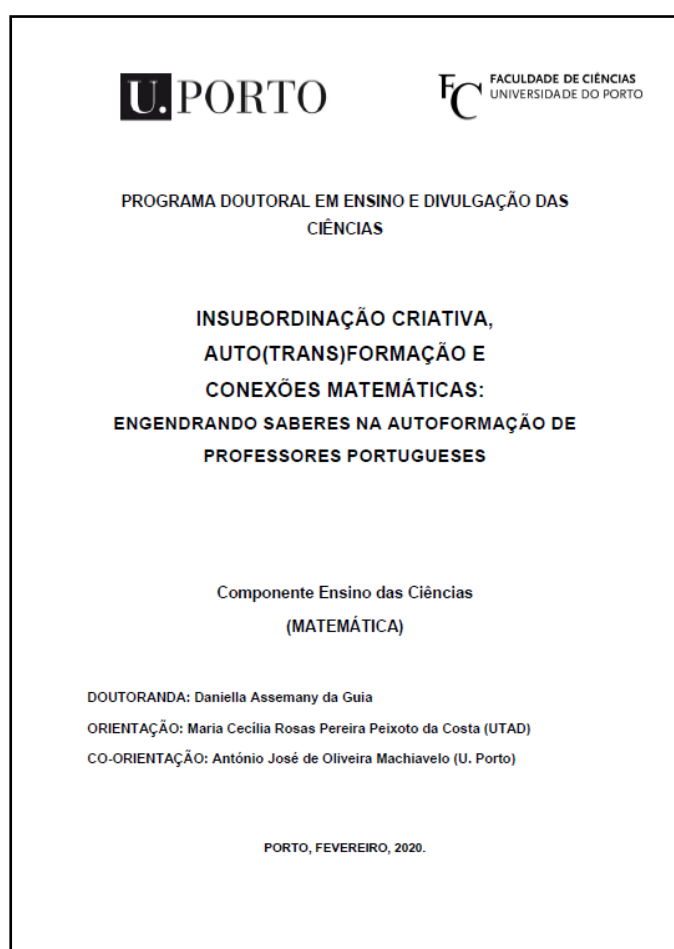




Creative Insubordination, Self(trans)formation and Mathematical Connections: engendering knowledge in teacher self-training

Insubordinação Criativa, Auto(trans)formação e Conexões Matemáticas: engendrando saberes na autoformação de professores

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Doctoral thesis review

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The thesis entitled "Creative Insubordination, Self(trans)formation, and Mathematical Connections: engendering knowledge in teacher self-training" was defended in February 2020 as the result of research for Daniella Assemany da Guia's doctoral degree. This research involved mathematics teachers in Portugal, as the author attended her doctorate at the Faculty of Sciences of the University of Porto. The study adopted a reflective and dialogical perspective, in a manner and context distinct from the conventional.

Conceived as "dialogical paths" and through a writing style that transitions between narrative and traditional formats, the thesis presents itself in a hybrid form, differing from the traditional rules normally imposed by academia for scientific texts. What we consider not as a preform insubordination in the context of research, but rather, above all, a requirement inherent to the object of study to which the author dedicates herself (Wagner et al., 2023).

The beginning of the thesis is marked by Path 0, titled "Better than a Introduction, I Prefer to Introduce Myself", in which Daniella describes to the reader, in a narrative tone, the "how" and "why" she chose to use the hybrid format to present the research. Subsequently, the other paths follow: Path 1 - "By Way of Introduction"; Path 2 - "Dialogical Path of Theoretical Foundation"; Path 3 - "The Design of this Research"; Path 4 - " Did the Formation Have All the Time in the World?"; Path 5 - "Results"; Path 6 - "Discussion of the Results"; Path 7 - "No Intent to Wind up"; Path 8 - "A Letter-Invitation to Insubordination"; Bibliographical References and Annexes.

In Path 0, "Better than a Introduction, I Prefer to Introduce Myself", the author describes a methodological proposal for teaching (PME), which consists of a curriculum reorganization developed and implemented by her in a federal school in Rio de Janeiro over eight consecutive years, prior to conducting the thesis research. This proposal aimed to use mathematical connections based on vectors as a method of teaching mathematics in High School. In order to evaluate the effectiveness and improve the developed PME, Daniella idealized a continuing education workshop for Portuguese teachers teaching at the same level of education. However, during the course - also used as field research for her thesis - the author realized that the data, collected through case study instruments, led her to answers to questions she had not asked, leading her to reconfigure the central question of the investigation, focusing on teacher training.

