

## Language, Literature, and Decoloniality: Ways to Think Science Education

Since the 1990s, especially in the last three decades, studies have been produced from various theoretical perspectives, which point to the place of language in Science and Technology Education (STE) and its necessary questioning. An article by Nicolli, Oliveira, and Cassiani (2014) points to this growth concerning research, indicating the historical process of changes and expansion of the Languages and Teaching line of research throughout editions of the National Meeting of Research in Science Education (ENPEC)<sup>1</sup>, the most significant event in Latin America in this area of research. We can point out that a consensus among the studies is that language is not problematized in STE, being thought/used many times as a mere communication tool.

In this way, for almost two decades, we have been discussing the role of language and its functioning in our research groups<sup>2</sup>, from a careful look at the reading and writing processes in STE, its relations with Science, Technology, and Society from a perspective criticism. Such investigations showed the importance of discussing the language understandings represented in this area, the modes of textualization and reading, as well as the methodological possibilities of a work that considered the importance of language in education, as a whole, and in research in STE, in addition to non-formal spaces (Cassiani & Linsingen, 2020).

This trajectory provided an essential event in international educational cooperation: the coordination by UFSC of the Teacher Qualification and Portuguese Language Teaching Program in Timor-Leste. This program, funded by CAPES, annually sent 50 Brazilian teachers/cooperatives who acted as trainers for Timorese teachers. In this bilateral agreement with Timor-Leste, other knowledge was deepened by the groups, articulated to the effects of coloniality to which we are subjected in these processes arising from colonized societies. Thus, many paths were trodden between

<sup>1</sup> The ENPECs are organized by the Brazilian Association for Research in Science Education. For more information, visit the website: <http://www.abrapecnet.org.br/>

<sup>2</sup> These researches are linked to the following CNPq platform groups: Discursos da Ciência e da Tecnologia na Educação (UFSC), Literaciências (UFSC), and Laboratório de Estudos de Interculturalidade, Discursos e Decolonialidades na Educação (UFPR), coordinated by the organizers of this dossier. The organizers of this dossier are strongly linked to cooperation with Timor-Leste, from project coordination acting as a professor in cooperation, in addition to guiding and developing master and doctoral research.

Brazil and Timor-Leste, learning experiences and new perspectives, which today culminate in education against various forms of oppression in favor of social justice.<sup>3</sup>

The discourses produced in our society constitute networks of meanings that historically sediment sayings and establish truths. This complex process produces the sensation of language transparency. It contributes to some discourses having a more legitimate character than others in specific contexts. An example of what we refer to can be considered in STE when specific ways of narrating the sciences are historically selected. Some facts and concepts are chosen in schools and textbooks to the detriment of other types of knowledge and possible versions of histories and knowledge production processes. Many history, philosophy, and science education researchers have criticized simplistic teaching approaches, which erase the historical and human processes and constituents of science. These “hygienist” lines of science tend to extend to other aspects, in addition to epistemological issues internal to the production of knowledge, building silences regarding the participation of women and ethnic diversity in the production of knowledge itself, in addition to the construction of racism, homophobia, and patriarchy, to name a few injustices. Thus, partial understandings of the sciences reach our schools (and higher education training), where white European men supposedly produce much scientific knowledge.

In this sense, epistemologically, we dialogue with authors who have promoted criticisms of these Eurocentric views of science and pointed to the importance of decolonizing this knowledge, such as Paulo Freire, Frantz Fanon, Lélia Gonzalez, Abdias Nascimento, Sueli Carneiro, Silvia Cusicanqui, Anibal Quijano, Ramón Grosfoguel, Santiago Castro-Gomez, Catherine Walsh. Coloniality, materialized in patterns of domination - the coloniality of power, influences subjectivity and knowledge. For example, in literature, it is common to find the permanence of colonial reports about Indigenous groups, naturalizing the invasion of native lands and producing an idea of building modernity.

In STE, the absence of dialogues can mean the loss of critical and transformative perspectives, deepening several types of prejudice and oppression. On the contrary, the current moment demands that we think of an STE that dialogues with the world to produce plural, democratic, solidary discourses, that is, that contribute to

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<sup>3</sup> Currently, we have two international projects in progress, which are consequences of the researches: the Unesco Chair entitled “Language Policies for Multilingualism” and the UFSC Internationalization Notice Project (PRINT-CAPEs) entitled “Repositório Intercultural: proposições para as pedagogias decoloniais”<sup>1</sup>. Now, the two pieces of research involve partnerships with at least 11 countries (Argentina, Australia, China, Spain, United States, France, India, Mexico, Portugal, Russia, and Timor-Leste) and several Brazilian public universities, forming a research network theme related to human rights and a counter-hegemonic science and technology.

the promotion of new knowledge and new ways of thinking about relations with sciences and technologies. In this way, we have pointed to the importance of research that puts into operation other ways of narrating the sciences and technologies based on other texts and discourses, in which the sciences can be read as intrinsically linked to a series of political and ideological issues.

