

Continuing Training of MST Teachers: a theoretical re-reading of the Study Situation from Henry A. Giroux

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ABSTRACT. Discussions concerning the teaching of sciences in the national context have assisted in the initial and continuing teacher training, as a contribution to the quality of teaching and learning. In this sense, this work explains a re-reading of the Study Situation (SE) proposal for the training of MST teachers, in dialogue with the critical pedagogy of Henry A. Giroux. The research, the result of a dissertation, was developed in the Integrated Center Florestan Fernandes of the Settlement Terra a Vista, located in Arataca/Bahia, constituting of the following instruments: a) Pedagogical Political Project (PPP); b) Questionnaires conducted with twelve teachers of the school; c) Interviews with the coordinator, the school director and three teachers participating in the course. Data from all instruments were analyzed in the light of the Discursive Textual Analysis (ATD). Through the stages that have been developed, we can perceive approximations from the theoretician adopted with the SE and the formation of teachers of the MST, as well as relations with the critical pedagogy and with the pedagogy of the MST.

Keywords: Continuing Training, MST, Study Situation, Science Teaching.

Formación continua de profesores del MST: una relectura teórica de la situación de estudio a partir de Henry A. Giroux

RESUMEN. Discusiones referentes a la enseñanza de las ciencias en el contexto nacional han ayudado en la formación inicial y continuada de profesores, como contribución a la calidad de la enseñanza y el aprendizaje. En este sentido, este trabajo explicita una relectura de la propuesta de Situación de Estudio (SE) para la formación de profesores del MST, dialogando con la pedagogía crítica de Henry A. Giroux. La investigación, fruto de una tesis de maestría, fue desarrollada en el Centro Integrado Florestan Fernandes en el Asentamiento *Terra a Vista*, ubicada en Arataca/Bahía, constituyéndose de los siguientes instrumentos: a) Proyecto Político Pedagógico (PPP); b) Cuestionarios realizados con 12 profesores de la escuela; c) Encuestas realizadas con la coordinadora, el director de la escuela y tres profesores participantes del curso. Los datos provenientes de todos los instrumentos se analizaron a la luz del análisis textual discursivo (ATD). Por medio de las etapas que fueron desarrolladas podemos percibir las aproximaciones de la SE y la formación de profesores del MST, así como su relación con la pedagogía crítica y con la pedagogía del MST.

Palabras clave: Formación Continua, MST, Situación de Estudio, Enseñanza de las Ciencias.

Formação Continuada de professores do MST: uma releitura teórica da Situação de Estudo a partir de Henry A. Giroux

RESUMO. Discussões referentes ao ensino de Ciências no contexto nacional têm auxiliado na formação inicial e continuada de professores, como contribuição para a qualidade do ensino e aprendizagem. Nesse sentido, este trabalho explicita uma releitura da proposta de Situação de Estudo (SE) para a formação de professores do MST, dialogando com a pedagogia crítica de Henry A. Giroux. A pesquisa, fruto de uma dissertação, foi desenvolvida no Centro Integrado Florestan Fernandes do Assentamento Terra à Vista, localizada em Arataca/Bahia, constituindo-se dos seguintes instrumentos: a) Projeto Político Pedagógico (PPP); b) Questionários realizados com doze professores da escola; c) Entrevistas realizadas com a coordenadora, o diretor da escola e três professores participantes do curso. Os dados provenientes de todos os instrumentos foram analisados à luz da Análise Textual Discursiva (ATD). Por meio das etapas que foram desenvolvidas, podemos perceber aproximações a partir do teórico adotado com a SE e a formação de professores do MST, bem como relações com a pedagogia crítica e com a pedagogia do MST.

Palavras-chave: Formação Continuada, MST, Situação de Estudo, Ensino de Ciências.

Introduction

The Study Situation (SE) originated in the Interdepartmental Research Group on Education in Sciences (GIPEC) of the Northwestern Regional University of the State of Rio Grande do Sul (UNIJUÍ) in the late 1990s and presents itself as a curricular innovation in which activities are organized from a situation of high experience of teachers and students (Maldaner & Zanon, 2004; Pansera-de-Araújo, Auth & Maldaner, 2007; Frison et al., 2007; Sangiogo et al., 2013; Massena, 2015; Vieira et al., 2016).

From the proposal of GIPEC, several SEs since 2012, have been developed in a research group of a university of Southern Bahia. This group has sought to develop the SE proposal with local and differentiated specificities from that thought by Gipec/Unijuí. As an example, we can mention the discussion of content from themes in the context of the school community. The group has developed training processes, involving chemistry graduates, university teachers and Basic Education professors. Among these formations, one finds a work developed in a school of Settlement.

It should be noted that the debates on Rural Education have expanded on the national scene, in addition to the increasing

number of surveys in the area. However, with regard to the Field Science and Education Teaching, the production of works is still insipid (Halmenschlager et al., 2017; Halmenschlager et al., 2018; Silva et al, 2019), needing a look at the theme of Rural Education.

