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Student protagonism in a school science fair

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Abstract
Science fairs promote student protagonism through fostering their autonomy and instigating a taste for the practice of science. This article aims to analyze the science fair as a space for the promotion of a protagonist attitude in the student as a producer and promoter of knowledge. The research scenario was the Potiguar West Science Fair, from the perspective of the participating student, highlighting the development of their taste for the practice of science and how they are stimulated to use the scientific method in the social life at the school, capable of revealing students' protagonism. From the results obtained, we conclude that the science fair enables the production of knowledge, under conditions of permanent learning, promoting the interaction between teacher and student, so that they are willing to learn together: the student who learns from the teacher and the teacher who Learn from the student.

Keywords
Science fair. Student protagonism. Scientific method.

Protagonismo estudantil em feira de ciências na escola

Resumo
A feira de ciências promove o protagonismo do estudante na medida em que favorece sua autonomia e desperta o gosto pela prática da ciência. Este artigo tem como objetivo analisar a feira de ciências como espaço para a promoção de uma postura "protagônica" no aluno como construtor e promotor de conhecimento. O cenário de investigação foi a Feira de Ciências do Oeste Potiguar, sob o olhar do aluno participante, destacando o desenvolvimento do gosto pela prática da ciência e de como é estimulado para a utilização do método científico na vida social da escola, capaz de revelar o protagonismo estudantil. Dos resultados obtidos, constatou-se que a feira de ciências possibilita a produção de conhecimentos sob condições de permanente aprendizagem, promovendo a interação entre professor e aluno, de modo que estejam dispostos a aprender juntos: o aluno que aprende com o professor e o professor que aprende com o aluno.

Palavras-chave
Feira de ciências. Protagonismo estudantil. Método científico.

Protagonismo estudiantil en feria de fiencias en la escuela

Resumen
La feria de ciencias promueve el protagonismo de los estudiantes, ya que favorece su autonomía y despierta su gusto por la práctica de la ciencia. Este artículo tiene como objetivo analizar la feria de ciencias como un espacio para la promoción de una postura protagonista en el alumno como constructor y promotor del conocimiento. El escenario de la investigación fue la Feria de Ciencias del Oeste Potiguar, bajo los ojos del estudiante participante, destacando el desarrollo del gusto por la práctica de la ciencia y cómo se estimula el uso del método científico en la vida social de la escuela, capaz de revelar el protagonismo estudiantil. A partir de los resultados obtenidos, se concluyó que la feria de ciencias permite la producción de conocimiento, en condiciones de aprendizaje permanente, promoviendo la interacción entre profesor y alumno, de modo que estén dispuestos a aprender juntos: el alumno que aprende del profesor y el profesor que aprende del alumno.

Palabras clave
Feria de ciencias. Protagonismo estudiantil. Método científico.

1 Introduction

Students' commitment in school involves systematic teaching-learning methods in a context that values the motivation to learn. Learning through practice has as premises the student-centered teaching and the learning based on the process of discovery and creation. Structured through everyday issues, the work with the scientific method in school has advanced through scientific dissemination actions, associating teaching and research in basic education.

Through science, we see social reality as a tangle of conflicting forces, unconnected from sacred things, favoring the dissemination of a critical spirit and objectivity in the face of social phenomena (WEBER, 2008). Critical spirit is something learned, not always transplanted from a reality to another, requiring appropriate investment and incentive. Thus, integrating science in the school routine means transforming knowledge into something creative, stimulating the practical application of theoretical reflections through effective interventions in the classroom. The execution of science fairs in school contributes to the production of new knowledge, under conditions of permanent learning, promoting interaction between teacher and student, in the sense of simultaneous learning; the student learns from the teacher and the teacher learns from the student.

Based on that thought, this article aimed to analyze the science fair as a space for the promotion of a protagonist attitude in the student as producer and promoter of knowledge. To that end, we identified aspects, characteristics and attitudes that reveal the students' protagonism in the science fair; we understand how the student develops their taste for the practice of science and is stimulated to apply the scientific method in the social life at school; lastly, we draft the profile of the student who participates in science fairs in school.