Path 1, "By Way of Introduction", presents the central research question: What contributions can a continuing education course have for teachers in basic and secondary education in Portugal, in order to act on their self-formation and transform their teaching practices? To try to answer it, Daniella submitted three specific questions: Q1: How do mathematics teachers appropriate the content connection proposals presented from the concept of vectors?; Q2: How is teacher self(trans)formation perceived?; Q3: What practices of a continuing education course for mathematics teachers can favor their creative insubordination actions (when necessary)?

In path 2, "Dialogical Path of Theoretical Foundation", one can observe, in an articulated way, the theories that support the study. Thus, aiming to establish a logic for the theoretical support of the research, various paths were explored, which, in the end, dialogued with each other, interrelating to constitute a coherent whole. From the communities of practice raised by Lave and Wenger, through Galvani's self-formation and Henz's self(trans)formation, to reach the "*Nós da Trama*", a theory conceptualized by the author about mathematical connections, which collaborated in filling gaps left by predecessor authors, it was a long and enriching journey.

Furthermore, interestingly, Daniella also highlights creative insubordination as an integral element of this journey. However, it is important to emphasize that this mention does not suggest, or at least should not suggest, this concept as a theoretical framework, since it does not propose to be that in fact (Lopes & Grando, 2022; 2023), but rather a tool to understand and analyze the subsequent postures narrated by the author.

In path 3, "The Design of this Research", Daniella describes the methodology of the case study, highlighting the methods used for data collection, such as semi-structured interviews, focused discussion groups, diagnostic questionnaires, among others. To analyze the data, the content analysis methodology was employed, which, as mentioned by the author, underwent a creatively insubordinate treatment, since the recording units were not fixed throughout the research.

In path 4, "Did the Formation Have All the Time in the World?", Daniella highlights for the reader the tension caused by the factor of time. This is revealed as an obstacle for both the teachers, who expressed concern about the deadlines set in the course schedule and in their teaching activities, and for Daniella herself, who expressed apprehension believing that the 50 hours of formation would not be enough to conduct the field research. This was accentuated especially due to the initial reluctance of the teachers to recognize and embrace the need to break with the established curricular programs, in order to modify them through the implementation of mathematical connections based on vectors.

From this point on, the author explains that she made changes to the course planning with the aim of providing autonomy and greater engagement for collaborative work. It was made clear to the teachers that nothing would be imposed on them and that they could, if they wished, explore the PME only theoretically, without the obligation to apply it in their pedagogical practice. This made the teachers more peaceful, on this way they could feel more comfortable exercising their agency and teaching autonomy.

Path 5, "Results", and Route 6, "Discussion of Results", address, respectively, the research findings and a discussion about them. Of the various results indicated in the thesis, Daniella points out the richness of pathways in solving a mathematical task as the core of the learning process. These pathways are described as central, creative, motivating, and significant. In the context of teacher training, the author highlights attributes such as autonomy, collaborative work, creativity, self-awareness, and creative acts of insubordination.

It is noteworthy that the teachers, even those who self-classified as "formatted" or "conditioned," began to make mathematical connections intentionally, as observed by the "*Nós da Trama*", abandoning the old labels, modifying their attitudes, and recreating their teaching identity. In this phase, where many teachers were in the process of self-transformation, the issue of time ceased to be an obstacle. Teachers began to emphasize vehemently their learning from the training course and during the period when they decided to implement the tasks developed with their classes. The lack of time to fulfill the programs ceased to be the center of the dialogue, and reflection on priorities in teaching practice was unveiled as one of the self-transformations in the teaching of these teachers.

In path 7, "No Intent to Wind up", Daniella prompts the reader with a reflection on time. Upon concluding the training (and the research), considering that the teachers underwent a process of self-transformation and self-training, the ideas explored in the course continued to echo and, in a way, to persevere and (re)create themselves, leaving the impression that the professional and personal development of the teachers and herself was not concluded. Thus, the author uses the idea of connections also to engender the concepts revealed in the investigation, showing that "The Formation Had All the Time in the World!"

In "A Letter-Invitation to Insubordination", the eighth and final route of the thesis, the reader is invited to adopt an active stance, embracing a conception of creative insubordinate actions in different areas of their life, such as at home, at work, in traffic, among others. This invitation represents a way of considering these acts beyond the field of Mathematics Education.

