





## Socio-scientific issues and the Political Pedagogical Project of public schools in Benjamin Constant, AM, Brazil

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### ABSTRACT

Socio-scientific themes are important because they allow us to understand the overcoming of the present day, themes resulting from the discussions of a globalized era in the midst of the development of science and technology, which emerged with vigor from the industrial revolution. This research aimed to identify in the curricular proposal of the Political Pedagogical Projects of public schools of Benjamin Constant, the actions related to socio-scientific themes, verifying how the contextualization of such themes occurs in the school environment. The research comprised four basic education institutions: Cosme Jean Municipal School, Graziela Correa de Oliveira Municipal School, Margarete Coelho Municipal School and Olavo Bilac Municipal School. The data were obtained from documentary research, where an analysis of the Political Pedagogical Projects of the institutions under study was made. The results showed that the socio-scientific themes present in the PPPs comprise contents such as adolescent pregnancy, sex education, cultural plurality, environmental education, and the environment, and that these are stagnant in the face of proposals that must be updated, considering the constant changes that occur in society. Thus, it was found that the institutions seek to contextualize the socio-scientific themes in their approaches, reconciling society and science, since these are essential to ensure a critical view of the students about the effects, they affect society. It is expected that the results of this research will help in the design of projects and activities for scientific development in local education and in the enhancement of the approach to socio-scientific themes in schools.

### RESUMO

Os temas sociocientíficos são importantes, pois, permitem compreender as superações da atualidade, temas resultantes das discussões de uma era globalizada em meio ao desenvolvimento da ciência e tecnologia, surgida com vigor a partir da revolução industrial. Esta pesquisa visou a identificar na proposta curricular dos Projetos Político Pedagógicos de escolas públicas de Benjamin Constant, as ações relacionadas aos temas sociocientíficos, verificando como ocorre a contextualização de tais temas no âmbito escolar. A pesquisa compreendeu quatro instituições de ensino básico: Escola Municipal Cosme Jean, Escola Municipal Graziela Correa de Oliveira, Escola Municipal Margarete Coelho e Escola Municipal Olavo Bilac. Os dados foram obtidos a partir da pesquisa documental, onde foi feita análise dos Projetos Políticos Pedagógicos das instituições em estudo. Os resultados demonstraram que os temas sociocientíficos presentes nos PPPs, compreendem conteúdos como gravidez na adolescência, educação sexual, pluralidade cultural, educação ambiental e meio ambiente, e que estes encontram-se estagnados diante de propostas que devem ser atualizadas, considerando as constantes mudanças que ocorrem na sociedade. Deste modo, verificou-se que as instituições buscam contextualizar os temas sociocientíficos em suas abordagens, conciliando sociedade e ciência, uma vez que estas são primordiais para garantir uma visão crítica dos alunos sobre os efeitos que acometem na sociedade. Espera-se que os resultados desta pesquisa auxiliem na projeção de projetos e atividades para o desenvolvimento científico no ensino local e na potencialização da abordagem dos temas sociocientíficos nas escolas.

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## Introduction

The approach to socio-scientific issues with a focus on Science, Technology and Society (STS) can favor the learning of scientific, social and cultural meanings for the training of science teachers. Education professionals, in turn, develop critical positions, breaking with the myths of the reductionist view of STS, and committing them to advances in education (Martinez & Carvalho, 2012).

Socio-scientific topics can be discussed in several segments, including: Population growth, demand for goods and services, impacts of global climate change on biomes, loss and fragmentation of habitats due to deforestation, introduction of exotic species and diseases to invasive plants, overexploitation of plant and animal species, deforestation of the Brazilian Amazon, degradation of freshwater water resources in quantity and quality, relationship between poverty and urban environmental degradation, destination of urban and industrial solid waste, loss of soil fertility and erosion, among others related to ethics and bioethics (Salati et al., 2006), in addition to obtaining electricity, embryonic stem cell therapies, transgenic foods, vegetarian/vegan nutrition, cloning, and especially situations related to socio-environmental issues (Genevise et al., 2019).