Thus, the schools of the Settlements have their proposal based on the MST notebooks, and seek the integration between... "theory and practice through pedagogical practices that involve, in addition to pedagogical issues, the work as an educational principle and the problems of the day to day in the Settlements" (Santos, 2013, p. 85). Another landmark document, on which the systems of education of the settlements are based, are the Operational Guidelines for Basic Education in Schools of the Field that, in Art. 13, subsection II, point out that the pedagogical proposals of the educational systems must also value the access to scientific and technological advancement (Brazil, 2002).

In the face of this, educators and educators of the MST, embedded with the education of the schools of the Movement, must "... to assume as subjects of a permanent reflection on the practices of the MST, drawing from them lessons of pedagogy that allow to make (and transform) in each school, and in its own

way, the educational environment, which reproduces and produces the Movement as a subject educator" (MST, 2001, p. 24). In this context, the continuing formation of these educators must be guided by the pedagogy of the Movement. In this perspective, the MST Notebook No. 8 emphasizes that the continuing formation of teachers exceeds the school formation, it is a human formation with political and ideological dimensions that is part of the experiences of the subjects in formation (MST, 2005).

It should be noted that the SE has as its theoretical basis the studies of Historical-Cultural Psychology, whose main representative is Vygotsky. However, within our group, by aggregating curriculum discussions and teacher training, we have sought to present theoretical relationships with critical curriculum authors such as Michael W. Apple and Henry A. Giroux, prioritizing dialogue with the critical pedagogy of the latest theorist cited. In this way, the objective of this study is to present a re-reading of the SE for the training of MST teachers, in dialogue with the critical pedagogy of Henry A. Giroux.

The specificities of MST pedagogy: the teaching of Science in the Settlement Schools

The issue of education in the MST has arisen since its officialization at the 1st National Meeting of Landless Workers in 1984 and is ratified in 1985 at the First National Congress held in Curitiba. At these events, the MST places in its political agenda the struggle for schools and that, therefore, these institutions should be part of the families of the landless. In this sense, the Movementⁱ is concerned with forming "new" subjects, who will not be the same peasants as before, but social subjects who bring to themselves the social struggle, the class struggle and a project of the future (Caldart, 2001).

The MST aims to constitute an education focused on the needs and reality of the field, and to this end education is not just a school. In this way, educators and educators need to appropriate different types of knowledge, the reality being the basis for this formation (MST, 2005). In this sense, MST expects educators to build, in the collective, teaching methods that can guarantee the learning and production of knowledge. Thus, when the MST documents (2005) refer to teaching methodologies, they highlight the generating themes, generating objects and contents that are linked to the human dimension.

This means, according to Caldart (2001), that the school, the subject and the

context in which they are inserted are linked to a project of development of the human being in all its dimensions, therefore, these aspects must be part of the teacher's planning. In this context, teaching should start from practice with the aim of enabling the educating of the scientific knowledge of reality. So, "... it is through teaching that students come into contact with the knowledge already accumulated by humanity in the various fields of human life" (MST, 2005, p. 43-44). In view of this, the content must be taught from the concrete situations of the Settlement and even from those issues that the students present.

It is from reality and practical experience that the curriculum in MST schools is developed. The more practical experience the student has, the easier he can learn the theory. Thus, the curriculum revolves around practical experiences, the organization and division of tasks, decision-making, the solving of everyday problems, as well as the content taught in the classroom that will assist in understanding the near reality and distant reality (MST, 1992).

The Movement's Education Book No. 01 explains what educators need to know within the area of Sciences, among which we can point out: a) understanding that everything is related to life and nature,

to agricultural production and livestock; b) to perceive its place in the world, in nature and in society as a subject of transformation and balance; c) developing scientific curiosity and the ability to investigate reality through observation - experimentation - analysis of the transformations of what happens in nature and society, in the relationships between the things of the world (animal, mineral, plant and social) (MST, 1992).

Finally, it should be noted that the selection and choice of content should not be done unexpectedly. Broad strategies are needed to cover the association between theory and practice. The more complex and heterogeneous reality is, the more concepts will involve and the richer the construction of thought and the intellectual skills of students (Caldart, 2005; MST, 2014). This is not a reproduction of knowledge and definitions of ready concepts, characteristic of the traditional method, but of the construction of knowledge between educators and educators.

Some assumptions of the SE proposal

The SE is a proposal for curricular reconfiguration that has as its main theoretical contribution the Historical-Cultural Psychology founded by Vygotsky (Sangiogo et al., 2013; Massena, 2015). According to Halmenschlager (2014), it is

a teaching proposal that presents itself as a curricular alternative, prioritizing science content in an approach that transcends linearity and fragmentation.

The SE began to be conceived and developed in the late 1990s and early 2000s, within the Interdepartmental Research Group on Education in Science (GIPEC) of the Northwestern Regional University of the State of Rio Grande do Sul (UNIJUÍ) as a proposal for curricular reconfiguration that considers the experiences of students, promoting and enhancing social relations (Maldaner & Zanon, 2004; Auth, 2002; Frison et al., 2007; Sangiogo et al., 2013; Halmenschlager, 2014).

According to Maldaner and Zanon (2004), the SE proposal is based on the assumptions of the historical-cultural conception of processes related to the knowledge and development of essentially human psychic processes. Thus, according to these authors, from the relationship between the basic school and the university, with the participation of teachers, graduate students, university professor, considerable changes have taken place both in the conception and in the curricular practices of formation in natural sciences.

