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Multidisciplinary Clubs In Reading, Science, Art, And Mathematics: Integration Of Teacher Mediation, Active Methodologies, And ESG Principles In Meaningful Learning

Adna Rodrigues De Alencar, Ana Karen Silveira Pereira Caracas, Antonio Werbiton Marinho Almeida, Diego Santiago Damasceno, Emilio Parra Sanches Junior, Ernandes Farias Da Costa, Francisco José Lopes Cajado, Irene Mendes Fontes, Joilson Pedrosa De Sousa, Juvanildo Terra De Alencar Junior, Marcelle Leite Rentroia, Maria Marcyara Silva Souza, Nailton Rodrigues Maciel, Paulo Francisco Barbosa Sousa, Paulo Henrique Barbosa Sousa, Régia Maria Carvalho Xavier, Rickardo Léo Ramos Gomes, Roberto Augusto Caracas Neto

(Doctorate In Educational Sciences From Universidad Del Sol – UNADES - Brasil);
(Director Of Innovation At The Science, Technology, And Innovation Club Of The Fortaleza Military School);
(Master's Student In Administration And Controllership At UFC);
(Bachelor's Degree In Mathematics, State University Of Ceará - UECE);
(Master's Degree In Educational Sciences From Universidad Del Sol – UNADES);
(Postgraduate Degree In Mathematics Education – FAK),
(Prof. Dr. In Agricultural Biotechnology (RENORBIO – UFC);
(Postgraduate Degree In Criminal Law From Uniateneu University Center)
(Master's Degree In Science And Mathematics Teaching From The Federal University Of Ceará - UFC),
(Doctorate In Educational Sciences From Universidad Del Sol – UNADES - Brasil);
(Postgraduate MBA In Renewable Energy Management – Fbuni/IEL)
(Master In Sociobiodiversity And Sustainable Technologies From The University Of International Integration Of Afro-Brazilian Lusophony);
(Specialist In Brazilian History – Faculdade Única);
(Prof. M.Sc. In Economics From UFC),
(Ph.D. In Educational Sciences, FCSA (DINTER Program),
(Master's Degree In History From The Federal University Of Pernambuco - UFPE),
(Honorary Doctorate In Biological Sciences; M. Sc. In Phytotechnics – Federal University Of Ceará – UFC);
(Doctoral Student At The Academy Of The National Institute Of Industrial Property).

Abstract:
Background: *The contemporary educational landscape requires pedagogical practices that integrate multiple fields of knowledge, foster collaboration, and promote the development of students' critical thinking. Multidisciplinary clubs of reading, science, art, and mathematics provide a fertile environment for such integration, offering opportunities to explore teaching mediation, active methodologies, and sustainability principles (ESG) as interconnected elements in meaningful learning.*
Materials and Methods*: To analyze these dynamics, a qualitative research design was adopted. Two methodological approaches supported the investigation. The first consisted of a bibliographic review, which made it possible to situate the discussion within the broader scientific literature. The second was a documentary analysis, which enabled the examination of records and materials that document the functioning of multidisciplinary clubs in educational contexts.*
Results: *The findings reveal that the integration of teaching mediation, active methodologies, and ESG principles within multidisciplinary clubs creates a pedagogical space that encourages engagement, collaboration, and reflective learning. This combination proved to be not only adaptable to different educational realities but also effective in stimulating students' capacity to connect theory and practice in ways that support significant learning.*

Conclusion: *The study indicates that linking teaching mediation, active methodologies, and ESG principles to multidisciplinary clubs is more than an innovative proposal for school organization. It represents a concrete opportunity to redefine educational processes, aligning them with the demands of 21st-century training and preparing students for a context in which knowledge, responsibility, and critical engagement are inseparable.*

Keywords: *teaching mediation; active methodologies; multidisciplinary clubs; meaningful learning.*

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I. Introduction

Contemporary education faces the challenge of integrating diverse languages, bodies of knowledge, and critical perspectives into learning contexts that are both creative and socially responsible. Within this scenario, multidisciplinary clubs of reading, science, art, and mathematics emerge as integrative environments that provide more enriching educational experiences. When guided by teachers and grounded in active methodologies, these clubs can transform school practices into opportunities for interdisciplinary dialogue and collaborative knowledge construction. Furthermore, the incorporation of ESG principles elevates their relevance, as learning becomes directly linked to sustainability, ethics, and social responsibility.