Socio-scientific themes are important to the extent that they seek to understand their overcomings, which, in many cases, are themes resulting from discussions that took place in a globalized era, with constant development of science and technology, and which intensified since the industrial revolution. The inclusion of these issues in basic education helps in scientific literacy and in the resolution and minimization of daily problems of an ethical, environmental and technological nature.

Considering the inseparability of scientific, social, and technological themes, authors such as Sandler and Zeidler (2004) and Genevise et al. (2019) conclude that all aspects of science are inseparable from the society from which they arise. Thus, the authors suggest that discussions, reflections and knowledge development promote citizen responsibility for decision-making on certain socio-scientific themes, demonstrating their potential for use in the classroom.

There is a noticeable lack of studies related to socio-scientific themes in the education system of the Alto Solimões mesoregion. From this verification, it was verified the need to know, through the curricular proposals, how the various controversial issues are being addressed and implemented in the public schools of the municipality of Benjamin Constant. Thus, the study aimed to identify actions related to the socio-scientific themes present in the curricular proposal Pedagogical Political Project (PPP) in public schools of Benjamin Constant, Amazonas (AM). In addition, the objective was to know the curricular activities related to the execution, contextualization and the relationship of the execution of socio-scientific issues in the educational projects implemented in the educational institutions. It was possible to verify the processes that lead to the elaboration of the PPPs, the educational proposals that are defined,

creating methods, resources and pedagogical strategies, to form active citizens in the construction of society.

### **Methodological Approach**

The research was carried out in the period from 2021 to 2022, from the Institutional Program for Scientific Initiation Scholarships (*Programa Institucional de Bolsas de Iniciação Científica* - PIBIC) of the Federal University of Amazonas (*Universidade Federal do Amazonas*), which studied the Political Pedagogical Project in four basic education institutions in the urban area of Benjamin Constant, the municipal schools Cosme Jean, Graziela Correa de Oliveira, Margarete Coelho and Olavo Bilac, which are located in the southwestern region of the state of Amazonas, both belonging to the municipal public school system. The research presents a bibliographic and documentary profile, which, according to Appolinário (2009), is restricted to the analysis of documents. In addition, it makes the indication to see the data collection strategies as well. In the entry, data collection strategy, he informs us that:

Usually, research has two categories of data collection strategies: The first refers to the place where the data are collected (local strategy) and, in this item, there are two possibilities: Field or laboratory. [...] The second strategy refers to the source of the data: Documentary or field. Whenever a research uses only documentary sources (books, magazines, legal documents, electronic media files, it is said that the research has a documentary strategy (see bibliographic research)). When the research is not restricted to the use of documents, but also uses subjects (human or not), it is said that the research has a field strategy (APPOLINÁRIO, 2009, p. 85).

According to Gil (2002, p. 62) “documentary research has some advantages because it is a rich and stable source of data, does not imply high costs, does not require contact with the research subjects and allows an in-depth reading of the sources”. Being similar to bibliographic research, according to the author, what differentiates them is the nature of the sources, being material that has not yet received analytical treatment, or that can still be reworked according to the objectives of the research.

In Padua's vision (1997):

Documentary research is that carried out from documents, contemporary or retrospective, considered scientifically authentic (not fraudulent); it has been widely used in the social sciences, in historical research, in order to describe/compare social facts, establishing their characteristics or tendencies (PÁDUA, 1997, p. 62).

Based on a qualitative approach, emphasis will be placed on holistic and qualitative information, presenting as a central interest of the research, the interpretation of the meanings attributed by the subjects to their actions in a socially constructed reality (Moreira, 2002).

According to Flick (2013), qualitative research seeks to understand the subjective meaning of the problems raised from the perspective of the study participants. One of the advantages of qualitative research, according to the author, is the freedom that participants have to present what is really important to them, within their contexts, their stories and experiences.

