognition of alterity and the development of behaviors that contemplate the difference, since it demands to look at the other, the adoption of a flexible attitude in the confrontation between idealization and reality and, especially, it stimulates tolerance, which is indispensable to a peaceful and whole social life.

For Durand [8], bioethics went through three moments: the first linked to patient autonomy and self-management of the body in face of the impositions of the medical class and new technologies [8]; this was followed by institutionalization, focused on the consolidation of committees and decision-making that involved the community [8]; finally, bioethics is experienced in its global scope, in the search for fair and egalitarian solutions to complex and plural problems, which demand global participation [8].

However, regarding the insertion of bioethics in a school environment it remains to be decided whether it will be treated as a discipline or in an interdisciplinary context. In the first case, the risk is to generate concerns about the teacher who will assume the workload and content currently proposed for elementary education, and especially high school education. The second proposal requires a change of attitude of the teachers, who can claim discomfort, for not having developed abilities in the mediation of debates of unfamiliar subjects [38].

It is precisely at this moment that the need for deliberative bioethics is consolidated, aiming to advance beyond theoretical approaches and to experience the practical function of bioethics, which is the promotion of dialogue and deliberation, in order to overcome the literary medium and reach the most interested segments: the vulnerable ones themselves.

Among the difficulties experienced by the academics, the most important ones are those related to frustration because the action has not come out exactly as idealized, in addition to the lower resilience and adaptability, when compared with professionals having a background in bioethics. This observation was confirmed in the results of the self-assessment, represented in the low values related to the previous understanding of bioethics, considering the partial view on the intention of the action, related to the search for solutions to the themes worked through the values discussed. The self-assessment also revealed that undergraduates admit the need to improve their knowledge, evidencing the deficiency of bioethics teaching at the undergraduate level.

The fact that the school teacher attested an improvement in knowledge illustrates the need for

professional qualification for teaching bioethics [9,32]. It is necessary that the teacher knows how to deal with the themes, values, rights, limits and respect, as well as the technological and scientific aspects that generate bioethical issues, and there is no specific training profile for this. Of particular note are the science and biology teachers, whose formative content is directly related to the first stages of the development of bioethics [20]. It is important to emphasize, however, if most of these contents are based on technocratic paradigms from the 1950s, aimed at preparing learners for decision-making, based on cognitive aspects, to the detriment of morals. It is important to emphasize, in addition, that the opening of bioethics to the social dimension stimulates the insertion of professionals from other training areas to the field, such as social studies, geography and history teachers, which are able to contextualize the discussion and correlate it to the social reality of students.

According to Machado and collaborators [31], it is necessary that there be close communication between the academia and basic education in order to socialize the knowledge and transform the social quality of the school. It should be noted that although many professionals understand the importance of bioethics, they can not relate it to their discipline. Thus, teacher training [39] does not provide confidence in the face of controversial subjects, which one does not master, thus not avoiding that the teacher to be limited to uncommitted, short and sterile answers to the questions of their students.

Another highlight was the inclusion of the theme in the student's reality and the need for flexibility and speed of adaptation of the approach, in face of heterogeneous groups, regarding the school, economic, age, gender, shyness and level and previous knowledge contexts. Bioethics is a pathway for the development of social skills, whose direct and reflexive action, through the insertion of the autonomous individuals, allows them to be the protagonists of a real issue [15].

In addition, knowledge is dynamic, contextualized in the interests of each group [9]. Oliveira [39] pointed out that the theme directed to elementary education, especially in the initial grades, should avoid issues for which students do not yet have maturity, such as sexuality and abortion, as these may generate resistance from parents and religious groups not likely to debate these issues. Oliveira [40] stresses that the school should respect these differences and act on pluralism, not pressing for participation. Therefore, it is recommended to discuss topics that involve the use of animals, pesticides and food, for example, leaving more complex subjects for high school.

In the present action, older students were more reflective about the role of bioethics, while 7th graders were still attached to the concrete, linking the action to the walk, the place and the museums. This result corroborates Kohlberg's theory of moral development [41], which suggests that every individual, throughout their cognitive development, goes through six stages, grouped into three levels of moral development: pre-conventional, conventional, and post-conventional. In the first, typical of children up to 9 years old, right and wrong are measured by external factors, which can promote punishment or favor, and the behavior is mediated by fear. In the second, right and wrong are also based on external factors, but mediated by social rules, and the behavior is directed to avoid shame. At the last level, expected in young people in late adolescence, the sense of what is fair or not is mediated by internal factors, by the set of values constructed up to this stage, and the error is punished with guilt.

However, in the face of real issues and the reality of life of each individual, moral development is not always so linear, and there may be several combinations in the face of different influences in life. According to Galvão and Camino [42], exposing the individual to real situations as a player, especially before another with higher moral behavior, causes restlessness and discomfort, in such a way as to foster maturation, a fact demonstrated by the action of this investigation, which, in addition to the students, congregated. The executors themselves. These, in turn, found themselves faced with unexpected placements, testimonies and questions, confronted with their own judgments, which fostered mutual opportunities for moral maturation.