2 Science in school

Science brings great changes for society, because what is new today might not be anymore tomorrow, thus we notice how dynamic time is in the Science world. Therefore, it is important to understand that education must be constantly in sync with the scientific path, taking into consideration interdisciplinarity and the continuous knowledge of the real with the new, always anticipating new discoveries. Following that thought, school and education must be – and are – directly influenced by scientific knowledge, which provides to the student a permanent critical attitude toward social reality.

Working with the scientific method in basic education has been suggested, since the middle of the 1960s, by José Reis. According to Reis (2018), when the child takes apart a doll to see what is inside, that symbolizes curiosity, which, when they grow up, with suitable education, develops the scientific spirit. In his approach, the method for teaching science has driven the student from the classroom, when taught only through the book. This effect happens "[…] according to the technique of the 'jug and basin', in which the student is the basin and the teacher is the jug that pours the water of their knowledge, without imagining that the basin might react" (REIS, 2018, p. 135, our translation). As we observed, the solution, for Reis (2018), lies in a pedagogical revolution in teaching that goes beyond the limits of the classroom, in order to reach levels of student involvement and participation, acknowledging how different parts of knowledge are connected and can affect their lives.

Associated to that thought is the critical spirit that boosts in the student the desire to give meaning to practices and concepts committed to criticism and the reflection about everyday problems. Developing critical spirit goes through the issue of training, immediately concerning the teacher's practice. This type of training brings to the curriculum the academic experience with science education, involving teachers and students in the desire to know, create, reflect, share, produce and evaluate results in an effective interaction with the world surrounding them.

Without formative experience with the scientific method, how can teachers guide their students if, in their curriculum, nothing was offered to them as research activity, or, at most, one course was offered, often only to list it in the curriculum? In their professional practice, the teacher is expected to understand the connection between practical reality and theory studied in the classroom. With that, teaching through research is incipient in teaching courses, since producing knowledge stimulates the practice of research. Freire (1997, p. 29, our translation) has taught us that the image of a researcher lies in the teacher, therefore "[…] the questioning, the search, the research is part of the nature of the teacher's practice".

In this context, the meaning of academic training for basic education extrapolates the formal sphere to reach any and all spaces of socialization, social inclusion and manifestation of democratic realization. It is necessary to overcome the abyss between the university and the education systems for basic education, for whom the former provides professionals. In order to fulfill that task, pedagogical knowledge produced in the university isn't exhausted in the knowledge of techniques to implement an ideal of education. For the university, the challenge of the 21st century is to demarcate their social place in the world, taking on different and multiple forms to reassert their commitment to professional training, the production of knowledge and social demands. Teaching requires learning how to be concerned, to be upset, and turning the world into a constant provocation (SANTOS, 2004).

In this sense, the teacher's practice in the classroom and their investigative capacity are the focus of training. This debate is the common thread of scientific education in the school space, with direct implications in the conception of the teacher as researcher. It concerns stimulating and developing the practice of research in students since basic education, returning to teacher training, as asserted by Demo (2015). In

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practice, their limit is in their own lack of experience with the scientific method and access to the spaces of training and investigation in school. Although nowadays it is a discussion within the academic community, when it comes to the scope of the research exercise by teachers in basic education, their practice is often purely theoretical, mainly based on reading and answering questionnaires, without investigative activities with scientific character.

Thus, we notice at the school a fragmented, disjointed, subject-oriented curriculum organization, reflecting the historical division of human activities imposed by the model of modern society of knowledge specialization, overestimating one field of knowledge to the detriment of another. Acknowledging multi- and interdisciplinarity in teacher training for basic education subscribes to a formative model, in which the fields of knowledge would be on an equal level, in juxtaposition to the practice of cooperative work. It concerns articulating, cohesively and coherently, existing knowledge around a real investigation problem.