This dossier aims to promote and give visibility to some research that focuses on the interfaces between science, technology, and languages from a critical decolonial perspective, contributing to expanding academic debates on the subject. It is essential to highlight that the dossier brings different fronts to think about these relations between language, sciences, technologies, and education with a decolonial horizon. Thus, the various articles discuss the central theme, presenting different foci but weaving networks that seek to combat different forms of social injustice in search of resistance paths, whether based on writings and readings or in dialogue with local knowledge.

After this prologue, we present our dossier, emphasizing that many themes are involved and committed to the fight against social inequalities. As Guarani Chief Mbya Kerexu says, when criticizing the neoliberal understanding of development, we are deeply involved with these struggles. We emphasize that the idea of (dis)engagement spread and naturalized by neoliberalism has as common consequences the destruction of the Earth and the deepening of oppression and social inequalities, especially in territories invaded for centuries and which are deeply guided by colonialism, capitalism, and the patriarchy (Padilha, Antunes and Cassiani, 2020).

Intending to understand ourselves as hierarchical, the articles inspire us to talk about many important concepts for understanding this moment: critical interculturality in teacher training and Indigenous education, Good Living, decoloniality and anthropophagic thinking as a form of resistance in STE, the possibilities of problematizing language in initial teacher training and other adventures with literature and writing.

Therefore, along these intense paths, we have organized the articles presented here into two parts. The first part covers works related to literature and reading and their contributions to thinking about STE. The first three will deal more deeply with the issue of language and literature. In the second part, three of these articles are about Timor-Leste. Finally, we bring an article about decoloniality and the relationship with STE of the Kurâ-Bakairi ethnic group.

To begin the first part, we present the text entitled *Contribuições da literatura popular do Vale do Jequitinhonha para a Educação Ambiental e Educação em Ciências de base comunitária* [Contributions of popular literature from the Jequitinhonha Valley to community-based Environmental Education and Science Education], by Daniel Renaud Camargo and Celso Sánchez Pereira. The text takes us to the existing connections between a proposal for Community-Based Education in the municipality of Chapada do Norte (MG), in the Jequitinhonha Valley, and the work of the expert in popular culture, Gilmar Souza, originally from one of these communities. Through an investigation into the local reality from the perspective of Participant Research, an educational proposal contextualized to the territory was developed based on a dialogue between scientific and popular knowledge, between practical and theoretical knowledge. Thus, the authors point out the potential of popular literature for constructing a community-based educational perspective attentive to the specificities of the Minas Gerais backlands.

The author Bethania Medeiros Geremias presents us with the article *Cartas para quem ousa ensinar Ciências: correspondências e vivências na Formação Inicial de professores* [Letters for those who dare to teach Science: Correspondence and experiences in Initial Teacher Training]. The author sought to understand the discursive objects (referents) produced in the dialogues between students from two universities who attended the disciplines of Supervised Internship in Science Teaching and Methodology for Teaching Natural Sciences. Thus, she pointed to possibilities of writing in the initial training of teachers, emphasizing that the spaces and moments of dialogue can be expanded, punctuating reflections about the university teaching action and its contributions to the pedagogical practices and the production of knowledge in science education.

Patrícia Montanari Giraldi and Cecília Galvão dialogue with Saramago's wonderful book, *The Cave*. In the text *Educação científica e tecnológica e literatura: uma leitura de A Caverna de José Saramago* [Scientific and technological education and literature: a reading of José Saramago's *The Cave*], the

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in its complexity, as well as the human condition itself. Based on the analyzed novel, they question the supposed generation of knowledge/ways of life that carry a pretense of objectivity, truth, and westernized universality. Literature is thought of as a power to promote displacements in the position of subject readers as far as, by analyzing and reflecting on what a literary text brings in its margins, it is possible to produce other interpretations about the socio-cultural contexts themselves. Thus, they critique the idea of linearity of scientific and technological development linked to discussions involving coloniality established in the contemporary world.

In a second moment, in a convergent way, we aim at co-constructions and co-learning with Timor-Leste, the newest independent country in Southeast Asia and the one with the most poverty. As we have already said, a South-South international educational cooperation process between Brazil and Timor brought these approaches, exchanges, and dialogues of knowledge, learning, affection, and solidarity, in more than ten years of coexistence. They are intercultural and decolonial dialogues that teach us from other perspectives.