In this perspective, the SE builds on the relationship between school and

university and its elaboration is given in the triad: university teachers, basic school teachers and graduates from different areas of knowledge (Biology, Physics and Chemistry). In this way, a dialogue between the school and the university can be provided in the construction of an open curriculum (Massena, Brito, 2015).

Auth (2002) proposes for the development of the SE in the classroom three stages: problematization; first preparation; and the function of conceptual elaboration and understanding. Problematization is the first stage in which students' first ideas on a particular problem will be sought and explained. At that moment, the spontaneous concepts of students are problematized from the introduction of scientific concepts (Gehlen, Maldaner & Delizoicov, 2012).

Regarding the First Elaboration, Gehlen, Maldaner and Delizoicov (2012) state that this is the time when activities involving in-depth texts on the circumstances that were presented in the first stage will be developed. According to the authors, this is the first contact of students with the scientific concept beyond the word and this happens through the guidance of the teacher in different activities.

As for the Function of conceptual elaboration and understanding, Gehlen,

Maldaner and Delizoicov (2012) consider it the most formal moment of concepts. For the authors already mentioned, at this moment, the scientific explanations are presented and explored with the students, who begin to identify words representative of the concept and reconcile with the first words of the first and second stages. Therefore, according to these authors, scientific texts are worked so that students identify words that are representative of the concepts with which they have contacted in previous moments. The same authors point out that this is the moment when new meanings appear, students begin to master new languages and appropriate the true concept. According to the authors, this concept is the in-depth understanding of subjects on a specific study. This does not mean that the spontaneous concepts of educators will be left aside, but it will achieve a new interpretation through the transition between their initial knowledge and understanding of scientific concepts.

Also in this stage, according to Gehlen, Delizoicov and Maldaner (2012), the initial questions presented in the first stage (Problematization) are resumed, with the aim of obtaining the conceptual understanding of them and are exposed also other situations beyond those presented.

In this way, in order for these steps to be developed in the classroom, it is necessary to plan each step. Pansera-de-Araújo, Auth and Maldaner (2007) present basic guidelines for the collective construction of an SE, involving three categories of subjects and four stages. According to the authors, teachers in basic education need to be part of this construction, together with university teachers and graduates. The four stages involve: (a) collective planning within the research group; b) the development of the SE with science graduates; c) the development of the SE with teachers of basic education in the areas of Biology, Physics and Chemistry; and, the last step, d) the reworking of the material with the three categories of subjects already presented above. Thus, according to Massena (2015), the students and teachers who are involved are responsible agents in the construction of the curriculum, which allows the questioning of factors related to the role of the teacher, knowledge and the school environment.

A rethinking of the SE: the development of the SE from the choice of subjects of the school context

Massena (2015) presents some characteristics of the Research Group in Curriculum and Teacher Training in Science Teaching (GPecFEC) of the State

University of Santa Cruz (UESC), located in the South of Bahia, coordinated by a professor of this institution and composed of master's and doctoral students, chemistry graduates, scholarships of Scientific Initiation (CI), high school students, teacher trainers and basic education teachers. The same author says that, within this group, work has been produced related to SE, examples of articles, dissertations and Course Completion Work (TCC)ⁱⁱ.

According to the author, the group has specific characteristics when developing SEs, unlike the initial proposal of Gipec-Unijuí, because the first group starts from a theme of the school context as stated Vieira (2017, p. 88)

... in the context of the group, if the concepts worked in the SE are contextualized from a concrete situation of everyday life in order to produce meaning, then the SE cannot be related to any theme but to a theme that presents a social relevance for students and the school community.

In this perspective, since 2012/2013, the members of the research group have already developed some SEs that value the school context. In this text we will highlight the work elaborated and developed within the GPeCFEC related to continuing teacher training. Among them

are the works of Santos et al. (2015) and Vieira et al. (2016).

The SE, elaborated and developed in 2016, was the context of Rural Education. The authors structured and developed a training process based on the SE, taking into account the teaching of sciences in the field. From a survey of the local context and the audience that would be attended to, the authors and members of the research group identified a problem around waste management in a city in Bahia. From this problem, some activities of the SE "Generation and Management of Solid Waste from Human Activities," elaborated and developed by Gipec/Unijuí, in 2003, were adapted for the course.

The SE developed in 2017 consisted in the development of a continuing training course for teachers working in the Education of Young People and Adults (EJA) of a public school in Bahia. The course was structured considering the three stages of the SE: problematization, first elaboration and function of conceptual elaboration and understanding (Gehlen, Maldaner & Delizoicov, 2012), it being possible for teachers participating in the course to draw up an SE to develop with their students. For these activities, the choice of subject was discussed and selected by the teachers, who considered

the context of the school and the students, defining the theme Ecology.

The critical pedagogy of Henry A. Giroux

Henry A. Giroux stood out as one of the leading figures in critical pedagogy in the late 1980s. His numerous works discuss aspects that run counter to traditional pedagogy and, influenced by Paulo Freire, Antônio Gramsci and the Marxists of the Frankfurt School, propose a transformative education.

