

THE PRACTICE AND CONCEPT OF POST-GRADUATE STUDENTS IN SCIENCE TEACHING ON ENVIRONMENTAL EDUCATION AND SUSTAINABLE DEVELOPMENT IN A BRAZILIAN UNIVERSITY

A PRÁTICA E A VISÃO DE PÓS-GRADUANDOS EM ENSINO DE CIÊNCIAS SOBRE EDUCAÇÃO AMBIENTAL E DESENVOLVIMENTO SUSTENTÁVEL NUMA UNIVERSIDADE BRASILEIRA

LA PRÁCTICA Y EL CONCEPTO DE POSTGRADO EN EDUCACIÓN PARA LAS CIENCIAS EN EDUCACIÓN AMBIENTAL Y DESARROLLO SOSTENIBLE EN UNA UNIVERSIDAD BRASILEÑA

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ABSTRACT: Environmental issues have triggered a complex relationship between society and nature. The role of environmental education is crucial to relate society, environment, biodiversity and sustainability. Current paper analyzes the concept of environmental education and sustainable development by post-graduate students in Education in Science and Mathematics of a Brazilian university. Qualitative research was undertaken in July 2014 by content analysis of the questionnaires and interviews (Lüdke e André, 1986) on the environmental theme. Current analysis showed that environmental education is intensely studied in primary education, albeit in a conservationist mode due to the lack of initial and continuous formation. Several participating students underlined that they had never taught environmental education in the primary school since they never had any contact with the discipline in their undergraduate course, a gap in initial formation. Although formation is urgent, it is greatly impaired and barriers have to be overcome. It is the case of one's own formation, difficulties in interdisciplinary inclusion and the need of public policies in environmental education in higher education. Environmental education is increasingly being taught in all teaching levels for environmental sustainability, while professionals have improved their upgrading to contribute towards the long process in changes for a better life quality.

KEYWORDS: Sustainability. Teaching. Teachers' Formation. Curricula and Higher Education.

RESUMO: As questões ambientais têm desencadeado uma relação complexa entre a sociedade e a natureza. Diante dessa realidade, é fundamental o papel da educação ambiental a fim de relacionar sociedade, ambiente, biodiversidade e sustentabilidade. Assim, este trabalho teve como objetivo analisar a visão de educação ambiental e do desenvolvimento sustentável pelos alunos do curso de Pós-Graduação em Educação para a Ciência e a Matemática de uma universidade brasileira. A pesquisa qualitativa foi realizada em julho de 2014, por meio da análise de conteúdo dos questionários e entrevista (Lüdke e André, 1986) acerca da temática ambiental. O estudo demonstrou que a educação ambiental é bastante trabalhada no ensino básico, no entanto, de maneira conservacionista, o que ocorre devido à ausência da formação, tanto inicial como continuada. Vários participantes destacaram que nunca havia trabalhado educação ambiental no ensino básico, simplesmente porque nunca tiveram contato com a disciplina na graduação, ou seja, ausência da formação inicial. Embora a formação seja uma necessidade iminente, ainda é barrada por muitos obstáculos que necessitam ser vencidos, como é o caso da própria formação, a dificuldade da inclusão interdisciplinar e a necessidade de políticas públicas da educação ambiental no ensino superior. Concluiu-se que a educação ambiental, vem ganhando espaços em todos os níveis de ensino em busca da sustentabilidade ambiental, os profissionais, têm buscado melhorar sua autoformação, para que possam contribuir nesse longo processo de mudanças para uma vida melhor.