A qualitative approach was adopted for this investigation, as it is particularly suited to understanding the meanings individuals attribute to their experiences within these clubs. Two methodological strategies were employed. The first was a bibliographic review, carried out through the examination of books, scholarly articles, dissertations, and reports addressing teaching mediation, active methodologies, school clubs, and interdisciplinary integration. The second consisted of documentary research, which involved the analysis of institutional documents, guidance materials, and reference works directly related to the creation and functioning of student clubs.

The general aim of the study was to examine how the combination of teaching mediation, active methodologies, and ESG concepts in multidisciplinary clubs of reading, science, art, and mathematics fosters meaningful learning among participants. Specific objectives included: discussing the foundations of teaching mediation in contrast with active methodologies; investigating how multidisciplinary clubs function as spaces for integrating knowledge; exploring how mediation in reading clubs contributes to the development of critical readers; analyzing the articulation of investigative practices with ESG principles in science clubs; reflecting on the stimuli for creativity and aesthetic expression promoted by art clubs; and evaluating how mathematics clubs encourage collaborative problem-solving. The study was structured into four main sections. The introduction presents the context, objectives, and rationale of the research. The second section describes the methodological procedures adopted. The theoretical framework is organized into topics that expand the discussion on teaching mediation, active methodologies, multidisciplinary clubs, and the contributions of each field of knowledge. Finally, the conclusion summarizes the main findings and emphasizes possibilities for continuity and the practical application of the results.

II. Material And Methods

To understand the subtleties of teaching mediation and the practices observed in multidisciplinary clubs, a qualitative research approach was adopted. According to Amado (2017), this type of investigation allows for a deeper grasp of meanings, practices, and contexts, while maintaining proximity to the participants involved. The choice of methodology is closely connected to the object of this study, since the articulation between reading, science, art, and mathematics—mediated by ESG principles and active methodologies—requires a careful examination of collective experiences and the meanings constructed by those engaged in them.

Two complementary research strategies supported this investigation. The first consisted of a bibliographic review based on the analysis of scientific articles published in specialized journals, papers presented at academic events, dissertations, and books. As highlighted by Cavalcante and Oliveira (2020), this type of review helps to identify diverse perspectives and track how academic debates have addressed a given object of study. More than 25 sources were consulted, with special attention given to works by Cosson (2021), Lopes, Borowsky, and Cunha (2024), Nascimento (2016), and Santos and Garcia (2024), all of which provide solid foundations for reflecting on the specificities of reading, mathematics, art, and science clubs within this framework. The second methodological strategy was documentary research, which involved the analysis of institutional documents and reports directly related to the subject, such as those published by the Ministry of Education (MEC) and by state departments of education. Key sources included Gomes, Silva, and Silva Júnior (2022), Brazil (2024a, 2024b), and Cruz (2024). As argued by Grazziotin, Klaus, and Pereira (2022), documentary analysis goes beyond the simple organization of published data, enabling critical interpretations that highlight tensions, gaps, and practical opportunities. This dimension enriched the bibliographic review by incorporating the study of practices and guidelines already tested in real educational contexts.

By combining bibliographic and documentary research, the study achieved a robust methodological foundation aligned with its objectives. This integration allowed for both a critical engagement with academic production and direct contact with institutional experiences currently underway. The range of sources—spanning theoretical contributions and normative documents—endowed the work with interpretative consistency and analytical sensitivity, uniting method, object, and reflection into a coherent investigative path.