In this direction, interdisciplinarity articulates the teaching-learning process and is acknowledged as a renovation of attitude in the face of issues related to teaching, research, and production of scientific knowledge (FAZENDA, 2011). What is proposed is interdisciplinarity as a premise in the school's curriculum organization, characterized by the intensity of exchanges between experts and the real interaction between subjects, in constant reciprocity of fields of knowledge, as defended by Japiassu (1976).

Vocation for research implies manners to access science and how the scientific method is learned and constructed in the school space. Without being implemented as a cultural practice in school as a process in construction, the scientific method is materialized not only through knowing, but through making science. In other words, it means fostering learning how to learn, or knowing how to think in always renewed conditions of intervening, redoing and questioning reconstructively (DEMO, 2015).

Therefore, there are many initiatives in the direction of emerging new ways to know based on the dialogue between fields of knowledge. Among those initiatives, there are those that tend to boost the process of popularizing science, which makes us recognize that the state of science specialization is misunderstood by people who are outside that scientific culture.

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Thus, the ability to learn and relate theory to practice in each subject of the curriculum converges to what gives study meaning. For that practice to work, planning, systematizing and a positive attitude toward teaching-learning are paramount. With these actions, we notice the need to establish collective practices in which partnership is a main attribute, because, when the teaching practice is abstract, disconnected from the process of internalization of the subject being taught, we create a separation between the acquisition of knowledge in the fields of substantive subjects and the constitution of practices to teach those subjects. Therefore, it is evident that the challenge posed to basic education is situated, more persistently, in promoting the students' permanence and learning, without forgetting access. To that end, it is necessary to ensure conditions for school success, through the offer of education that meets minimum quality standards.

It is clear that meeting those requirements demands overcoming regional conditions of inequality and a broad view of educational quality, which includes: educational environment, pedagogical practice and assessment, teaching-learning of reading and writing, democratic school administration, training and work conditions for school professionals, physical school environment, access and permanence of students in school. Therefore, it is necessary to dynamize the school environment to converge in a process of science-making in school, because, by discussing the reach of science in school, we assume science as a phenomenon located between subject frontiers. After all, the nature of science is, quintessentially, multi- and interdisciplinary. Thus, interdisciplinary work is a strong element for project qualification. In that perspective, according to Lima (2004, p. 4, our translation):

> […] young researchers are invested of power, free to go through the world investigating, questioning, observing, consulting living sources, memories of the neighborhood, neighbors, organizations, universities, libraries, computers, putting formal and informal knowledge side by side, producing diagrams and data records, checking information and interpreting reality to construct new versions.

As we saw, one of the great challenges to promote scientific initiation in school is the little to no training that teachers and pedagogical staff have in scientific methodology. The problem with scientific initiation at that education level is also due to the big distance between universities and school. An important strategy to decrease

that distance is when students seek information and/or use laboratories at universities and federal institutes during their research for tests, experiments and even help with the interpretation and systematization of results. Likewise, that strategy is present when professors, technicians and students from universities go to schools in an attempt to contribute to the development of a project that leads to the construction of a vision of science as an interpretation of the world. Following that logic, didactic materials for scientific initiation were generally conceived for a higher education audience and using them to train teachers from basic education only contributes to confuse and discourage, then advance toward popularizing science in the school space.

When the development of science gains importance in the social life of school, teacher and student feel included and participative in pedagogical practice. In this reality, it is necessary to acknowledge that people need to have more access, in school, to scientific knowledge and opportunities to develop it. The school needs resources that enable the accomplishment of the project, not overlooking the incentive by the entire school community, because the popularization of science takes place through group work. We have emphasized that the idea to "[…] popularize science doesn't partake in its simplification and spontaneism, but in the singular needs and characteristics to communicate and disseminate science" (SANTOS; SANTIAGO; FREIRE, 2015, p. 69, our translation). Thus, we establish a more democratic perspective between science and society, deepened by actions undertaken through access and dissemination. Add to that the ideas of Germano (2005), when he defends the popularization of science as a right that must be permanently demanded by working classes. For that author:

> […] throughout a history of exclusion, a true abyss was built between the few who have access to scientific knowledge and the vast majority that is still submitted to the technological impositions of a science that is unknown to them. Popularizing that science is, above all, an attempt to pay this huge social debt and a right that must be permanently demanded by organized working classes. (GERMANO, 2005, p. 7-8, our translation).