PALAVRAS-CHAVE: Sustentabilidade. Docência. Formação de Professores. Currículo e Ensino Superior

Artigo recebido em janeiro de 2017

Aprovado em março de 2017

RESUMEN: Los temas ambientales han provocado una compleja relación entre la sociedad y la naturaleza. Ante esta realidad, el papel de la educación ambiental es fundamental para relacionar la sociedad, el medio ambiente, la biodiversidad y la sostenibilidad. Este trabajo tuvo como objetivo analizar la visión de la educación ambiental y el desarrollo sostenible por los estudiantes del curso de Postgrado en Educación para las Ciencias y las Matemáticas de una universidad brasileña. El estudio cualitativo se llevó a cabo en julio de 2014, mediante el análisis del contenido de los cuestionarios y entrevistas (Lüdke y André, 1986) acerca de los temas ambientales. El estudio mostró que la educación ambiental está bien trabajada en la educación básica, sin embargo, de una manera conservada, lo que se produce debido a la falta de formación, tanto inicial como continuada. Varios participantes resaltaron que nunca habían trabajado la educación ambiental en la enseñanza primaria, simplemente porque nunca tuvieron contacto con esa materia durante el pregrado, es decir, ausencia de formación inicial. A pesar de que la formación es una necesidad inminente, esta sigue siendo excluida por muchos obstáculos que deben ser superados, como la propia formación, la dificultad de inserción interdisciplinar y la necesidad de políticas públicas de educación ambiental en la educación superior. Se concluyó que la educación ambiental ha ido ganando espacios en todos los niveles de educación en la búsqueda de la sostenibilidad del medio ambiente, los profesionales han tratado de mejorar su auto-aprendizaje para que puedan contribuir a este largo proceso de cambio de una vida mejor.

PALABRAS CLAVE: Sostenibilidad. Docencia. Formación docente. Programas de estudios y Educación Superior.

1 | INTRODUÇÃO

Present day society lies within a conflicting relationship with the environmental issue, considered a crisis for civilization and human rationality (LEFF, 2002), with deep and significant damages to sustainable environment. Discussions are rife on human intervention on the environment, biodiversity and consumerism produced by current capitalist model triggering social and environmental problems.

Several initiatives for solutions in social and environmental issues may be highlighted, such as the insertion of Environmental Education and Sustainable Development in higher education (LOZANO et al. 2013). Universities have a basic and historical role in the construction of knowledge, information, social and environmental responsibility and citizenship. According to studies by Vesterinen et al. (2016), education contributes towards the formation of citizens concerned in building a better world.

Higher Education forms reflecting citizens capable of intervening in the complex relationship between society and the environment, and prepares future teachers on how to approach nature and biodiversity in the school (LINDEMANN-MATTHIES et al. 2009). Educational reformulation is highly relevant and should further discussions on environmental themes, decision-taking processes, organizational structures, and develop planning strategies and leadership that take into account future generations (MOORE, 2005).

The environmental issue in schools and universities has the basic mission to prepare students for their role in society, as well-informed and committed critics, capable of taking important decisions. In fact, young people are capable of taking an active role in providing the planet with a better future (VESTERINEN et al. 2016). The above factors are basic in the formation of a new society and highly relevant to cope with environmental and social complexity. Further, environmental education makes one understand how human activities affect the environment, and the contact with natural environment help develop a better knowledge and positive attitude with nature, as reported by DRISSNER et al. (2013) in an educational program with students outside classroom. Thus, environmental education requires environmentally responsible life styles that contribute towards environmental health and sustainability.

However, the insertion of environmental education in teaching brings several challenges to institutions, especially higher education units (RIOJAS, 2003). There are several stumbling blocks that impede the execution of the environmental theme in teaching, such as curricular changes and the difficulties teachers have in dealing with disciplines within a transversal and interdisciplinary approach (ROCHA, 2003). However, proposals by the Brazilian Policies for Environmental Education (1999) and the Guidelines for a Brazilian National Curriculum for Environmental Education-DCNEA (BRASIL, 2012) state that education on social and environmental sustainability may be constructed through environmentalism, aiming at the constitution of a new society with new social, ethical, environmental values.