Initially, an exploratory bibliographic survey of a qualitative nature was carried out, based on observations that consider the singularity of the subject and the subjectivity of the phenomenon. In order to learn about the approaches given to socioscientific themes in science teaching with a theoretical basis, research was also carried out on digital platforms of SciELO and Capes Periodics, with works considered relevant to the theme, published between 1994 and 2023. It is important to know the socio-scientific approaches from previous years, since the Brazilian pedagogical trends are influenced by the cultural and political moment of society, which is in constant phases of change.

Following the exploratory bibliographic study, documentary research was carried out in the PPPs of four municipal schools in Benjamin Constant, AM. After the documents were made available by the school managers, we proceeded to search for socio-scientific elements present in the schools curricular proposals. For the organization and presentation of these documentary data, we resorted to the execution of descriptive research, defined by Gil (1999) as having the purpose of describing characteristics of a given population or phenomenon, or the establishment of relationships between variables.

This type of research seeks to describe a phenomenon or situation in detail, especially what is occurring, allowing to accurately cover the characteristics of an individual, a situation or a group, as well as to describe the relationship between events (Marconi & Lakatos, 2016). For the use of the data, a term of information availability was prepared and delivered, which was signed by the managers and those responsible.

## **Results and Discussions**

### **The contextualization of socio-scientific themes in the school environment from the Pedagogical Political Project**

Based on the principle that education is the “appropriation of historically produced human culture” and that it is “the school as an institution that provides systematized education” (Faro, 2002, p. 85), it highlights the importance of education in the performance of its specificity and nature.

Thus, it is important to evaluate PPPs, since their elaboration can significantly collaborate in the teaching and learning process of students and their elaboration precedes the pointing out of changes and solutions to problems observed in the school routine. In view of this, teachers should study and appropriate the pedagogical tendencies that Saviani (1997) and Libâneo (1990) propose about the reflection of pedagogical practices, offering conditions for

the school to organize itself and identify the challenges and put into practice the strategies defined to achieve its objectives.

The PPP is the document that details objectives, guidelines and actions of the educational process to be developed in the school, expressing the legal requirements of the system as well as the needs, purposes and expectations of the school community (Gadotti, 2000).

The PPP of educational institutions, in addition to being a legal requirement, expressed in the Law of Guidelines and Bases of National Education, Law No. 9,394, of December 20<sup>th</sup>, 1996, allows the disclosure of the identity of the Institution and its conceptions. The idea that the construction of the PPP should contemplate, in its essence, the quality of education to be offered, based on democratic management, with principles of equality and freedom, is reinforced by the LDBN, in the following articles:

Article 12. Educational establishments, respecting the common norms and those of their educational system, shall have the task of:

1<sup>st</sup> - Develop and execute your pedagogical proposal;

6<sup>th</sup> - Articulate with families and the community, creating processes of integration of society with the school;

7<sup>th</sup> - Inform parents and guardians about the attendance and performance of the students, as well as about the implementation of their pedagogical proposal.

Article 13. Teachers will be responsible for:

1<sup>st</sup> - Participate in the elaboration of the pedagogical proposal of the educational establishment;

2<sup>nd</sup> - Prepare and comply with the work plan, according to the pedagogical proposal of the educational establishment;

Article 14. The education systems shall define the norms of the democratic management of public education in basic education, according to their peculiarities and in accordance with the following principles:

1<sup>st</sup> - Participation of education professionals in the elaboration of the school's pedagogical project (Law No. 9,394, of December 20<sup>th</sup>, 1996).

It is observed, therefore, that the organization of pedagogical work, before being a necessity for the development of curricular activities, is also a legal requirement. From this perspective, it is important that the use, evaluation and reformulation of the school's PPP is not restricted only to the beginning of the school year, because it is necessary to evaluate and observe the failures of the present on a daily basis, in order to seek solutions to certain problems, assuming that the elaboration of an institution's PPP is constant and presuming that through it there are contributions in the teaching and learning process with a view to a promising school future.