The need for the school to collaborate is clear, in the sense of working more confidently the scientific method in the school space, providing to the student opportunities to create, seek news, enabling, thus, a better learning through their own discoveries. It is necessary to know science, live it and practice it, in order for the

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scientific method to be understood and demystified. Science isn't only within the reach of scientists in academic spaces. It is possible for the scientific method to be within everybody's reach, including school, following the same steps, tests and discipline. According to Azevedo (2009, p. 6, our translation): "The scientific method is a rigorous process through which we test new ideas about how nature works. Since scientists are curious and observant, their curiosity leads them to observe attentively a fact, which they question and seek to find a solution".

In this perspective, the scientific method in school begins in a very intense process, requiring caution from the student to accomplish their research in developing a project. Azevedo (2009) warns about the need the student has to seek questions that demand research to be answered; that the teacher, as a mediator, must always provide problem situations for the student to have the opportunity to research and, therefore, achieve their results. That author also discusses how the steps of scientific work take place, the importance of applying the scientific method in school, describing, step by step, how to draft and develop a project to present at science fairs. The students' experiences with these scientific approaches need to be more accessible and promoted, caring for their own achievements and, in a way, infecting the other students with scientific accuracy, avoiding their fall into scientific illiteracy.

Generally, works presented at school science fairs follow the classification created by Mancuso (2000). The first category encompasses the assembly works, in which students present devices or demonstrative artifacts through which they explain a theme studied; the second category encompasses informative works, in which students show academic knowledge or draw attention to warnings and/or complaints; in the third category, we find investigative works, in which students evidence the construction of knowledge about everyday facts in a critical way.

According to this thought, the school that offers, to students, pedagogical activities grounded on discovering significant results through the scientific method will be acknowledged by the virtue of forming knowledge protagonists, and not only knowledge recipients. One of the activities supported by that dynamism is the science fair. Thus, fairs have an important function in stimulating students to construct their materials or conceive different methods to demonstrate and explain scientific principles, at the same time that they value the ability to work as a team, with partnership and

cooperation. The science fair, nowadays, has been a pedagogical strategy to awaken in the student the meaning of making science in one's own environment (BARBOSA; SOUSA; SANTOS, 2014).

3 Contextualization

Since 2011, without interruption, science fairs have united state and municipal public schools in cities from the west of Rio Grande do Norte, with the objective of awakening, in students from middle school (8th and 9th grades) and high school, scientific curiosity, preparing them to present their research project based on the use of scientific method. The extension project Potiguar West Science Fair gathers state and municipal schools in the public network that offer primary and secondary education, from the municipalities of Apodi, Felipe Guerra, Caraúbas, Severiano Melo, Rodolfo Fernandes, Itaú and Taboleiro Grande, which are part of the 13th Regional Board for Education and Culture (Direc, in Portuguese), part of the Secretariat of Education of the state of Rio Grande do Norte, located in the west of that state.

The Potiguar West Science Fair, in its ninth edition, in 2019, took place at the State University of Rio Grande do Norte (UERN, in Portuguese) – Advanced *Campus* of Pau dos Ferros – and the 13th Direc, in a partnership with the Federal University of the Semi-Arid Region (Ufersa, in Portuguese). Throughout that period, it received funding from the National Council for Scientific and Technological Development (CNPq, in Portuguese), with financial support for the fair and scholarships for the Junior Scientific Initiation Program (Pibic-Jr, in Portuguese), especially the following public selections for the promotion of Science Fairs – Municipal Sphere: MCTI/CNPq/Secis/MEC/SEB/Capes n. 50/2012; MCTI/CNPq/Secis/MEC/Capes n. 46/2013; MCTI/CNPq/Secis/MEC/Capes n. 44/2014; MCTI/CNPq/Secis n. 20/2015; CNPq/MCTIC/Secis n. 24/2016; CNPq/Capes/ MEC/MCTIC/Seped n. 25/2017; CNPq/MEC/MCTIC/Seped n. 27/2018. In addition to funding the fair, the resources from those public selections have funded Pibic/Jr scholarships for students, whose projects achieved the highest ratings in the Potiguar West Science Fair since its third edition, in 2013.