According to Article 1 of the Declaration of Principles of the World Conference on Higher Education, held in Paris, the university is bound to educate, develop research and contribute towards sustainable development and a more just society (PÉREZ-GÓMES, 2007). Consequently, higher education should invest in teachers' initial and continuous formation to work out the environmental theme required by the Brazilian Curricular Parameters (PCNs-BRASIL, 1996) and the Brazilian National Policy for Environmental Education (1999). Teachers must be able to reflect and act in an interdisciplinary and transversal mode on the environment. They should plan new methodologies that would actually contribute towards the deployment of environmental education which depends on relevant modifications in public policies, in the rupture of paradigms, in the formation of a new

society seething with new ideas, values, and a concept of citizenship aiming at a sustainable society. Current article analyzes the concept that students in the post-graduation course in Education in Science and Mathematics have on environmental education and sustainable development, in a Brazilian University.

2 | METHODOLOGY

Qualitative research was performed in July 2014 by a questionnaire and interview and their content analysis (LÜDKE and ANDRÉ, 1986) on the environmental theme, with a group of students in the post-graduation course in Education in Science and Mathematics of one of the state universities in Brazil, during the discipline Environmental Education (EE). The studied group consisted of 18 participants in different areas such as Biology, Mathematics, Chemistry, Sciences and Pedagogy. Interviewed students included six doctoral candidates and twelve candidates for a Master's, featuring twelve with professional experience in basic education, three in higher education and three in higher education and basic education.

Interviews took place in the class room with a pre-established script composed of a five-question questionnaire, previously answered by the students, on the understanding of environmental education and the manner environmental themes are developed in the class room. The interview was recorded and transcribed after permission by the participants was given.

The questionnaire comprised the following questions:

1. Prior to sitting for this discipline, have you taught Environmental Education?

If yes, how did you teach it? If not, why did you not teach it?

2. During the first lessons of the discipline, the importance of knowing the representations that students have on the environment was discussed. Do you agree? Explain.

3. What are in your opinion the main progresses and critiques with regard to Sustainable Development?

4. The theoretical and epistemological referentials that foreground Environmental Education are several. Mention that which you think most relevant for an effectively transforming Environmental Education.

5. Discuss the difficulties and possibilities in teachers' formation in Environmental Education in Brazil.

Response categories were later adopted and results were displayed in tables and graphs.

3 | RESULTS AND DISCUSSION

Table 1 shows the profile of each interviewee with data on age, graduation and post-graduation courses, teaching and years in the profession.

Table 1. Profile of interviewees

Interviewee	Age (years)	Institution	Formation	Post-Graduation (studying)	Teaching	Years in the profession
E1	25	Unespar (PR)	Mathematics	Doctoral	Basic education	1
E2	26	Unioeste (PR)	Biology	Doctoral	Higher education	2
E3	24	UEM (PR)	Chemistry	Master's	Basic education	1
E4	30	UEM (PR)	Chemistry	Doctoral	Basic & Higher education	5 and 3
E5	26	UEM (PR)	Biology	Master's	Basic education	3
E6	24	UEM (PR)	Biology	Master's	Basic education	1
E7	24	UEM (PR)	Science	Master's	Basic education	3
E8	41	Unoeste (PR)	Chemistry	Master's	Basic & Higher education	20 and 2
E9	27	Unipar (PR)	Biology	Master's	Basic education	
E10	37	Unespar (PR)	Science	Master's	Higher education	7
E11	26	UEM (PR)	Biology	Master's	Basic education	1
E12	31	UEPG (PR)	Chemistry	Doctoral	Basic & Higher education	6 and 7
E13	24	Unipar (PR)	Biology	Master's	Basic education	1
E14	31	Unioeste (PR)	Mathematics	Doctoral	Higher education	7
E15	25	UEM (PR)	Chemistry	Master's	Basic education	1
E16	30	FAFIPA (PR)	Pedagogy	Master's	Basic education	5
E17	41	UEM (PR)	Biology	Master's	Basic education	6
E18	27	UEM (PR)	Biology	Doctoral	Basic education	4

Table 1 demonstrates that 8 interviewees have a graduation in Biology, five in Chemistry, two in Mathematics, two in Science and one in Pedagogy. There is actually a variety in the formation of the interviewed group, from several universities in Brazil.