No less important, socio-scientific themes in the school context encompass social aspects related to current scientific knowledge. The approach to these themes in teaching is a viable alternative to improve the teaching and learning process in Science, as well as for the formation of citizens.

The Escola Municipal Professora Graziela Correa de Oliveira, uses the PPP of the 2021 school year, comprising the validity of one year, in which working on socio-scientific issues in the discipline of science, is undoubtedly something that should be debated and discussed among the teaching staff and the school community, since in recent years the reality is based on technological advances and social transformations. Technology combined with education can then be a starting point for educational institutions to cover the social aspects of the school environment with current scientific knowledge.

In the view of Borgmann (2005, p. 38), schools conceive a deterministic view of technology, either from a technophobic point of view and with pertinent contributions, or a salvationist determinism that denounces hypocrisy on the part of those who reject it while using its benefits. The aforementioned schools present unique difficulties related to limited access to technologies and, consequently, the adhesion of educational tools due to the lack of understanding and integration adapted to local needs.

“Intertwined with socio-scientific themes, citing Science, Technology and Society is necessary, because STS enables a reconstruction of scientific education in the school environment” (Loureiro, 2005, p. 112). In an interdisciplinary approach to science education, integrating it with economic, ethical, social and political aspects. Thus, it is evident that the teacher's experience and the explanations and methodological guidance on the use of STS elements contribute significantly to the systematic approach to socio-scientific themes.

From the perspective of socio-scientific issues, proposals that promote the interpretations of the relations between science, technology, society and the environment have been reconstructed and developed in educational institutions and in the disciplines of natural sciences. This effort arises from the need to develop critical thinking, which empowers students to discuss and act on decisions, including critical thinking, ethical and moral reasoning for collective action (Carvalho & Carvalho, 2012).

In the analysis of the PPP of the Graziela Correa de Oliveira municipal school, one of the specific points for addressing the themes developed for the science discipline, is mentioned in the excerpt “development of competencies and skills related to the critical and responsible use of digital technologies both in a transversal way, present in all areas of knowledge and highlighted in various competencies and skills with varied learning objects, and in a targeted way, with the aim of developing skills related to the use of technologies, resources and digital languages, exercising in the student the ability to reflect on natural phenomena and how these phenomena can be explained scientifically”. It is noted that the discipline of sciences seeks to use different languages and digital technologies of information and communication to communicate, also seeking to access and disseminate information, produce knowledge and solve problems of the Natural Sciences in a critical, meaningful, reflective and ethical way.

Considering that STS has a fundamental role in the evolution of society, being present in all aspects of modern life, it is noted that the STS approach within the PPP is concerned with

inserting into the teaching of science, themes that would bring the complexity of the interconnections of Science, Technology and Society. The data show that despite the complexity of the elaboration of the school's PPP, projects that emphasize the importance of science-related themes in society still need to be worked on.

Through this, the school monitors and analyzes the progress of the student's teaching-learning process, through different methodological instruments, such as: Assessments, readings, research, questionnaires, events, interdisciplinary projects. From these evaluation instruments, which constitute a methodological system, they provide results that are systematized at different times in the school. According to Menezes et al. (2014), leaving the traditional teaching model and using other methodologies make students build their own understanding of the subject step by step.

It can be seen, from the documents analyzed, that the contextualization of the socio-scientific themes present in the PPP of each school are stagnant in the face of proposals that must be updated taking into account the constant changes that occur in society. Considering the data obtained, in accordance with the reality experienced and the daily social and technological transformations, it is understood that there is a need to adapt the curricular activities, as a process of humanization and awareness of the subjects who can intervene for the improvement and quality of teaching.

According to the PPP of the municipal schools Cosme Jean, Margarete Coelho, Olavo Bilac and Graziela Correa, it is possible to note that socio-scientific themes are addressed using various didactic strategies, whether through lectures, projects, exhibition of posters, panels, science fair, video classes and didactic games.