III. Literature Review

The theoretical framework was organized into six interconnected topics that support the analysis developed in this study. Section 3.1 discusses teaching mediation and active methodologies within the school environment, emphasizing the teacher's role as a facilitator of learning. Section 3.2 examines interdisciplinary clubs and the ways in which they enrich integrated learning experiences. Section 3.3 focuses on Multilingual Reading Clubs, with particular attention to the development of critical reading skills. Section 3.4 addresses the connection between Science Clubs and ESG principles, highlighting their contribution to critical and socio-environmental learning. Section 3.5 turns to Art Clubs, emphasizing how they foster creativity and aesthetic expression. Finally, Section 3.6 is dedicated to Mathematics Clubs, exploring learning through problem-solving and its formative implications.

Teaching Mediation and Active Methodologies in the Educational Context

When integrated with active methodologies, teaching mediation creates a more dynamic environment for learning across different educational settings. According to Gomes et al. (2024), such practices enhance the teacher's autonomy and strengthen their role as a mediator in processes of collaboration, inquiry, and meaning-making. Rather than positioning knowledge as something centered on the teacher, it is understood as a construct that emerges through ongoing dialogue between teachers and students. In multidisciplinary clubs of reading, science, art, and mathematics, knowledge is shaped by experimentation and exchange. This approach transforms the classroom into a dynamic space where the sharing of experiences stimulates meaningful learning. As Rocha (2022) emphasizes, when applied in basic education, these methodologies are not confined to teaching strategies alone; they also provide authentic opportunities for students to engage in research-based experiences. When teachers act as mediators, they bridge disciplinary content with students' real interests, which fosters intrinsic motivation. This process broadens the interpretation of phenomena, supports problem-solving, and generates meanings that extend beyond the traditional classroom context. Teaching mediation, therefore, is not limited to guidance; it becomes a practice that integrates academic knowledge with everyday experiences.

Figure 1 – Word Cloud on Teaching Mediation and Active Methodologies

Source: Own authorship.

Santos, Ramos, and Querido (2022) emphasize that, in the current context, active teaching methodologies should not be viewed in isolation but rather in connection with broader values such as sustainability and social responsibility, which are aligned with ESG principles. Integrating these principles into pedagogical practices within multidisciplinary clubs enables teachers to enrich students' learning experiences while fostering critical awareness of global issues. This formative approach encourages participants to become protagonists in their own learning trajectories, engaging in an educational experience that responds to the contemporary needs of society.

Multidisciplinary Clubs and Their Contribution to Learning

Multidisciplinary clubs are increasingly consolidating themselves as spaces where different areas of knowledge converge, fostering the creation of richer and more participatory learning experiences. Teixeira and Dias (2021) demonstrate that students' curiosity can be transformed into inquiry when structured through

science clubs within the school environment, promoting research that is aligned with collaborative practices and the local context. This shift extends beyond the mere transmission of content, emphasizing experimentation, dialogue, and shared responsibility in the learning process.

The establishment and continuity of student clubs also highlight the teacher's mediating role as a central element in connecting reading, art, science, and mathematics. According to Gomes, Silva, and Silva Júnior (2022), the successful implementation of clubs requires more than institutional organization; it also demands teachers' emotional and intellectual commitment. When effectively integrated, these spaces encourage students to become protagonists, enabling them to construct their own learning narratives and to find in the group a supportive and engaging environment. By offering this type of experience, clubs emerge as a concrete alternative for incorporating active methodologies into everyday school life.

Another key issue concerns how educational design can guide the creation of more creative and interconnected learning environments. Emanuel and Martins (2022) argue that conceiving the school as a space for collective projects requires a reconfiguration of pedagogical practices, making them more interactive and receptive to diverse forms of expression. In this sense, multidisciplinary clubs represent a valuable opportunity to integrate planning, aesthetics, and pedagogy, thereby enriching the learning experience. They provide spaces that promote the exchange of ideas, the co-construction of solutions, and peer learning within a continuous dialogical and experimental process.