Further, the group comprised six Doctoral and twelve Master's candidates with teaching experience in basic and in higher education. The group was highly diversified and most, formed in Biology, had difficulties in including studies on Environmental Education as an interdisciplinary factor as required by the Guidelines (1997) and by the Brazilian Policy in Environmental Education (1999). The above condition mainly occurred due to lack of studies and experiences with an environmental approach in the undergraduate course. The participants reported that they did not receive adequate initial formation to teach environmental themes within an interdisciplinary and transversal stance. Lack of experience in environmental education was another factor that hindered them in developing a reflective process on the environmental issue. In fact, they mentioned lack of knowledge and information on public policies and educational laws on the subject.

Difficulties in inserting environmental themes within the professional exercise of the interviewees may be confirmed by the first question of the interview: *“Prior to sitting for this discipline, have you taught Environmental Education? If yes, how did you teach it? If not, why did you not teach it?”* The question actually aimed at knowing the teachers' milieu with regard to the practice of environmental education in the school, at the university, or within the community (Figure 1).

Figure 1: Percentage of interviewees who had already worked with EE and the manner the environmental themes were approached.

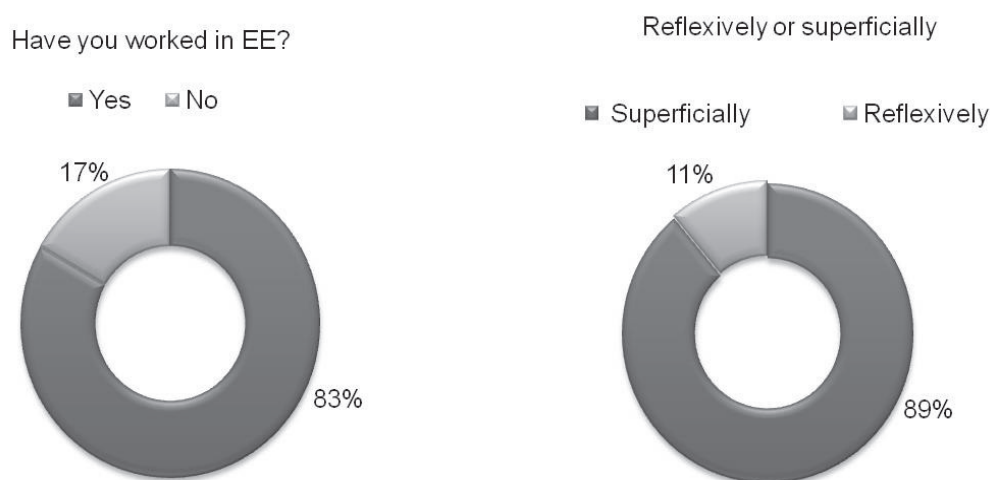


Figure 1 revealed that most interviewees had already taught environmental education (83%), whereas a small percentage (17%) had never dealt with the theme due to the fact that they had never had any contact with EE during their undergraduate course. Let us see the statement of one of them:

“E15: I had never taught environmental education. I guess that this is due to the fact that I had never had any contact with EE in my undergraduate course. Only during teachers’ training. It is the motive. I did not know at any depth what environmental education was. That’s why I did not any have conditions to do so”.

However, teachers who worked with the theme (83%) admitted that they did so in a rather superficial way. There was no reflexive activity by the teachers: 89% of activities were superficial, whereas only 11% were developed in a reflexive way.