Within that context, the Potiguar West Science Fair is inspired and affiliated to the experience of science fairs developed by the program “Science for All in the Potiguar Semi-Arid”, carried out by Ufersa, counting on their partnership with UERN, the Federal Institution of Education, Science and Technology of Rio Grande do Norte (IFRN, in Portuguese), the Secretariat of Education of the state of Rio Grande do Norte, among other partners. The aforementioned program has contributed especially to consolidate, in the state, the experience of science fairs through their organization, as well as the production of didactic materials used in the implementation of the social technology Scientific Methodology for Everyone (MCAT, in Portuguese) (AZEVEDO, 2009) and organization of science fairs (RIBEIRO, 2015).

4 Methodological path

Combining bibliographical review with field work, we carried out a qualitative research, which, according to Deslandes and Minayo (2013, p. 21, our translation), “[…] works with the universe of meanings, reasons, aspirations, beliefs, values and attitudes […]”. In the bibliographical review, we carried out readings about science and the popularization of science based on Germano (2005), Reis (2018) and Santos (2004); in order to handle the development of the scientific method in school and experiences of work with science fairs, we used as a reference the studies by Azevedo (2009), Lima (2004, 2011), Mancuso (2000) and Santiago, Santos and Santos Filho (2015).

The proposed investigation finds in field research the supposition of a qualitative approach more appropriate to our analysis, by turning field work into a problematization that leads to reflection, discovery, analysis, synthesis and creation. The individuals involved in it constitute a group with common objectives and goals, interested on a problem that emerges from a given context. In this sense, enabling the expansion of the conscience of those involved, in order to plan the ways to transform the actions of individuals and institutional practices in which they act, means to acknowledge that their actions express social practices and that these are constructed through the action of historically involved individuals (BRANDÃO, 2003). For data analysis, we had as a base

the theory of content analysis by Bardin (2004, p. 41, our translation), which is understood as a:

> […] group of techniques for communications analysis, which aims to obtain, through systematic and objective procedures for the description of message content, indicators (quantitative or not) which enable the inferences of knowledge related to conditions of production/reception (inferred variables) of these messages.

Developed systematically, content analysis values methodological accuracy, obeying three phases: I – Pre-analysis: phase in which the material that will be studied is organized, in order to make it operational, systematizing initial ideas; II – Exploration of material: phase in which categories are defined; III – Treatment of results, inference and interpretation: phase in which there is the results treatment, condensation and highlight of information for analysis (BARDIN, 2004).

In the initial phase, we dedicated ourselves to reading the forms applied and the information about the structure, organization and functioning of the project Potiguar West Science Fair. In the second phase, we listed the categories that allowed us to reflect about student protagonism in science fairs, such as: involvement, commitment, autonomy and development of the students in the research projects presented. In the third phase, we sought to understand how students are stimulated to access practical knowledge of science application as an integral part of social life at school, as well as the aspects that reveal student protagonism.

Field work was carried out with students that participated in science fairs of public schools, on a high school or middle school (8th and 9th grades) level, from municipalities within the 13th Direc, with headquarters in Apodi-RN. We applied a form to 30 students who participated in the Potiguar West Science Fair, between 2016 and 2017, the research period[1]. The form was chosen for being a data collection tool that guarantees information return in a quick and immediate way, since the questions and answer annotations are guided by the researcher. The form was drafted with 19 multiple-choice questions, where nine aimed to discover the profile of the student participating in the science fair and their enthusiasm for study, and ten questions aimed to uncover the students' previous knowledge about the scientific method, their

[1] Project affiliated to the Institutional Program for Scientific Initiation, at the State University of Rio Grande do Norte/PIBIC 2016/2017 – PUBLIC SELECTION N. 003/2015-DPI/PROPEG/UERN.

involvement and development of the research project and their motivation to participate in the science fair. Out of 30 students interviewed, eight were in middle school (8th and 9th grades), between 13 and 15 years of age, and 22 were in high school, between 16 and 19 years of age. Out of those 30 students interviewed, eight were male and 22 were female.