Multilingual Reading Clubs and the Formation of the Critical Reader

When multilingual reading clubs are introduced within the school context, opportunities for critical formation are expanded, as students navigate multiple literary and cultural traditions. Borges (2024) emphasizes that these spaces enable young readers to experience literature as a social practice while simultaneously developing their interpretive autonomy. This approach exposes students to reading as an experience that extends beyond the written text, connecting it to issues of identity, linguistic diversity, and contemporary values.

In the same vein, Cosson (2021) argues that reading circles promote literary literacy through peer interaction and teacher mediation, which facilitate collective interpretation. The teacher acts as a guide while also allowing students to ask questions, engage in debate, and construct meaning collaboratively. Literature is thus not merely considered an object of study, but a dynamic practice encompassing listening, discussion, and the generation of new interpretations. To systematize some of these contributions, Table 1 – *Multilingual Reading Clubs and Dimensions for the Formation of the Critical Reader* – is presented and will be included in the following section of the theoretical framework.

Table 1 – Multilingual Reading Clubs and Dimensions for the Formation of the Critical Reader

Dimension	Contribution to the Formation of the Critical Reader	Reference
Teacher Mediation	Stimulates interpretive autonomy through guided dialogue	Borges (2024); Cosson (2021)
Multilingual Interaction	Exposes the student to different cultures and ways of thinking	Pereira et al. (2021)
Collaborative Practice	Encourages the collective construction of meaning through the exchange of readings	Cosson (2021)
Connection with Real Experiences	Relates literary texts to everyday themes and social reflections	Borges (2024); Brasil (2024)
Cultural Diversity	Broadens understanding of identities and values in plural contexts	Pereira et al. (2021); Brasil (2024)

Source: Brasil (2024), Borges (2024), Cosson (2021) e Pereira et al. (2021).

When reflecting on the dimensions presented in the table, it becomes evident that multilingual reading clubs constitute more than mere spaces for literary practice. They enable the development of individuals who engage with diverse voices and contexts, equipping them to question and critically analyze the world around them. The combination of teacher mediation, peer collaboration, and exposure to multiple languages enriches learning, making it more meaningful and aligned with contemporary challenges.

Finally, the proposal to implement multilingual reading clubs emerges as a tangible strategy to integrate language education, literary literacy, and cultural inclusion. In the document issued by the Ministry of Education (Brazil, 2024), this connection between corporeality, language, and holistic education is already identified as a path to be pursued. By incorporating literary works in different languages, educators broaden horizons and encourage students to reflect critically on the narratives circulating worldwide. Thus, the club transcends its role as a mere reading space, becoming a genuine environment for the cultivation of critical and creative readers.

Science Clubs and ESG: Contributions to Critical and Socio-Environmental Learning

Science clubs have proven to be ideal spaces for integrating science, society, and education into a single initiative. They not only allow students to test hypotheses and develop explanations but also promote practices that encourage cooperation and community engagement. Tomio and Hermann (2019) highlight that the network of clubs in Latin America succeeded in constructing an identity shaped by cultural diversity and the exchange of educational experiences, which renders these spaces even more meaningful beyond the school environment. The collective dimension mentioned aligns with ESG principles, as it implies collaborative governance that values the environment and social issues.

Connecting science clubs to ESG principles provides a means of transforming the classroom into a space for civic experimentation. Santos and Garcia (2024) note that by presenting themselves on digital platforms, clubs have increased their visibility and established new ways to engage students. This enables interaction between scientific research methods and emerging environmental and social issues. Consequently, teacher mediation should assume a facilitative role, allowing students to lead projects addressing sustainability, equity, and social innovation. Before presenting a structured example, it is worth noting that experiences reported by Rosito and Lima (2020) emphasize dialogue as a methodology, which underpins reflective practice and strengthens bonds between students and teachers.