The didactic strategies, mentioned in the previous paragraph, are used by the four schools to address socio-scientific themes, using them to develop the student's interest in different thematic axes. Among the most mentioned topics in the PPP of the institutions, we can mention teenage pregnancy, sex education, drugs: Causes and consequences, environment, pollution, effects of telecommunications, environmental education, cultural plurality, gender diversity, pollution, ecumenical religious education, natural ecosystem, climate change, healthy food and living, transgenic foods, social issues and topics such as health and science.

From an interdisciplinary point of view, in order to study a given question of daily life, a multiplicity is needed, and moreover, by mixing different disciplines in a particular way, it obtains an original approach to certain problems of everyday life. According to Fazenda (1994 and 2007), the Brazilian focus is centered on the actor, whether teacher or researcher, as the main vector of interdisciplinarity, in this sense the author focuses on the teacher as the main methodological agent of the student's teaching-learning process, including in the construction

of promoting the realization of their integration into society in a critical way, knowing their duties and rights.

The themes worked on should be organized by the teachers, based on decisions that result from a process of involvement and participation of families and the school community, in addition to what is observed in daily life. The school should seek actions such as the contextualization of the contents of the curricular components, in order to strengthen the development of more dynamic strategies on socio-scientific themes.

Some important points in the PPPs of the schools are the partnerships with existing institutions in the community, carried out during the school year, such as: Health Department, Social Assistance Department, Environment Department, Municipal Guard, Guardianship Council and Military Police, among others. The work of the school in partnership with other institutions makes it possible for sensitive socio-scientific issues to be addressed more efficiently, since they are people with greater autonomy to address complex issues, such as teenage pregnancy or drugs, strengthen socio-educational measures for the school environment and the approach to socio-scientific themes, in order to explain the reasons or precedent characteristics of a situation, it is important to guide the themes in schools so that there is an understanding of a certain subject, since they are approached by the professionals of the partner institutions in a complex way, which perhaps due to the delicacy of the subject, the teacher could not approach the theme in the classroom with such depth.

Sá (2010) argues that his approach has been widely recommended in research in the area of science teaching, especially in studies that point to its discussion as a possibility to foster the development of argumentation in the classroom.

These approaches, comprised of controversial issues, which involve different points of view, and which have implications in one or more areas of knowledge, such issues, “in addition to favoring the citizenship formation of the student, can contribute to the understanding of the nature of science, with the articulation of different areas of knowledge, with the development of critical thinking” (Simonneaux, 2007, p. 80).

It is possible to verify that despite the diversity of themes that the PPPs pay attention to discuss, it is necessary that the teacher, when working on the textbook, as well as the different teaching strategies, pay attention to the socio-scientific themes present in each subject, reinforcing the contents with the local reality.

### **The execution of socio-scientific issues related to educational projects implemented in educational institutions**

It is necessary to know the sociocentric approaches, which are themes that can be worked on by reconciling society and science, with implications in the social, political, ethical and economic areas. In this context, Barbosa et al. (2022, p. 120) inform of the importance of studying socioscientific topics, whether in the area of science, biology and chemistry, which



are essential to ensure a critical view of students on the effects they affect society in the 21<sup>st</sup> century.

In the search for literature, one can also observe the approach of Science, Technology and Society, which comes from the 1980s with the teaching of science in Brazil, has theoretical and methodological influences in the formation of science education and has come to align itself with the globalized world so that they know how to make good use of technologies (Amorim, 1995).

Another interest that can be observed was the connection with regional themes, according to Rodrigues and collaborators:

In line with this theoretical discussion, the Socio-Scientific Issues emerge, as well as the regional themes as an alternative way for many subjects little discussed in the classroom, to take space for socialization and collective construction of decisions, so that they can be directed to a public in formation and thus apply their development in the social sphere (Rodrigues et al., 2020, p. 6).