Moreira and Silva (2002) point out that Henry A. Giroux was part of the movement that intended to reconcile the field of curriculum, because, together with several specialists in curriculum, he rejected the dominant curricular tendency because it was apolitical, uncritical instrumental and atheoretical. To this end, Henry A. Giroux began to develop a series of studies, proposing a radical pedagogy as a form of cultural policy, starting from his criticism of the traditional educational model, regaining the nature of pedagogical activity as a political, critical and transformative activity (Giroux, 1987).

According to Giroux (1997), radical pedagogy is born as part of the New Sociology of Education (NSEⁱⁱⁱ), with the determination to unravel the domination and oppression that are produced in the

most varied mechanisms of schooling. The same author states that traditional educators, for the most part, do not question the political nature of public education, reproducing and legitimizing capitalist ideologies. Thus, according to the author mentioned, for traditionalists, the school is merely a place of instruction, that is, a space for transmitting knowledge.

Paradoxically to this view, in radical pedagogy, the school is considered as a public sphere and not as an institution serving the interests of a single class (Giroux, 1987). The concept of the public sphere, according to Giroux (1987, p. 8), is understood as "that which maintains an indissoluble association with questions of power and democracy." That is, a school capable of offering an expressive number of pedagogical spaces for the democratic social movement to be incorporated by subordinate groups and resistance groups in order to generate forms of emancipation of knowledge, as well as of social relations.

According to the author, the school as a public sphere allows subordinate groups to develop their own intellectuals. In this way, we emphasize, from Giroux (1987), that the intellectual term is adopted by him to name the teachers, because it is thus possible to rethink and restructure the teaching work. For the author, the teacher,

as intellectual, values teaching activity as an intellectual work, clarifies what are the important material conditions for developing intellectual work and helps in the detachment of the dominant forms of ideology that permeate and legitimize teaching work. Still, according to Giroux (1997, p. 29), "in order to act as intellectuals, teachers must create the ideology and structural conditions necessary to write, research and work with one another in the production of curricula and distribution of power." In summary, it means considering teachers as reflective actors, critics and questioners of ideological and economic conditions.

Giroux (1987; 1997) appropriates the intellectual term based on Antônio Gramsci, who considers that men and women are intellectuals, but not all act as such, and develops the categories to also analyze the social function of educators. For the author, these categories are typical-ideal to indicate the interests and trends present in each of them. The categories developed by Giroux (1987) are explained below.

1. Transformative intellectuals: Based on Gramsci (1971) and Freire (1984), Giroux (1987) states that, in this category, teachers can emerge as intellectuals of any group, and can act in various groups to develop emancipatory

cultures both inside and outside the public spheres. The same author emphasizes that the central role of transformative intellectuals is to "make pedagogical more political and political more pedagogical" (p. 32). In the first case, the teacher as a transformative intellectual has the task of introducing education into the field of politics. This means, according to the above author, that the process of schooling represents a struggle for power relation and a dispute for meaning, that is, the school is the space in which power and politics are found from a dialectical relationship between groups and individuals.

In relation to making the politician more pedagogical, Giroux (1987) says that teachers as transformative intellectuals, need to use forms of pedagogy in which it is possible to consider educators as critical subjects, who are able to problematize knowledge from emancipatory critical dialogue. According to the author mentioned, it means giving students an active voice, considering their learning experiences, also consider them as collective and private actors. In short, it means "creating material and ideological conditions in the school and in the wider society that give students the opportunity to become agents of civic courage" (p. 33).

2. Critical intellectuals: The critical term does not mean that these intellectuals

have a political social function. According to Giroux (1987), educators as critical intellectuals think differently from existing institutions and forms of thought, but do not consider themselves bound to any specific social formation, which means that they are exempt from an explicitly political social function by nature. Similarly, according to the author cited, most of the time, critical intellectuals have an a-political posture, that is, "as individuals, they are critical of inequalities and injustices, but often refuse or are unable to move from their isolated posture to the ground of collective solidarity and struggle" (p. 34).

3. Adapted intellectuals: According to Giroux (1987), unconsciously adapted intellectuals adopt an ideological posture and a set of material actions that give sustenance to the dominant society. For the author, educators who fall into this category produce and mediate, in an uncritical way, the social ideas and practices that reproduce the status quo.

4. Hegemonic intellectuals: Unlike adapted intellectuals, hegemonic intellectuals act consciously in favor of the dominant ideology. According to Giroux (1987), these intellectuals surrender to the model of academic cooptation as well as political and make themselves available to

the ruling classes, strengthening their ethical, political and economic ideas.

Despite developing the above categories, Giroux (1987; 1997) defends teachers as transformative intellectuals, as it is the only way to rethink and restructure the nature of teaching activity. In defending this category, the author states that, in this perspective, there is the possibility of combining the language of speech with the language of possibility. It means that educators in this category are able to promote change and can speak out against the many different forms of political, social and economic injustice that are present inside and outside the school.

Transformative intellectuals come to life in institutions of different levels of education that produce and maintain the dominant ideology, offering students alternative discourses and critical social practices (Giroux, 1987; 1997). To this end, it is necessary for the educator, as a transformative intellectual, to understand the critical educational theory on which he is founded and, moreover, to understand the power relations present in the formal and hidden curricula, recognizing that school knowledge cannot be transmitted, but constructed from a process of selection and exclusion (Giroux, 1987).