The following Table 2 synthesizes some possibilities for articulating science clubs with ESG principles, highlighting practical dimensions for the school environment. It is primarily based on the perspectives presented by Santos and Garcia (2024) and the proposals of Rosito and Lima (2020), which demonstrate how teacher mediation, combined with active methodologies, can promote critical and socio-environmental learning.

Table 2 – Science Clubs and ESG: Practical Dimensions of Pedagogical Integration

Dimension	Examples of Application in Science Clubs	Contributions to Critical and Socio-Environmental Learning
Environmental	Projects for monitoring water quality or school waste	Encourages environmental responsibility and investigative thinking
Social	Interdisciplinary workshops open to the local community	Promotes social dialogue and expands the reach of science in everyday life
Governance	Organization of clubs with participatory management among teachers and students	Encourages shared responsibility, autonomy, and democratic practices
Digital	Dissemination of results on collaborative platforms	Fosters scientific communication and transparency in the educational process

Source: Santos e Garcia (2024); Rosito e Lima (2020)

These dimensions, when combined, demonstrate how art clubs can function as spaces for collaborative creation and aesthetic reflection. According to Gomes, Silva, and Silva Júnior (2022), student clubs generally promote greater democracy and participation within the school environment. In the context of art, this contribution takes the form of experiences that enable students to create, interact, and perceive themselves as agents capable of transforming their own reality. In this process, the teacher's mediation is essential: not merely providing technical guidance, but continuously inviting experimentation, collaborative work, and the collective construction of knowledge.

Mathematics Clubs and Problem-Based Learning

Mathematics clubs, by their very nature, constitute dynamic environments for pedagogical experimentation. They offer students the opportunity to collaborate in problem-solving, fostering logical reasoning and creativity in the pursuit of solutions. According to Lopes, Borowsky, and Cunha (2024), such environments promote the construction of mathematical knowledge through continuous peer interactions, challenging the notion that mathematics is confined to solitary exercises focused solely on predefined techniques. In this context, teacher mediation transcends mere content delivery, evolving into a facilitation process wherein the instructor stimulates, questions, and encourages new avenues of reasoning.

Current literature demonstrates that mediated learning within mathematics clubs is enhanced when problem-solving is integrated with active methodologies. The educational-training experience that unfolds in these settings not only expands student autonomy but also enables teachers to reflect on their own practices (Silva; Côco, 2023). This dual formation cycle, in which students and teachers learn mutually, renders the club even more relevant as an innovative and democratic pedagogical tool.

It is pertinent to acknowledge, prior to presenting Table 3, that the systematization of strategies helps to make evident practices already well established in teacher mediation within mathematics clubs. This table was developed based on the contributions of Carvalho (2023), Silva and Côco (2023), and Lopes, Borowsky,

and Cunha (2024), who report diverse experiences regarding the implementation and evolving significance of clubs across various educational contexts.

Table 3 – Strategies for Teacher Mediation in Mathematics Clubs

Dimension	Teacher Actions	Effects on the Learning Process
Collaborative problem solving	Propose group challenges and mediate discussions about strategies	Stimulates cooperation and strengthens collective logical reasoning
Reflection on errors	Encourage the analysis of mistakes as part of the process	Develops cognitive resilience and expands solution repertoires
Integration with everyday life	Relate mathematical problems to real-life situations	Makes knowledge more applicable and meaningful
Appreciation of strategy diversity	Allow space for different solution approaches	Fosters creativity and broadens mathematical thinking

Source: Carvalho (2023), Silva e Côco (2023) e Lopes, Borowsky e Cunha (2024)

This table illustrates how mediation can be translated into practical actions that go beyond merely correcting exercises. It emphasizes the importance of a teacher who, instead of positioning themselves as the holder of the answer, acts as a companion to the student in the construction of their own reasoning.