Considering the contributions of the author above, there is a need for schools to work on regional themes, which cover social issues observed in the daily life of a given place. The use of regional themes in teaching is a viable alternative to favor the teaching and learning processes in science and other subjects, as well as for the formation of citizens.

There is also the relationship between the school and local institutions, such as the Municipal Department of Education (*Secretaria Municipal de Educação - SEMED*), which collaborates whenever requested, in addition to offering training courses for teachers, where SEMED invites teacher trainers, with experience in different areas, to teach courses related to pedagogical approaches that can be worked on in the classroom. In addition to the courses, the secretariat also applies projects in municipal schools, in order to verify if there is a learning deficiency in schools, as well as to improve students' knowledge. The Tutelary Council is also a partner institution, contributing to educational progress through lectures and orientations involving social, cultural, moral and ethical values, in addition to offering services such as service to the community, for the good performance of citizenship.

There is also a partnership with the Institute of Nature and Culture (*Instituto de Natureza e Cultura - INC*) of the Federal University of Amazonas (*Universidade Federal do Amazonas - UFAM*), which contributes to pedagogical and research projects, mainly with extension projects, helping in the training of teachers and academics during internships, in addition to contributing to the teaching and learning process of students. It is important to point out that extension projects are one of the indispensable tools for bringing elementary and high schools closer to universities.

Through internships and projects, UFAM intern students can work on both topics provided for in the teaching plan of the regent teacher, as well as topics that are not part of the lesson plans. This enables a relationship between the school and the university, establishing

partnerships so that both develop educational work for the good performance of education, such as the insertion of controversial topics, opening opportunities for students to carry out technical visits to the University, posing itself as one of the ways to break the stereotype created by society, that university or going to college is something far away.

The following chart (Chart 1) presents the data obtained in the PPP of the schools, with regard to socio-scientific issues and the activities carried out for the execution of these issues in municipal schools.

**Chart 1.**

Way of execution of projects by educational institutions, on socio-scientific issues.

<b>Institution</b>	<b>Type of activity/project</b>
Cosme Jean Municipal School	Environment week; cultural activities (singing, dancing, theater); cultural, artistic and pedagogical exhibition...
Graziela Correa de Oliveira Municipal School	Environment week; handicraft fair; school garden; workshop; cultural exhibitions, events (lectures)...
Margarete Coelho Municipal School	Environment week; collection of recyclable materials; playroom...
Olavo Bilac Municipal School	Environment week; gymkhana...

**Source:** Based on the PPP of the schools in which the research was conducted. Prepared by the authors (2023).

From the data presented, it is noted that the institutions present similar projects to debate socio-scientific issues, from this point on, some of the projects worked on in each municipal school will be mentioned, it is emphasized that such choice arose through the compilation of data, in which it was found that although the projects are similar, the execution and approaches of the themes occur by different methods. The Graziela Correa Municipal School, for example, carries out the environment project, which seeks to work on issues such as deforestation, pollution, population growth and expansion in stream areas, and how this can affect the life of the community. Moving away from a traditional approach to methods that facilitate students understanding, making them discuss socio-scientific topics, relating them to other aspects.

The discussion of socio-scientific themes, in a way that associates political, social, economic, environmental, ethical and moral aspects to the disciplinary content, in science teaching can occur from the problematization of controversial issues (Ratcliffe & Grace, 2003), the consideration of STS relations or the problematization of cultural issues (Santos, 2008).

As cited in the PPP of the Cosme Jean school, in the discipline of sciences they seek to “understand fundamental concepts and explanatory structures of the Natural Sciences, as well as to master processes, practices and procedures of scientific investigation, in order to feel safe in the debate of scientific, technological and socio-environmental issues [...]”. The school in its PPP, unlike other institutions, uses other types of projects to work on socio-scientific issues, whether through dramatization, singing and dancing, where students can express their ideas and opinions on any topic, enabling the student to understand the contents through other forms of expression, promoting socialization and increased creativity.

