



Continuing Training for Natural Sciences Teacher: The Case of Earth Sciences in Series Final Elementary School

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Abstract

The primary purpose of this work is to initially make a diagnosis about the study of geosciences in elementary school, moreover, plan together with teachers of Basic Education, one short course of continuing education, with topics and teaching strategies to be defined during the research, that fosters interdisciplinarity of knowledge to other areas of education and to assist in the mediation of geoscience concepts in natural science classes. This proposition will be performed with the help of Moodle, the course will be directed by the researcher, and will be mediated by online and in-person meetings. The participants will be teachers working in elementary school, they have no training in natural sciences, and who long continue the study of geoscience, engaged in social and environmental aspects, integrated, set within a historical and evolutionary context and directed to the area of teaching.

1. Introduction

The geology is presented as a science that deals with the history and evolution of the Earth, with the primary issue the study of historical and geological process [1]. Their study transit in large areas of the natural sciences, his research deals between elementary concepts present in the disciplines of History, Physics, Chemistry, Biology and Geography, thus leading to a science that triggers an important role in the social context and its diverse subfields by be a science by interdisciplinary nature. Your study becomes too important character, since it is necessary that the students understand the world, enabling the establishment of relations between human activity and the natural dynamics of the planet and how human activity can influence positively or negatively on the nature [2].

Earth's formation processes triggered over billions of years prize for an approach that is located in a multidimensional perspective, and promotes the understanding of the problems associated with Earth's dynamics, particularly those that permeate the social fields in its various aspects. Gadotti [3] commends this perspective by emphasizing that "it is necessary to contextualize, globalize, relate, seek the multiple causes of things. It is not enough to reform the education without reform the thought".

The school triggers a key role in the construction of knowledge that will support decision making among students. The Curriculum General National Guidelines for Basic Education [4] suggest that it is school work and education professionals, especially, teacher, promote research situations and trials, starting from a particular context and local levels to take further a more general approach. Freire [5] adds that, "is mediating reality in consciousness that it have, educators and people that we will find the syllabus of education", it is necessary to approach local issues punishable by a liaison with the global dimension.

The National Curriculum Guidelines for Secondary Education [6] point out that the most relevant topics of Geology are distributed in the various curricular components of elementary and secondary education. However, an articulate and organized approach in a fragmented structure does not allow the teacher to conduct a cohesive design processes. Morin [7] points out that "it is essential to learn to contextualize and, better than that, to globalize, that is, place the knowledge in an organized whole." These facts are rooted in the use of decontextualized books, who value the encyclopedism geological terminology, guided by mere conceptual definitions, and which do not cover the reality experienced by students [8]. Another factor is related to the initial training of teachers, that this "should be marked by a principle of social responsibility, favoring communication and professional participation in the public sphere of education" [9].

Despite numerous efforts by the teacher, the construction of knowledge on the basis of geology is limited by a number of factors that go beyond the initial training of these teachers, they are guided from the poor working conditions, to lack of teaching materials basic that assist in teaching practices, thus hindering the urge to reduce the gaps currently found in teaching. The teacher is the direct collaborator on issues involving the educational process, it is intervening, accompanying leads,



creates, reformulates and perfect conditions and mediators stimuli for the construction process of knowledge by the student [10]. The improvement of their practice occurs not only during their initial training, but during his career, in that there is a continuous process of self-training and re-elaboration of knowledge according to the trigger experiences in teaching practice.

The case of science education, particularly the teaching of Geology Sicca et al., [11] points out that the curriculum of continuing education must address issues that favor the "systemic, integrated and complex character of terrestrial phenomena". The adoption of local environmental issues should favor the articulation of education in these terms, ensuring the establishment of a perspective CTS.

The exercise of education in Geology for the promotion of citizenship allows the preparation of students for the development of a planetary design more linked to the preservation mechanisms and has extensive links between theoretical and practical knowledge. For this reason, is that Pedrinaci [12] list a number of factors by which the establishment of Geology indispensable in EB:

- i. His approach allows for greater disclosure of what is to be the Geology, tools, processes and studies, contributing to its disclosure.
- ii. Their study allows the teacher to get a significant improvement in the geological conceptual bases, which leads them to improve their teaching and to rethink teaching strategies that are focused on the area.
- iii. His presence in the scientific bases will go against a larger space of Geology in educational documents.
- iv. There is a widespread need for literacy of citizens with regard to the processes of Geology. Through this training process instruction will be favored, giving citizens the exercise of reflection and criticism towards environmental issues.
- v. The development of curriculum proposals scoped teaching Geology is of interest to society in general.