The choice of students happened randomly, but always being careful to interview one student per project from different schools, education levels and municipalities present at the science fair. Initially, we approached them by introducing the interviewer and the research objectives, along with the Informed Consent Form. We only began to ask the research form questions after the informant signed the Informed Consent Form.

5 Weaving results: the profile of the protagonist student

The Potiguar West Science Fair is characterized by the interdisciplinarity of themes and objects of study of works developed. However, we observe throughout its execution a predominance of themes related to technology, environmental education, laboratory experiments and experiences in the Physics, Chemistry, Biology and Engineering fields, with an emphasis on issues related to the environment, soil, weather, semi-arid, agriculture and livestock farming, whereas projects focusing on Human Sciences, Social Sciences and their technologies are still few in number, although students and teachers are encouraged by the organization staff to develop projects in those areas, in order to contemplate different fields of knowledge. It is also common for teachers to mentor many different themes in their field of work. The fact is that, whatever field the project is in, there is an effort by the team in the moments of training and supervision of projects, aiming to observe if the project shows a development of scientific principles, which is also an evaluation item for projects. Regardless of the field, the theme choice, according to Mancuso (2000), provide constructive elements for the individuals who are part of them, by bringing solutions and reflections for local, regional, national or global problems through research.

It is also important to emphasize that municipalities whose schools participate in the fair show a predominance of the rural lifestyle. The students' research objects have tended toward the semi-arid region, its production, its lifestyle and organization, through the eyes of social technologies, as is the case of projects related to clean energy, reutilization of water, silage, organization, production and solidary marketing of small farmers, natural insecticides, food conservation, natural soil fertilization, cisterns, among others. In practice, science fairs, according to Lima (2011, p. 196, our translation), "[…] have sought contextualization, in an effort to establish relationships between their objects of study and the possible applications in reality".

Within that reality, the science fair awakens in the student a great interest in feeling useful and being able to showcase their competencies and abilities during the creation of a project to exhibit during the event. It is an opportunity to turn their ideas into practice and show the results obtained during the research process. According to Borba (1996), the fair encourages the student toward a critical thought in which their communication capabilities are exercised. It is possible to notice that the students' expectations bloom through the dissemination of their own studies through the event, which is also awakened in the other students, which shows that it is necessary/possible to make science in the school context. Based on this premise, we will draft the profile of the students in order to know them better through their answers to our questions.

One of the requirements to participate in the science fair is the field diary. In it, students record the activities, the stages, the guidance and other relevant information for the research. The diary and the research report are exhibited for information consultation and verification by visitors and evaluators. During the fair, the moment when the research is directly observed, we verified that all works presented had the diary and report available for consultation: some with more information and details from the research, focusing on advances, difficulties, observations, references consulted, regularities and irregularities, visits carried out in the research field and even pictures; others were more simple, with basic information regarding dates and activities, without a systematic record of the research.

Even with the limitations, the fact is that requiring the diary and report has contributed to more planned and systematized actions in research, contributing to the credibility of the work, and is used as an evaluation instrument. According to Lima (2011, p. 196, our translation), science fairs function as encouragement to cooperative work between students and teacher, when the demands of the work, such as "[…] reading, research, interviews, experiences, constructions, systematization and presentation scripts – involve an effort that requires planning, task division, collaboration among the work team and control of actions".