According to Rava (2005), assessment should be understood as an integral part of the teaching and learning process, demonstrating the performance not only of the student, but also of the teacher. It presents the dimension and understanding of what was worked on, reorienting the student, the teacher, the group and the institution.

The Margarete Coelho Municipal School serves Elementary 1 students, working on content aimed at the environment through the collection of recyclable materials, in which teachers address the benefits of recycling, and students are guided to correctly separate materials. This project aims to exhibit toys made from the collected material, through fairs and activities that involve students in the classroom.

At the Olavo Bilac school, environmental issues are addressed through activities that seek to identify differences in animal and plant species, study all forms of life, encourage the conscious use of recyclable materials such as (pet bottles, cardboard, plastics, styrofoam, etc.), and through lectures, video classes, dynamics, the student can identify what are the main causes for imbalances and environmental problems today.

The PPPs constructed, when developed with the active participation of the students, can favor an educational space that brings the teacher closer to the students, promotes a critical and scientific dialogue between students and teachers, who begin to explain the knowledge acquired by studying the supposed current themes.

## **Final Considerations**

It is known that the contextualization of socio-scientific themes in the school environment is based on the PPP, because it is in it that the educational planning occurs, which should seek to integrate the curricular contents with the social, cultural and scientific reality of the students. In addition, the PPP is a document that defines the principles, objectives and guidelines of the school, establishing the identity, pedagogical proposal and forms of organization of the school.

In view of the above, one of the proposed objectives intended to identify the actions related to socio-scientific themes, such as proposals for themes to be worked on such as: Pollution, environment, technology, effects of telecommunications, among others, considering

that socio-scientific issues are configured as everyday issues that are directly related to aspects of science and technology, which today plays a vital role in most technological systems. changing the way we relate and communicate.

Through the survey carried out, the educational projects implemented include themes focused on the environmental area, science and technology, from the adversities present in daily life, which are discussed, explained and presented through competitions, workshops and fairs.

The contextualization of socio-scientific themes in the PPP strengthens the relationship between education and the reality of students, promoting a critical, participatory and conscious education of contemporary socio-scientific challenges. Therefore, the approach to these themes becomes essential to ensure that students develop a critical view of the constant changes that occur in society.

It is worth noting that partnerships with local bodies and entities strengthen the approach to socio-scientific themes, presenting a different view of teachers and students, providing debates from issues of local society into the classroom, as well as strengthening the comprehension and understanding of what is being discussed, in which the university and other institutions can contribute significantly so that socio-scientific issues come to be debated between the school community and implemented in the PPPs of schools, whether at the municipal or state level.

Through the identification of the proposals contained in the PPPs evaluated and based on the data presented and corroborated, it was found that the construction of the PPP aims to present socio-scientific issues through projects, actions and competencies on themes aimed at the school environment, where schools should analyze the reality of students and emphasize in their PPP plan, themes that make it possible to work on content through interdisciplinarity.

The Professora Graziela Correa de Oliveira Municipal School uses the PPP of the 2021 school year, comprising the validity of one year, in which working on socio-scientific issues in the discipline of science, is undoubtedly something that should be debated and discussed among the teaching staff and the school community, since in recent years the reality is based on technological advances and social transformations. Technology combined with education can then be a starting point for educational institutions to cover the social aspects of the school environment with current scientific knowledge.

## REFERENCES

- Amorim, A. C. R. O ensino de biologia e as relações entre cts: o que dizemos os professores e o currículo do ensino médio? 1995. 108f. Dissertação de mestrado – Universidade de Campinas, Campinas, 1995.
- Appolinário, F. Dicionário de metodologia científica: um guia para a produção do conhecimento científico. São Paulo, Atlas, 2009.