In our point of view, throughout the text, there is evidence of a gradual transformation in the posture of the participating teachers. At a certain point, they understood that breaking with the prescribed curriculum, exploring both their own creative potential and that of the students, was not just a mere rule-breaking but rather an intentional rupture, with the purpose of putting the students at the center of the educational process. A transgression aimed at supporting the students and providing them with broader learning through the complete experience of the situation. In other words, we witness a mixture of teaching actions that, when observed together, highlight creative insubordinate practices (D'Ambrosio, 2015).

Particularly in the field of teacher training, when presenting and discussing their results, Daniella emphasizes the emergence of unique characteristics in educators, such as autonomy, collaboration, creativity, self-awareness, among others. We observe an inclination towards the new, the different, and dissatisfaction with what was imposed on them, with these characteristics being awakened by acts of creative insubordination (Garnica, 2014). We interpret such attitudes as a way for teachers to exercise their right to question, reflect, and seek solutions, aiming at their continuous development, as well as the well-being of the students (D'Ambrosio & Lopes, 2015a).

In this way, we consider that the unfolding of the training course, conceived by Daniella, but adapted and implemented collaboratively by the researcher and participating teachers, presents us with several possibilities for dialogues with the concept of Creative

Insubordination (D'Ambrosio & Lopes, 2015b). This includes questioning rigid methodological positions, as well as the role of the researcher as the sole holder of knowledge, in addition to the desire to provide meaningful mathematical education to students, among other situations for which there are no pre-established answers.

Furthermore, by considering the relativity of time in teacher training and the change in the stance of teachers, with an emphasis on the perception that both the self-training of teachers and that of the author herself remained even after the course ended, we as readers can draw a parallel with a relevant hypothesis presented by Vicente Garnica (2014): a creative insubordinate is always in a process of transformation, never reaching a definitive state. This underscores the need to remain vigilant and questioning, including in relation to the subversive nature of their acts of insubordination.

In the face of everything previously exposed here, we believe that Daniella's thesis proves to be highly relevant and significant, offering a valuable contribution to the field of Mathematics Education. The research data, combined with the theoretical framework used, provide a deep and enriching discussion for teachers and researchers seeking to enhance their work, particularly by breaking free from imposed constraints.

Through the dialogical pathways presented in the thesis, designed to transform into sensitive-exploratory pathways, the reader can recognize themselves, including as an unfinished and self(trans)formation process being, capable of adopting practices that incorporate new perspectives and considering multiple views on what it means to do mathematics (D'Ambrosio & Lopes, 2015a), much like the characters in the narrative.

We propose the reading of the thesis to all those interested in understanding mathematical connections, perceiving how some acts of creative insubordination can manifest in practice, observing the processes of teacher (trans)formation, and especially to those who, like Daniella, believe that reflection in action denotes our condition as unfinished beings. Therefore, there are no barriers that the ethics of social justice, imbued with the intent of promoting the well-being of others, cannot creatively overcome and subsequently resignify.

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References

- D'Ambrosio, B. (2015). A subversão responsável na constituição do educador matemático. *Anais do 16º. Encontro Colombiano de Matemática Educativa*. Bogotá, Colômbia.

- D'Ambrosio, B., & Lopes, C. (2015a). Práticas pedagógicas insubordinadas criativamente. In: B. D'Ambrosio & C. E. Lopes (Orgs.), *Ousadia criativa nas práticas de educadores matemáticos* (pp. 13-20). Campinas: Mercado de Letras.
- D'Ambrosio, B., & Lopes, C. (2015b). Insubordinação Criativa: um convite à reinvenção do educador matemático. *Bolema*, 29(51), 1-17.
- Garnica, V. Insubordinar-se criativamente: inícios, continuidades e (re)inícios. In: B. D'Ambrosio & C. Lopes (Orgs.), *Trajetórias de educadoras matemáticas* (pp. 17-22). Campinas: Mercado de Letras.
- Lopes, C., & Grando, R. (2022). *Subversão Responsável e Formação de Professores*. Campinas, SP: Mercado de Letras.
- Lopes, C., & Grando, R. (2023). *Práticas Formativas em Educação Matemática em Diálogos com a Insubordinação Criativa*. Campinas, SP: Mercado de Letras.
- Wagner, G., Silva, C. M. R. B., Lubavem, E., Silva, G. S. , Jacomelli-Alves, K. Z., Grando, R. C., & Buehring, R. S. (2023). Articulações entre a pesquisa narrativa (auto)biográfica e as insubordinações criativas: um feliz encontro. *RECEM – Revista Catarinense de Educação Matemática*, 2 (1), 1-22.