Finally, it is important to highlight that, as Carvalho (2023) states, clubs also contribute to the training of future teachers by providing a valuable space for observation, experimentation, and reflection on various approaches to teaching mathematics. Their dual role, in both learning and training, makes clubs unique spaces within the school environment. More than simply solving problems, they generate opportunities for joint reflection, valuing different pathways of reasoning, and transforming mathematics into a space for encounter, dialogue, and innovation.

IV. Conclusion

This study aimed, in a comprehensive manner, to investigate how the combination of teacher mediation, active methodologies, and ESG principles within multidisciplinary clubs of reading, science, art, and mathematics fosters meaningful learning among participants. This objective was achieved, as the research demonstrated that these clubs serve as privileged environments for the co-construction of knowledge and promote teaching-learning practices aligned with critical and socio-environmental values. Regarding specific objectives, it was found that it was possible to: discuss theoretical foundations of teacher mediation and active methodologies; explore multidisciplinary clubs as integrative knowledge spaces; analyze the role of reading clubs in forming critical readers; examine the articulation between science clubs and ESG principles; reflect on creativity stimulation in art clubs; and evaluate the relevance of collaborative problem-solving in mathematics clubs.

The results point toward an integrative interpretation: multidisciplinary clubs, in their various forms, constitute spaces where teacher mediation becomes transformative, enabling learning to transcend the limits of the traditional classroom. The research indicated that when integrated with active methodologies, these clubs enhance student protagonism, foster interdisciplinarity, and contribute to building a critical and civic education. Lastly, the adoption of ESG practices emerged as a distinctive element by integrating education with themes of sustainability, ethics, and social responsibility, thereby broadening the scope of meaningful learning for both individuals and society.

The connection between multidisciplinary clubs and ESG principles—a topic still scarcely explored in national literature—is what renders this study original. This articulation among teacher mediation, active methodologies, and learning mediation not only extends the state of the art but also provides significant contributions to research and educational practice. Socially and educationally, the study points to clear directions for establishing learning environments that are more participatory, critical, and responsible.

Future research could benefit from empirical studies analyzing real experiences of school clubs in operation to identify challenges, potentialities, and effects on learning in diverse contexts. It would also be valuable to compare clubs established in public versus private schools or across different regions to observe how social, economic, and cultural factors influence their functioning.

Aligned with the real-world context framed by this study, multidisciplinary clubs have the potential to transform teachers' pedagogical practices by linking school content with contemporary societal problems and

challenges. By engaging with values that promote sustainability and social responsibility, these clubs can contribute to the formation of more conscious individuals capable of acting critically and creatively within their environments.

Finally, the reflections presented here are coherent with the introduction and objectives outlined, ensuring textual and argumentative unity. This study demonstrates that the combination of teacher mediation, active methodologies, and ESG principles with multidisciplinary clubs is not merely an innovative approach to school organization but a genuine opportunity to redefine the educational process to meet the needs of 21st-century education.

References

[1]. Emanuel, B., & Martins, B. (2022). Design & School: Designing Teaching-Learning Practices (1st Ed.). Ed. Dos Autores. ISBN 978-65-00-54161-8.

[2]. Borges, G. P. (2024). Literary Literacy: The Reading Club In The Formation Of The Young Reader (Master's Thesis, UNESP, Assis).

[3]. Brazil. (2024). Mathematical Literacy Club. Brasília: National Steering Committee Of The Adolescence School Program (CONAPEA)/MEC.

[4]. Brazil. (2024). Literary And Corporeality Literacy Club. Brasília: National Steering Committee Of The Adolescence School Program (CONAPEA)/MEC.

[5]. Campos, S. D., & Gomes, R. L. R. (2022). The Importance Of Cooperative Learning As An Educational Philosophy. Revista Atlante: Cuadernos De Educación Y Desarrollo, 14(8), 33–47. Https://Doi.Org/10.51896/Atlante/Ahzg4752.

[6]. Carvalho, H. C. De. (2023). Mathematics Clubs: Environments For Teacher Education. Coinspiração - Journal Of Mathematics Teachers, Mato Grosso, 6, E2023015. ISSN 2596-0172. Https://Doi.Org/10.61074/Coinspiracao.2596-0172.E2023015.