- Barbosa, A. F.; Araújo, T. V. M.; Santos, v. S.; Lemos, R. G.; Coutinho, R. C.; Renato, A. L. Abordagem dos temas sociocientíficos no ensino de ciências naturais, biologia e química em Benjamin Constant, Am. Diversitas journal-2022.
- Carvalho, L. M. O; Carvalho, W. L. P. Formação de professores e questões sociocientíficas em ciências. São Paulo: escrituras, 2012.
- Fava, R.; Marino, J. Educação em cocriação: perspectiva sociopsicodramática. São Paulo: 2005.
- Faro, V. H. Gestão democrática da escola pública. São Paulo: Ática, 2002.
- Flick, U. Introdução à metodologia de pesquisa: um guia para iniciantes. Porto Alegre: Penso, 2013.
- Gadotti, M. Perspectivas atuais da educação. Porto Alegre: Artes Médicas Sul, 2000.
- Genovese, C. L. De c.; Genovese, R. L. G. R.; Carvalho, W. L. P. De. Questões sociocientíficas: origem, características, perspectivas e possibilidades de implementação no ensino de ciências a partir dos anos iniciais do ensino fundamental. V. 15. N. 34 (2019). Revista mazonia. doi: <http://dx.doi.org/10.18542/amazrecm.v15i34.6589>
- Gil, A. C. Como elaborar projetos de pesquisa. 4ª edição. São Paulo: atlas, 2002.
- Gil, A. C. Métodos e técnicas de pesquisa social. 5.ed. São Paulo: Atlas, 1999.
- Libâneo, J. C. Democratização da escola pública: a pedagogia crítico-social dos conteúdos. São Paulo, Loyola, 1990.
- Loureiro, H. M. Anticapitalismo e emancipação. Transformação, São Paulo, vol.28, n2, p.7-20, 2005.
- Marconi, M. De A.; Lakatos, E. M. Fundamentos de metodologia científica. 7ª edição. São Paulo: atlas, 2016.
- Martinez, P. Contribuições e dificuldades da abordagem de questões sociocientíficas na prática de professores de ciências. Educação e pesquisa, vol.38, n3, p.727-741, 2012.
- Moreira, M. Pesquisa em ensino: o vê epistemológico de gowin. São Paulo: editor pedagógica e universitária ltda. (1990).
- Pádua, E. M. M. Metodologia da pesquisa: abordagem teórico-prática. 2. ed. São Paulo: Papyrus, 1997
- Ratcliffe, M.; Grace, M. Educação científica para o cidadão: ensinando questões sociocientíficas. Maidenhead: Editora Universidade Aberta, 2003.
- Rodrigues, R. C.; Nívea, M. C.; Rodrigues, M. Temas regionais e o ensino de ciências a partir de questões sociocientíficas: com a palavra os professores em formação. Revista de ensino de ciências e matemática, São Paulo, vol. 22, n. 2, p. 399-420, 2020.
- Salati, E. Santos, A. A. D., Klabin, I. Temas ambientais relevantes: estudos avançados. 2006. disponível em: <https://www.scielo.br/pdf/v20n56/28630.pdf>. Acesso em: 25 de fev. 2024.
- Santos, W. L. P. Dos; Mortimer. E. F. Uma análise de pressupostos teóricos da abordagem (ciência-tecnologia-sociedade) no contexto da educação brasileira. Ensaio: pesquisa em educação em ciências, vol. 2, n. 2, p. 133-162, 2000.
- Santos, W. L. P. Educação científica humanística em uma perspectiva freireana: resgatando a função do ensino de CTS. Alexandria, Florianópolis, v. 1, n. 1, p. 109-131, 2008.
- Saviani, D. Escola e democracia. – 8ª ed. Campinas SP: Autores associados, 1997.
- Sadler, T. D.; Zeidler, D. L. The morality of socioscientific issues construal and resolution of genetic engineering dilemmas. Science education, v. 88, n. 1, p. 4-27, 2004.

Simonneaux, L. Argumentação em Contexto Sócio-Científico. In: ERDURAN, Sibel; JIMÉNEZ ALEIXANDRE, María Pilar (eds.). Argumentação na Educação em Ciências: Perspectivas da Pesquisa Baseada em Sala de Aula. Dordrecht: Springer Holanda, 2007.