In addition to the above aspects concerning the role of the transformative

intellectual, Giroux (1987; 1997) argues that they are central tasks as well: 1. Deviation from the role that language and power play in school as a way of maintaining the status quo; 2. research into the relationship between popular cultures and the dominant forms of schooling; 3. Involvement in a critical dialogue between teachers of the same school and academics, for the development of projects that critically question the school curriculum that legitimizes the dominant social relationships.

In relation to the last task cited above, these alliances are based on the relationship between theory and practice, which, for Giroux (1987), means the abolition of the social division of labor between those who elaborate the theory and those who execute it. This means, according to the author quoted, understanding that in school spaces arise the various forms of theoretical production and therefore cannot be seen only as places where these theories will be developed.

Paths covered

This work is part of a stage that precedes the course conducted with teachers of an MST Settlement. In this research, we seek information about MST Pedagogy through document analysis, questionnaires and interviews (Silva,

2019). Therefore, when considering the question of investigation in this research, we use a qualitative methodological approach. This type of research deepens in the world of meanings, in which the researcher exposes and interprets phenomena of reality not visible in the light of subjectivity. Moreover, it is possible to approach the researcher with the reality closely, establishing interaction with the subjects of the research (Minayo, 2012).

The research was developed in the Integrated Center Florestan Fernandes, in the Settlement Terra a Vista, located in Arataca, in the South of Bahia with capacity for 100 families, but, according to the page of the National Institute of Colonization and Agrarian Reform (INCRA, 2017), it has 53 families settled. The said Settlement, at the moment, has two schools, one of high school and with some technical courses, which serve students from nearby cities; and another (place where the research was carried out) that meets the Children's Education, Basic Education I and II and Youth and Adults Education. The school attends to 200 pupils of the Registration and of near communities and counts on a director, a vice-director, a secretary, a secretary's assistant, two (2) lunch-ladies, two (2)

cleaners, a porter, fifteen (15) teachers, two (2) assistants and two (2) coordinators.

The space is structured in: six (06) classrooms, (01) secretary room, (01) boardroom, (12) toilets, (04) bathrooms, (02) kitchens, (01) dining room, (01) auditorium, (01) computer lab, (01) science lab, (01) library and (01) outdoor courtyard

After the project is approved by the Committee on Ethics in Research (CEP), we define as subjects of this research teachers, coordinators and director as presented in Chart 1.

Chart 1 - Research subjects.

SUBJECT	CODE	TRAINING	SEGMENT
Director	D1	Agronomic Engineering	School administration
Coordinator	C1	Graduating in Pedagogy	Coordination of Elementary School I
Professor	P1	Agronomic Engineering	Elementary School I
Professor	P2	Agronomic Engineering	Elementary School II
Professor	P3	Pedagogy	Youth and Adults Education
Professor	P4	Magisterium	Elementary School I
Professor	P5	Agronomic Engineering	Elementary School II
Professor	P6	Magisterium	Early Childhood Education
Professor	P7	Assistant	Early Childhood Education
Professor	P8	Pedagogy	Elementary School I
Professor	P9	Graduating in Pedagogy	Elementary School I
Professor	P10	Agronomic Engineering	Elementary School II
Professor	P11	Graduated in Mathematics	Elementary School II
Professor	P12	Assistant	Early Childhood Education

(Source: Research data, 2018).

It should be noted that the Term of Free and Informed Consent (TCLE) was presented to the research participants so that they could understand what the research was about and know their rights. The name of the participants was kept confidential and replaced by alphanumeric codes. The teachers had their names replaced by the letter P followed by the number identifying the same in the organization of the data.

The research was carried out considering three instruments, namely: a) document concerning the Pedagogical Political Project (PPP) of the Integrated Center Florestan Fernandes; b) questionnaires with open questions (Figure 1) and c) interviews with the director, the coordinator and three teachers (Tables 2 and 3).

The use of the questionnaires was carried out before the training process, in order to collect information related to the

teaching of sciences and to the development of the teaching practice of teachers, thus, twelve (12) questionnaires were given to teachers, however, only six (06) responded.

Figure 1 - Questionnaire roadmap with teachers.

Name:	
Function:	
Formation:	
Training institution:	
1.	Do you currently take any course? If yes, which one?
2.	Is this course financed by any institution?
3.	What is your length of service in teaching?
4.	Was all this time spent in the Settlement?
5.	How are the science class schedules carried out in the school where you work?
6.	Are the plans made based on education in the countryside? Do you consider any special theoreticians?
7.	Are the proposed activities in class based on the reality of the students? Explain.
8.	In the institution where you work, is there a specific continuing education for the area of Science? If yes, does this training correspond to the needs of daily professional life?
9.	Could you cite some of the pedagogical matrices on which the pedagogy of the MST is based?
10.	Could you explain the pedagogical proposal for Science Teaching present in this school's Pedagogical Political Project?
11.	How are your Science classes taught?
12.	Did you participate in the construction of the school's curriculum this year?
13.	How did this construction and the choice of contents take place?

(Source: Research data, 2018).

The interviews aimed to raise information about the educational principles of the MST that are developed in the school and the consonance with the Pedagogical Political Project, as well as to obtain information related to the planning and training of teachers.