[7]. Cosson, R. (2021). Reading Circles And Literary Literacy (1st Ed., 5th Reprint). Contexto.

[8]. Cruz, V. (2024). Arts Club: PICASSO Intervention Project With Associated Art. Escola Básica De Santo Tirso De São Tomé De Negrelos.

[9]. Gomes, D. B. M., Silva, M. S. B., & Silva Júnior, P. J. C. (2022). Student Clubs. SEDUC. ISBN 978-65-89549-71-0 (E-Book).

[10]. Gomes, R. L. R., Et Al. (2024). The Relationship Between Active Methodologies As Teaching Strategies And Educators' Autonomy. IOSR Journal Of Business And Management (IOSR-JBM), 26(8) (Ser. 9), 74–84. E-ISSN: 2278-487X. Http://Doi.Org/10.9790/487X-2608097484.

[11]. Lopes, R. L. V. A., Borowsky, H. G., & Cunha, L. P. (2024). The Mathematics Club As A Space To Learn And Teach Mathematics. Revista Ibero-Americana De Estudos Em Educação, 19 (Special Issue 2), E024071. Https://Doi.Org/10.21723/Riaee.V19iesp.2.18559.

[12]. Nascimento, F. G. (2016). Art Club In School: Space For Creation And Formation (Master's Thesis). Universidade Federal Do Paraná, Curitiba.

[13]. Pereira, M. R., Et Al. (2021). Learning And Teaching English With Literature: Challenges And Possibilities (1st Ed.). Pragmatha. ISBN 978-65-86734-47-8.

[14]. Rocha, R. Da S. (2022). Active Methodologies Applied To Basic Education Context: Pedagogical Potential Strategies? Research, Society And Development, 11(13), E89111334794. ISSN 2525-3409. Https://Doi.Org/10.33448/Rsd-V11i13.34794.

[15]. Rodriguez, C. Del P. S., León-Lomelí, L. R., Gamboa-León, M. R. De Los M., & Zamora-Pedraza, C. (2021). STEM Scientific Training: Learning Experiences From Science Clubs. REAMEC - Amazon Network Of Science And Mathematics Education, 9(1), 1–20. Http://Doi.Org/10.26571/Reamec.V9i1.11192.

[16]. Rosito, B. A., & Lima, V. M. Do R. (2020). Conversations About Science Clubs. Edipucrs.

[17]. Santos, G. T. Da R., Ramos, R. L. F., & Querido, M. V. F. M. (2022). Active Teaching Methodologies In The Current Teaching Context. III Brazilian Online Congress Of Teaching, Research And Extension (ENSIPEX). ISBN 9786588884447.

[18]. Santos, R. B. T., & Garcia, R. N. (2024). Brazilian Science Clubs: A Scenario On Digital Platforms (2020–2023). REAMEC - Amazon Network Of Science And Mathematics Education, 12, E24007. Https://Doi.Org/10.26571/Reamec.V12.16518.

[19]. Silva, S. A. F. Da, & Côco, D. (Eds.). (2023). Mathematics Club: Didactic-Formative Experiences. Pedro & João Editores And Edifes. ISBN 978-65-265-0684-4. Https://Doi.Org/10.36524/9786526506851.

[20]. Teixeira, L. R. De A., & Dias, G. R. M. (2021). The Experience Of A State School In Rio De Janeiro: Science Club Implementation Guide As A Scientific Education Tool. Renbio - Biology Teaching Journal Of Sbenbio, 14(2), 727–747. E-ISSN 2763-8898. Https://Doi.Org/10.46667/Renbio.V14i2.623.

[21]. Tomio, D., & Hermann, A. P. (2019). Mapping Science Clubs In Latin America And Building The Website Of The International Network Of Science Clubs. Ensaio: Research In Science Education, 3(5), 1–23.