Paixão Junior [33] warned of the importance of knowing the demands of the students, showing concern with environment, profession and sexuality. It is also emphasized how the simple transposition of the student from the classroom to an outdoor environment - where it was possible to sit on the ground, walk, talk, experience new situations and meet other people - is already something that induces pleasure and greatly increases the predisposition to learn and absorb content. Guerino and Mello [26] report that students with little knowledge of current and controversial subjects present in the media, after projection of films, showed strong involvement and interest in researching and deepening their knowledge.

Although the main purpose of the action was to teach bioethical reflection through dialogue, discussions on topics of interest to children and adolescents also direct attention to specific issues. In this context, students are still very much influenced by common sense, which should be a concern of the school, since, by refraining from preparing this future citizen to be autonomous with regard to interpreting information, the future probability of this young person being manipulated by political or economic interests is increased [19].

In order to achieve this result, it is important that the teacher knows that it is not necessary to provide the correct answer, because if it is still an issue, there is no answer. The teacher needs to stimulate reflection, act as mediator between divergent positions, showing respect for alterity and tolerance exercises. It should mainly lead the student to identify the pros and cons, to reflect on the points of view, and not to readily accept an opinion as absolute truth. The reports of students who felt welcomed, respected, listened to without judgment or pressure during the exercise indicate that listening and consideration are not a reality in their school environment, even though they are important for education [43].

Although expected, the influence of the media on the positioning of students was observed, this being a point of concern for educators and bioethicists. It is precisely the access to these media by the youth who live in a world of technical, scientific and social transformations, which must be considered the great challenge of the educational process [38]. Although humanity is living a moment of access to information never seen before, in fact, this is not fully accessible to all, demanding the development of abilities that allow for the selection and interpretation of the information.

To do this, it is necessary for individuals to be critical, self-conscious and promoters of values, since they will encounter different groups and options on a daily basis, and must have evaluation and judgment criteria. It is the function of the school to promote bioethical subjects through the experience and maintenance of values for a dignified life and with a view to the common good, at a time when humanity is experiencing a crisis of values that conflicts with the individual and the community [34]. Oliveira [39] warns that students are not a free field for advertising and economic manipulation. In fact, different social actors, such as family, school and community, influence their perception, with school having an important but not determinant role.

The confluence between bioethics and education is in the formation of the student for citizenship, in the awareness of values that promote justice and quality of life with freedom, taking into account the constitutional imperatives, aiming at the construction of a free, fair, and solidary society, in order to reduce inequalities and promote the good of all [28]. Official documents [11,12] define the school as responsible for the moral formation of the citizen, a role that perfectly matches the application of bioethics. By promoting the autonomy of the subject in the face of common issues, bioethics positions itself beyond its own interests and values, fostering alterity and stimulating the adoption of moral and ethical principles, whose educational practices must be developed in the school, through dialogue and construction of citizenship [28].

## Final considerations

The present action consolidates the expectation that a simple activity, subsidized essentially by human resources, is enough to obtain a satisfactory result that promotes reconstruction and deepening of knowledge and development of argumentative abilities. These activities go beyond common sense, stimulating protagonism in the concrete case, for which the position is based on the identification of responsibilities, points of view, manifestation of society, the need for transformation and legislation, obtained through dialogue.

The most prominent reflection of the Path of Dialogue was the engagement of all involved. For graduate teachers and students, the main highlights were the applications of their theoretical knowledge in real situation, as well as the opportunity to meet the demands of children, who will soon be the moral agents of the issues discussed. For the undergraduate students, who were more critical and sensitive to situations that required adaptations, due to unpredictability, the elevation of self-esteem was highlighted by assuming the role of protagonist of their action stands out. School teachers showed satisfaction for the recognition of their work in the face of student participation. And, finally, the elementary school students felt welcomed and respected by the fact that they were heard and understood the dichotomous essence of the bioethical reflection, metaphorically materialized in the bridge that interconnects arguments and equalizes the values; but they also emphasized the dissatisfaction with the limited time and not getting to know all the trees.



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It is suggested that an action like this one be multiplied in other school and community realities, involving the dialogue of different social actors and stimulating the protagonism of the elementary school student. The project highlighted the importance of the application of active methodologies and the collective construction of knowledge, with emphasis on the importance of dialogue, in order to arouse interest and deepen the understanding of children and adolescents.

Bioethics in education serves as a counterpoint to curb the processes that lead to a society strictly focused on consumption and immediacy. The action of the Path of Dialogue shows that the application of bioethical reflection in society, through a meeting of university professors, professionals from different areas, undergraduates and students of basic education, promotes the moral growth of all. The process allows the understanding that it is not enough to hold theoretical knowledge, because it is precisely the interaction with reality, hearing the arguments and knowing the values of the other that makes it possible to reach consensual and fair solutions for all, in order to respond to the needs of the individual, society, humanity, nature, for the present and future generations.

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