Analyzing the answers, when asked if they liked to study, only one student answered that he didn't like it, while the others answered they liked studying. Some students reported lack of free time to just study, because they had to work in order to help their households. Out of the 30 students interviewed, eight worked, dividing their time between study and work. These students worked helping their parents with activities in commerce, agriculture, services, among others, as well as in independent forms of work, unrelated to their parents. Among the 30 informants, 23 were never held back a grade; only seven had been held back once or twice.

Additionally, when asked about their actions as students in the classroom, among the options mentioned in the form, 22 answered that they asked questions during classes; five answered that they usually didn't ask questions during classes, even if they had doubts about what was being taught; and three reported that they always agreed with what was exposed in the classroom, showing insecurity and/or convenience. In the perspective of benefits from the fairs, Mancuso (2000) already pointed to the expansion of knowledge and communicative abilities, as was observed in most reports from participants.

Regarding encouragement to study, students were categorical when stating that they were encouraged by parents, especially their mothers, although they also mentioned the teacher. They are students who always went to public schools, whose family income is usually one minimum wage, according to informants.

When asked about what they liked most about school, 18 answered that they liked to study; the others answered that they liked to chat and make friends. For the individuals, the school is a place of knowledge construction, but also of socialization and social interaction. School is a place to create, discover, seek answers for questions, at

the same time that it is a place for interaction and social development of students and other people involved.

6 Participation in the science fair

In the science fair, we observed that the projects combine quantitative and qualitative methods and techniques with the incorporation of principles and approaches from Human, Social, Natural, Exact, and Earth Sciences. When the projects show distinctive research instruments and techniques from Human Sciences, such as interviews, questionnaires and forms, there is an opening for new theoretical and methodological perspectives of research and innovation in the field of Human Sciences.

About the participation in science fairs, we asked them about issues related to their involvement, their participation in the science fair and the development of the scientific method. Based on the positive effect of the science fair, we initially asked what the students thought about the event. In their answers, it was clear that the context of the fair is a place where creativity and knowledge are present, as well as a means to provide new constructive projects for the school and the local community.

When asked if they were developing a taste for science practice, 24 students answered that the taste for science was built through the science practice, i.e., through the development of the project. While they were researching, they were constructing work that had their name, the name of the school and the name of the municipality. Within that perspective, Lima (2011) reminds us that the fair is able to generate, in the student, the commitment to quality, since the authorship significance motivates them to dedicate themselves to the production that carries their name.

We also noticed the relevance of the teacher's role when we asked who most encouraged them to participate in the science fair. Out of those interviewed, 21 students said that they were most encouraged by the teacher, the others mentioned that they were encouraged by the school principal, by a classmate or by themselves. Sasseron and Carvalho (2008) report that, on that educational level, the teacher has a paramount role in the students' awakening to science. The questions and studies about scientific and

technological advancements must be approached in the classroom, as well as activities that successfully popularize science.

When we asked what was their biggest motivation to participate in the science fair in 2016, 12 students answered that they were interested because they liked to participate; nine answered that they wanted to go to the next stages of the science fair, such as the state fair, and, obviously, the national fair; seven answered that because they had participated in previous fairs, they were interested to participate again; two said that they participated to obtain more knowledge and learn more. Demo (2015) highlights that creativity and imagination are part of research; in this broad sense, the educational principle is one of the most fruitful paths to achieve learning.

In this sense, the student protagonism in the fair is revealed as the student highlights the desire to research and develop their own ideas. When we asked who had originated the theme and/or research question of the project presented at the fair, 15 students answered that the idea had been theirs, eight answered that it was the idea of their partner in the project, and seven said that the idea had come from the teacher.

Here we realize the students' potential autonomy when the research problem is their own idea, and not the teacher's. According to Mancuso (2000), participation in science fairs perfects personal growth, while stimulating the development of critical thought, producing greater involvement and leading to the student's exercise of creativity. However, the project's theme is often suggested by the teacher. With the expectation to create the project, the teacher has sought students interested in research, thus they originate research projects aiming to attract students.