Table 2 - Script of the interview with teachers.

1	What is your education and how long have you been working in education? And with your teaching in Science? And in this school? Was there an option to work in this school?
3	Has your higher education helped you in your role as a science teacher?
4	Do you currently do some complementary training to enrich your work as a teacher?
5	How are your science classes taught?
6	Is there a collaborative work perspective in the school? How does it happen?
7	Did you participate in the construction of the school curriculum this year? How did this construction and the choice of contents and themes take place?

(Source: Research data, 2018).

Chart 3 - Script of the interview with director and coordinator.

1	I would like you to explain a little bit about your trajectory in education here at the Settlement's school. If you are a resident, settled, how long have you been teaching?
3	Could you quote the educational proposal present in the MST documents?
4	Could you cite some of the pedagogical matrices on which the pedagogy of the MST is based?
5	Could you explain about the pedagogical proposal for the Teaching of Sciences present in this School's

	Pedagogical Political Project?
6	Could you cite some of the pedagogical matrices on which the pedagogy of the MST is based?

(Source: Research data, 2018).

In the analysis of the data, the talks related to the interviews and questionnaires are represented by the letter E and Q, followed by the alphanumeric code referring to the subject of the survey. The data constructed during the research were analyzed in the light of ATD, which consists of a methodology of data analysis with the aim of producing new meanings to the existing elements from the data of documents, questionnaires and interviews (Moraes & Galiazzi, 2007). ATD begins with the unitization process, which consists of separating texts into units of significance. At this stage, the materials (PPP, questionnaires and semi-structured interviews) that constituted the body of the research were examined in detail and fragmented, which allowed us to reach the units of meaning.

After this process, it followed to the categorization in which we gathered the units of similar meaning, which culminated in levels of categories of analysis. That is, the units that were built were grouped into similar elements and we established the a priori category model, according to Moraes and Galiazzi (2007). In this work, a priori category is discussed, which we call "Continuing teacher training through the SE: possible reflections on reality in MST

education." From this category, we produce the metatext that, according to the authors cited above, are made up of interpretations and descriptions of the researcher about the phenomenon investigated.

Continuing teacher training through the SE: possible reflections on reality in MST education

One of the biggest fighting flags of the MST is the initial and continued training of its educators. In view of this, starting from the principle of "those who educate also need to educate themselves continuously" (MST, 2005, p. 175), the Movement, through the Education Sector, promotes training activities that go beyond an uncontextualized formation. In other words, the formations proposed by the MST documents must be political and ideological in nature, as well as enhancing human experience. And, still according to Caldart (2003, p. 51) "... the MST has a pedagogy, that is, it has a praxis (combined practice and theory) of how people are educated, of how human formation is done," an aspect valued in the PPP of the school as noted below.

... the school is a space of human formation... (PPP, 2015, p. 7).

We consider that the SE presents similarities with the aspects advocated by the education of the MST, because it... "contemplates the vision of a human formation that is able to promote human-social potentialities as a whole" (Maldaner & Zanon, 2004, p. 8). That is, it means forming man in his various dimensions, an aspect also defended by the MST (2005, p.161) when he mentions... "we consider education one of the dimensions of formation, understood both in the broad sense of human formation, and in the narrower sense of the formation of frameworks for our organization and for the whole struggle of the workers." This means an omnilateral^{iv} education in which it is possible to work all aspects of the human being (Caldart, 2005, 2003, 2001).

In this same perspective, Giroux (2003, p. 124, our translation) argues that

A radical pedagogy, then, has to take seriously the task of creating conditions to modify subjectivity as it is constituted in the needs, impulses, passions and intelligence of the individual, as well as to transform the political, economic and social foundations of the society that is part of it.

For this, the author states that teachers as transforming intellectuals need to develop in subjects the social relations that are compatible with their real needs, thus, their subjectivity changes and

becomes meaningful in a way that can transform the political, economic and social aspects that permeate the environment in which they live. In this same perspective, SE, from the inter-relationships between conceptual, technological, social, environmental and linguistic issues, allows "...to develop an articulated vision for the transformations of the environment and of the human being himself in his environment - also as a constructor and transformer of this environment" (Maldaner & Zanon, 2004, p. 7). In this way, it becomes essential to the continued formation of educators in a critical bias.

Considering the aspects already presented, the MST promotes continuing teacher training at local, state and national levels. According to Santos (2011), the continuing training that takes place at the local level is articulated from the management of the school with the direction of the Settlement. Already at state level, the formations happen through the articulation between the settlements and camps. And, finally, the national level training is carried out through the articulation between the state coordinators of the Education Sector and the national management of the MST. On this assertive, we note, from the interviews with D and C¹, that the continuing training developed

in the school takes place at state level, as we can observe in the speech below:

Right now you will have an MST meeting in Salvador and I will take most of the teachers so we start adapting the issue of new teachers and old ones also to be updating in this pedagogy of the Movement (DE).

It should be noted that the training carried out annually by the State Education Sector is not specific in Sciences, but it is a general formation, focused on the specificities of the Rural Education, as we observe in the words of P²:

The school offers training more focused on the issue of education in the field where all teachers participate in training, but it is not specific to science teaching. And every year there is training on education in the field (P² E, our emphasis).