Thus, in *Experiências de vida, saberes e práticas da tradição no observatório etnoformador em Timor-Leste* [Experiences of life, knowledge, and practices of tradition in the ethnoforming observatory in Timor-Leste], Rosiete Costa de Sousa, Cláudio Orlando Costa do Nascimento, and Suzani Cassiani analyze knowledge produced by teachers who train Basic Education in a training-action-research device – the ethnoforming observatory – to provoke a reflection on how traditional knowledge and practices can contribute to different readings and interpretations from the perspective of Timorese education. In this sense, they bring analyses showing the contextual nature of knowledge, the importance, and the scope of interpretations and understandings of social and cultural subjects.

In the text *Interculturalidade crítica na formação de professoras/es de Ciências da Natureza: um legado da cooperação brasileira em Timor-Leste* [Critical interculturality in the training of Natural Sciences teachers: a legacy of Brazilian cooperation in Timor-Leste], Patrícia Barbosa Pereira presents us with a theoretical-empirical analysis of an experience within the scope of Brazilian educational cooperation in Timor-Leste, in which she problematizes formations of a welfarist nature, little dialogic and without focus on the intersubjectivities of the participants. Thus, she raises questions that point to the importance of recognizing cultural diversity in the classroom and the importance of critical interculturality and decolonial training

practices associated with pedagogical practices that extend to various contexts, in addition to those provided by cooperation south-south.

Alessandro Tomaz Barbosa and Vicente Paulino present us with the article *O pensamento decolonial antropofágico na Educação em Ciências* [The anthropophagic decolonial thinking in Science Education], in which they start from the idea that in Timor-Leste, the end of Portuguese colonization in 1975, and the end of the Indonesian invasion, 24 years later, did not denote the end of coloniality. In this context, they seek to think about Science Education based on the analysis of anthropophagic decolonial thinking in Biology teaching. To this end, they held reading circles with Biology teachers from General Secondary Education in the municipality of Dili, seeking to problematize the Biology students' manuals and build decolonial horizons, contributing to the transformation of these moments into a critical intercultural space, also becoming paths for the construction of an anthropophagic decolonial thought, from the global south.

To close this second section of texts, we have the Brazilian indigenous presence with the text by the authors Yasmin Lima de Jesus and Edinéia Tavares Lopes, entitled *Ensino de Ciências, Interculturalidade e Decolonialidade: possibilidades e desafios a partir da pesca com o timbó* [Science Teaching, Interculturality, and Decoloniality: Possibilities and challenges from fishing with fish poison], which teaches us on how fishing with fish poison - a vine used by some indigenous groups, among them the Kurâ-Bakairi, constitutes a theme for teaching Natural Sciences in an indigenous school, based on the subjects' statements about pedagogical practices in this school reality and the light of critical interculturality and decoloniality. Thus, they problematize how this fishing can create an interstitial space for intercultural dialogue in Science teaching that contributes to breaking/overcoming the coloniality of knowledge/power in this school space.

We point out that in the path traced in this dossier, we can glimpse different possibilities of interlocution between Language, literature, and decoloniality as ways to think about science education. The articles presented here tell us about reading and interpretive movements that mobilize knowledge and subjects around issues that are important to Education in Science and Technology and that have a democratic education as their horizon, based on the dialogue of knowledge in the search for plural theoretical and methodological perspectives and that contribute to the construction of a fairer world in all senses.

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## References

Cassiani, S. & I. Von Linsingen, (Orgs) *Resistir, (Re)Existir e (Re)inventar a Educação Científica e Tecnológica*. Florianópolis, Núcleo de Publicações do Centro de Ciências da Educação, UFSC. Acessado em Dezembro de 2020: [https://nup.ced.ufsc.br/files/2019/08/Ebook-PPGECT\\_Suzani-com-401-p%C3%A1ginas.pdf](https://nup.ced.ufsc.br/files/2019/08/Ebook-PPGECT_Suzani-com-401-p%C3%A1ginas.pdf)

Nicolli, A. A.; Oliveira, O. B.; Cassiani, S. A linguagem na educação em ciências: um estudo a partir dos ENPECs. In: Flores, C. e Cassiani, S. *Tendências Contemporâneas em Educação Matemática e Científica: sobre linguagens e práticas culturais*. Campinas, Mercado de Letras. 2014. 287 p.

Padilha S. R; Antunes, E.; Cassiani, S. Guaranização da educação em ciências: caminhos para o bem viver no envolvimento com a comunidade do Morro dos Cavalos. REVERSEA [Internet]. 29º de outubro de 2020 [citado 9º de dezembro de 2020];7(Especial):1-14. Disponível em: <https://www.seer.ufs.br/index.php/reversea/article/view/1439>

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