Along with that concern regarding the verification of the students' autonomy, we asked about the search for information, materials and artifacts necessary to research when the school didn't offer material conditions for its fulfillment, such as laboratories, equipment, bibliographical references, among others. Some students emphasized the use of laboratories and/or equipment at Ufersa, UERN or IFRN to accomplish their research, although most students highlighted the importance of college students (scholarship holders) from the Program Science for All in the Potiguar Semi-Arid in the school helping with the project, especially in the case of projects outside the field of work of the mentor-teacher, as well as the use of creativity and some improvisation in carrying out experiments. In fact, this is the moment when we realize the creation and

inspiration of students in their research, when they build devices, models and artifacts conceived in different ways, especially with recyclable material, to demonstrate the scientific principles.

In order to develop their research, we asked who had helped them: 27 students answered that they were helped by their mentor-teacher to develop their research and three answered that they got help from classmates and former teachers. The mentor-teacher plays a central role, although it seems like an obvious conclusion, since the student's project needs a teacher to guide them, because it is in the exchange of experiences between mentor-teachers and researcher students, according to Santiago, Santos and Santos (2015, p. 28, our translation), that both "[…] learn together and understand that the teaching-learning process is effected in an autonomous and dialogical way and that thus both can teach and learn in the active and participative construction of knowledge".

When we asked our subjects what were their expectations when participating in a research project, 15 answered that they wanted the project to become known; 13 wished it to serve as motivation for other students; two answered that they wanted to win the prize and participate in another fair. We observe and emphasize, with this, the students' desire to show their results, as well as to motivate other students to develop science. As explained by Lima (2011), fairs are an exercise to evaluate not only one's own work, but also other works, the instruments and methods used and the infrastructure of the event itself.

We concluded asking what they would do differently in the fair if they were in the organization staff. Among the answers, 16 students said that they wouldn't change anything, since they were satisfied with the organization of the fair; 14 students said that they wanted a better environment to exhibit the projects, with more space between booths and more technology, besides the wish that projects were taken more seriously, considering the punctuality and inviting the population to see the projects, to have more visibility. In the informants' evaluation of the science fair, many showed the desire to go beyond presenting their work in the school or regional fair, with the expectation to participate in other events to disseminate the research results. The students also showed expectations related to the desire for their projects to become well-known and,

with that, to be an incentive to the others who haven't braved the scientific research path yet.

7 Conclusion

In the science fair, we had the opportunity to know many researches with several different themes: waste, water, products to combat dengue fever, among others. What stands out is that they concern, mostly, studies in the students' reality, be it their neighborhood, their city, or the rural area. This shows their concern with the environment where they live, which makes the research more relevant.

As we noticed, in the fair, projects developed by the students themselves are exhibited and disseminated, with the teacher as the person who most encourages them to participate in the event. Many students said they felt excited about the research they were presenting, making the fair a rewarding strategy in research development, noticing the involvement, commitment, the desire to make that project work, to make it well-known and accessible to everyone. We also noticed, in students, the desire to disseminate their project and show its applicability, relevance and social commitment, beyond a one-time event to present their work.

We obviously cannot deny that some of them showed lack of interest in their own exhibit and in how they answered the form. However, we need to acknowledge the effort toward the exchange of experiences and a search for new knowledge when investigating problem situations and solutions for them, as well as when developing new productions that may benefit society, their community. Thus, the science fair is an important moment in the process of knowledge construction, in which students, teachers and school strive to make, think and disseminate science for society.

In that context, we understand the relevance of the science fair and the role of students and teachers in the development of the scientific method. The science fair is a space that offers opportunities for the student to show and promote their project, but not enough to really assure their research is well-known. Their perspectives are enormous and go beyond a presentation for a small, local audience, showing the need to promote it.

Thus, we also notice the importance and the role that the school educator must play, so that schools, along with their educators, offer moments of interaction in the classroom, seeking new tools and asking students to carry out experiments, being able to draft hypotheses and awaken curiosity to reach an answer. Finally, that the fair is an event that promotes student protagonism in the teaching-learning process.

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