There is no specific training for the area of science. There is a training process for rural education in the wider field (P² Q).

In the meantime, it is not enough only the state level training, it is necessary the development of local level training that values the peculiarities and the context of each school of Settlement. Therefore "... the teacher needs to know deeply the reality of the Settlement: the problems of production, organization, formation; the type of education that children have at home in the group" (MST, 2005, p. 53). This assertion is consistent with the ideas

of Giroux and McLaren (1998, p. 126) when they mention that "Teachers need to develop pedagogical practices that link student experiences with those aspects of community life that shape and sustain such experiences." The authors argue that educators must assume a responsibility to understand the relationships and forces that influence students beyond the walls of the school. To this end, the continuing training in the school allows the professional development in this ideological bias, the example of the formations developed through the SE, because they have sought to value themes of the context and value the high experiences (Viera et al., 2016).

So, from the analyses, we found that, during the period of 2016 and 2017, there was no continuing training in the school, as we can see in the talks below.

We had three appointments. But he didn't have any. I had a girl who came from Salvador, but it didn't happen. So far not (EC).

Not yet, because we set up with a person and, on the day, gave a problem and she was unable to attend. And, we are trying to rebrand another formation toward the teachers (DE).

From the speaks, we can infer that for a local formation, mainly in the area of Sciences, the school needs the support of researchers who take into account the specificities of education in the MST. Thus, the absence of training within the

school can be a hindrance to the integral development of the education proposal advocated by the Movement, because some teachers are not seated and need specific training. D's speech confirms that the faculty of the school is also composed of those who come from the city, who need to know the proposal of the Movement.

In fact, there in the Settlement, we demand that everyone who works there must study to graduate and prepare for education, in this question of the pedagogy of the Movement also that we work. Even those who come from the city we work with them the question of training (DE).

According to the MST documents (2005), educators need to have a greater knowledge for changes in education in the Settlements, this extends from the organizational aspects of the educational space to the way to teach and assume the role of a transformative intellectual as referenced by Giroux (1987). In addition to teaching the contents, the teacher should know how to teach, accompany students at work, help in the process of organizing them, as well as lead them to make decisions. However, that is not enough. The teacher of the Settlement needs to be a militant, and that's only possible if this

... participate in the main discussions and actions of the Settlement as a whole... to assume from body, mind and heart the pedagogical principles

and the principles of the MST. When he makes his fight for land, for production, like the fight for education" (MST, 2005, p. 36).

It is in this sense that "The school must teach the local and general reality" (MST, 2005, p. 33), this is one of the fundamental principles in the MST. Thus, for the Movement, reality is understood as all that is related to practical life, work, organization, the natural environment, the social environment and the problems of day-to-day life and society. Thus, everything taught in the school space must be related to the concrete needs of educators. If that's not the case,

... every time a school disregards and/or disrespects the history of its students, every time it deviates from the reality of those who should be its subjects, not recognizing them as such, it chooses to help uproot and fix its educators in a gift without ties (Caldart, 2001, p. 41).

Thus, when the teacher relates the contents of science to the concrete needs of the students, the process of conceptual significance as proposed in the SE (Maldaner & Zanon, 2004) happens, as well as there is a meaning in the subjectivity and apprehension of the reality that surrounds them. According to Maldaner and Zanon (2004), when the student learns in an articulated way to his social life, he has the ability to develop a

critical awareness about his social and cultural practices, while developing the learning in a contextualized way. It is worth noting that, according to Giroux (1998), for the development of a critical discourse, the school needs to understand that the curriculum needs to be related to social practices. Still in this view, Giroux and McLaren (2011) argue that "classroom culture" needs to be associated with "corner culture."

Giroux (2003) states that the appreciation of the social context of students provides a basis for rethinking the way in which subjects give meaning to their experiences. This implies understanding questions such as: why things are and how they are; how they came to be; making the familiar stranger and the familiar stranger (Giroux & Simon, 2011). If teachers consider the students "experiences it will be easier to understand the reading, productions and responses presented by them in the classroom (Giroux & McLaren, 2011).

From the passages below, we can observe the ideology of education in the MST with regard to the aspects already presented.

The education that MST advocates is focused on... turned by today, by the formation of the Movement, by what we preach that our life of the earth, of the differentiated education, aimed at the man of the field (DE).

I usually take them in my classes to the outside, that's very important... we make visits to the Settlement to know the space, because many are in the classroom, but do not know the reality. So I usually take them abroad, which is a very rich space, mainly for science classes (P²E).

Sometimes classes are held in practice, as this allows direct contact with the environment and better understanding of the phenomena of nature (P4Q).

The activities proposed are based on the reality of the students so that they can familiarize themselves with the contents and learn more easily (P11Q).

From the previous speaks, it is noted that the reality of the Settlement is well worked, besides being in line with the PPP of the school.

We want the social practice of the students to be the basis of their training process, to be the raw material and destination of the education we do (PPP, p. 22).

However, according to P², the broader questions are also worked on, as noted in the section below.

Partly yes, but it works on broader issues involving social, economic, environmental issues etc. (P²Q).