From this premise, the promotion of actions that promote the resolution of the gaps present in textbooks, fully contributes to the provision of possible curriculum reforms involving the intrinsic elements geology, with the instrument favoring this issue the adoption of distance education as a vehicle aims to provide a contribution to teachers regarding their continuing education. Since according to Magalhaes Junior and Pietrocola [13] the current teacher education can not meet the importance and Geology knowledge, which are provided for in science curriculum through the axes "Land and Universes", "Life and Environment" and "Technology and Society".

Given the previously discussed concepts and as an integral part of the educational role played by educational institutions, present much concern with the formation of Natural Science teachers, particularly with regard to social and environmental issues. Following this premise, this study aims to answer the following concerns: as a continuing education course covering up issues of Geology can contribute to the pedagogical practice of Natural Science teachers?

Backed by the foregoing question, the primary purpose of this study is to conduct a diagnosis on the teaching of Geology in elementary school, in addition, plan together with teachers of basic education, one short course of continuing distance training to be held in Moodle platform. It is hoped that the mediation of geological concepts through a distance learning course, promote update and / or completion of the knowledge available to this area, encouraging interdisciplinary approach to knowledge with other areas of education, and contribute in a cohesive mediation and linear of Geology themes discussed in the Natural Sciences classes.

2. Methodology

The methodology used in this study has a qualitative, since it "provides the abstraction of motivations and ideas not explicit, or even unconscious spontaneously. Therefore, qualitative research is used when seeking perceptions and general understanding of a particular case" [11]. Thus this research is characterized as a collaborative research [15], since the interest is to develop research with teachers in the school context and their pedagogical practice and not on teachers, seeking to contribute to the process of continuous training of these teachers.

2.1 Participants

The choice of participants will occur because of academic thereof, excluding the formation of Natural Sciences. For blood sampling, it is necessary the participation of eight teachers of Natural Sciences, who are acting in elementary school, so will be selected two teachers at a public school in the region Planaltina, Federal District.



2.2 Instruments

The chosen instrument is the individual interviews, semi-structured, with recorder aid. According to Marconi and Lakatos [16] This is "the encounter between two people , so that one of them get information about a particular subject ." For qualitative analysis of data collected after your transcript will be used webQDA software.

In this research the script will focus on the following aspects: a) academic training of teachers b) time of experience as a student in the Department of Education and/or other education units; c) discipline of Geology in the curriculum graduation; d) aspects of the course taken during graduation; e) importance of understanding the Earth's dynamics in addressing social and environmental problems; f) difficulty and / or facilities to work Geology topics in class; g) teaching strategies used to work themes of geology; h) teaching resources used to work Geology of topics; i) familiarity with the technological resources.

The interviews will be conducted in previously scheduled meetings with participants and will be initially delivered a Consent and Informed (IC). This which aim to clarify some general aspects of the research, highlighting its objectives and intentions. Evidence these factors is important since "the researcher has the obligation to respect rights, needs, values and desires (s) informant (s)" [17].

2.3 Of the data Construction Procedures

In order to achieve the research objective, the following actions will be performed: a) delivery of the free and informed consent; b) semi-structured individual interviews with teachers; c) Construction of continuing education proposal, based on the course of distance education; d) the course, steps to distance and face-e) discussion about the proposal and its importance to the training of teachers with regard to teaching geology.

2.4 Data Analysis Procedures

After collecting data, made possible through implementation of individual interviews, one qualitative data analysis that will be performed according to Lüdke and André [18] means "work with all the material obtained during the search, including the reports of observation, interview transcripts, document analysis, and other information available".

3. Expected Results

The mediation of geological concepts through a course of continuing education can help update and / or complement the knowledge forward to this area, and promote the interdisciplinary approach of the acquired knowledge to other areas of education.

Performing the construction of possible hypotheses for research, it is suggested that: i) teachers, target of the work in question, may seize the knowledge built during participation in short course, multiplying the learning, becoming disseminators of educational proposals the other teachers in the field of Natural Sciences; ii) the completion of a short course for teachers trained in that its goal is to foster mediation of geological concepts can promote update and / or complement the knowledge forward to this area, and promote the interdisciplinary approach of the acquired knowledge to other areas of education, including the sphere of Natural Sciences; iii) promote the continuing education of teachers to develop Geology topics in the classroom can be a way to minimize the deficit teaching in the area in question, taking the students to develop a critical and reflective thinking.

The indicators that can be observed in such cases are guided by the: a) multiplication of knowledge built during the execution of the short course, teachers will disseminate the information acquired during their participation to other professionals in the education, opening scope for improvement any of the problems observed in the teaching area; b) other this indicator and that is intrinsic to the second hypothesis put forward is to update and complement the training of teachers. With a more consistent luggage of geological knowledge, they can reflect on their teaching strategies, supported by the interdisciplinary practice of concepts, adopting those that could significantly contribute to the teaching and learning process of the students; and finally c) continuing education will help to minimize the effects of fragmentation identified in the teaching of geology.



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