The conception of P² Q is consistent with what MST (2005, p. 45) advocates, because... "the teacher must have the permanent concern to help children so that they relate the near reality to the more distant reality." In addition, the PPP states

that the curricular matrix of the school is based on the thematization of reality and the problematization of the school context. These aspects resemble the SE which, according to Vieira et al. (2018, p. 4) "... enables the rescue of a real situation, rich in contexts experienced inside and outside the school environment, in which students develop their own thoughts about what is being worked on." In the face of this, the formation of teachers based on the SE implies turning the eye to the social role of the school, going beyond the walls of the school and, in the words of Maldaner and Zanon (2004, p. 8)" ... implies enhancing the perspective of the school's critical and reconstructive work."

So we consider Giroux's assertive (2004, p. 72, our translation) which states that... "schools cannot be analyzed as separate institutions from the socio-economic context in which they are situated." Thus, according to the author, from the perspective of radical pedagogy, the stories and experiences that students carry with them should be valued. Moreover, "... radical educators must understand power as a concrete set of practices that produce social forms through which different experiences and modes of subjectivity are constructed" (Giroux, 2003, p. 173, our translation).

As the PPP analyzed, the school is organized through philosophical and pedagogical principles, among these is the relationship between theory and practice. In this sense, the reality of the school community is the starting point and the point of arrival. Thus, this pedagogical document is based on the thematization of reality and the interpretation of everyday life, as we can observe in the following passage.

We want the social practice of students to be based on their training process (p. 23).

To this end, the continuing training of teachers becomes a fundamental part, so the teacher will be the agent who will guarantee the human formation of the subjects. Caldart (2005) emphasizes that the teacher who works in the schools of settlements should be concerned with the formation of educators in all dimensions. In the words of Giroux (2003, p. 117, our translation) "... indicates the need to go beyond discourse and the awareness of human authors to address the conditions and foundations of their daily experiences....".

To address these aspects, the training developed at all levels (local, state and national) must deepen both practice and theory in MST education, interfering directly in the school curriculum.

Moreover, through an association between theory and practice it is possible to establish a relationship of exchanges of experience.

Teacher training for the participation and involvement of subjects breaks with hierarchy and instrumentalization, allowing trainers and trainees to build together knowledge. Above all, teaching training linked to the critical transformation of subjects and schools must be highlighted. It is the type of training that will announce whether the teacher will develop his critical or uncritical practice.

Final considerations

We have sought to present, from this research, a re-reading of the SE for the training of MST teachers, dialoguing with the critical pedagogy of Henry A. Giroux. To this end, we seek to understand the specificities of the MST Pedagogy, how the teaching of sciences is guided, and also to present relations between the SE and critical pedagogy.

Education in the MST has a specificity, which is educating the social subject on the day to day of the Settlement. And to this end, reality is the basis of every production of knowledge. In view of this principle, we consider, from the results, that the school in which the research was

conducted has sought to relate the teaching to the context in which it is inserted. Thus, the basis of the educational process of educators is related to their social practice.

As an environment of human formation, this school seeks to train its educators through the state meetings held annually, and it is possible to study and reflect on the aspects related to the Education of the Field. These formations are fundamental to the development of the MST Pedagogy in school, and especially for those teachers who are not seated and do not know the conception of a reality-oriented education. However, at these events, there is no specific discussion of the area of science teaching.

We emphasize the importance of state meetings, however, it becomes necessary to develop formative processes of teachers within the school, taking as a basis the reality of the Land to Sight Settlement. In this way the teacher, especially the unseated one, will be able to know deeply the problems of the settlement. Thus, school management understands that all teachers, including those from outside, need to study the education proposal advocated by the school.

Despite the absence of local training, the reality of the Land in Sight Settlement has been worked by some teachers through

practical classes, visits to the Settlement, and, above all, in the association between content, context in which educators are inserted and with social, political, economic and environmental issues. In this perspective, we signal a relationship with critical pedagogy that the school cannot be disconnected from the socio-economic context, so the SE contributes to the development of this social role of the school.

We are in favor of training that will enable a dialogue between professionals in order to question the curriculum in the school. Thus, the involvement among graduates, postgraduates, professors of the university and the basic school, allows the reflection of the political nature of the teaching work. Therefore, forming the transforming intellectual contributes to the development of a professional critic and committed to social justice.

On this basis, the curricular proposals developed under the GPecCFEC are now differentiated from that proposed by GIPEC with SE. These proposals are planned/organized/structured from the theoretical point of view as well as from the practical point of view and, in this text, from discussions of Henry A. Giroux on curriculum and teacher training in the field of science teaching.

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ⁱ The word Movement with initial capital letter when mentioned refers to the MST.

ⁱⁱ The GPeCFEC develops initial and continuing teacher training processes within the UESC Bachelor of Chemistry course and in schools in the Southern region of Bahia. More information about the work and activities of GPeCFEC can be found at <https://gruposdepesquisa.wixsite.com/gpecfec>

ⁱⁱⁱ "The NSE was constituted in the first sociological current in fact focused on the study of the curriculum" (Moreira & Silva, 2002, p. 19).

^{iv} The word omnilateral comes from Marx, who used the expression "omnilateral development of the human being" to call attention to the fact that a revolutionary educational practice should account for the reintegration of the diverse spheres of human life that the capitalist mode of production strives to separate" (MST, 2005, p. 163).

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