Results revealed the importance of environmental themes in teachers’ formation and showed that teachers sought as far as possible to include EE in the teaching of their disciplines. It actually reinforces the need for teachers’ formation directed to activities and reflexive dialogue so that teachers may be transforming agents of education and of current environmental scenario. Further, reflection on one’s own practice is indispensable for the formation of good teachers since it proposes a critical and innovatory view to monitor one’s concepts, identify and acknowledge what one must teach and be aware of the social and environmental issues and their solutions (PARSONS and STEPHENSON, 2005).

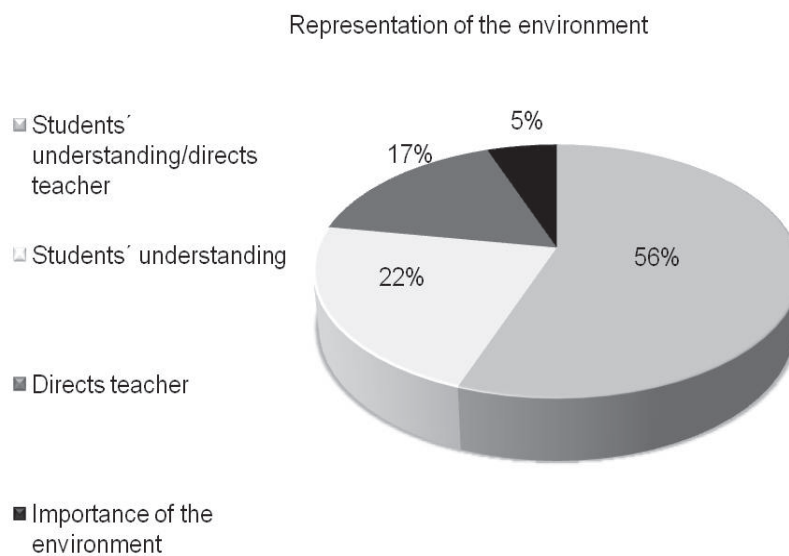
When reflexive dialogue is proposed on environmental themes, the representations that those involved in the education process have with regard to the environment should be assessed. According to Purkhardt (2015) one must know, interpret and discuss social representations because they portrays the world vision and directs actions. Besides, social representations are part and parcel to facts, as Moscovici and Duveen (2000) comment.

In current paper, environmental representations were dealt with in the second question of the interview: *During the first lessons of the discipline, the importance of knowing the representations that students have on the environment was discussed. Do you agree? Explain.* Most interviewees (56%) replied that assessment of the environmental representations makes possible the understanding that students have with regard to the environment and the manner they direct their activity

developed by the teacher:

“E18: Reflects students’ attitudes and influences teachers’ activities”

Result showed that representations give an idea of what students understand by environment (25%); for others, it merely directs teachers’ activities (17%); a small percentage of the interviewees insisted that representations explicated the important of the environment (5%), Figure 2:



Results clearly revealed that the interviewees were aware of the importance of a previous survey through environmental representations. Most underscored that representations provided information on students’ concepts and directed teachers’ activities. In fact, it is highly relevant to respect the concept and the knowledge that students forward from their experience, since one knows what students know what they are taught.

Representations also favor reflections and discussions on the issues identified and may help the teacher to choose the perspective to work on since it affects behavior, activities and dialogue. Moscovici and Duveen (2000) report that social representations are a product of professional activities. They may be the key to understand the reality of communities and their relationship with the environment. In this case, data vary according to environmental needs of each community. Therefore, representations allow the researcher to intervene to underscore the required changes and reinforce that which is relevant. However, caution is needed for the analysis of representations since there is a relevant heterogeneity in representation of the environment and several different meanings may ensue. People present different social concepts reflected in their representations (REIGOTA, 2002).

Representations are actually relevant for activities on EE since they reveal the social and environmental world and the issues that should be discussed and solved. There is a fundamental process for the construction of knowledge (REIGOTA, 1999). The author underscores that since representations of the environment foreground environmental education, they should include all people involved in the educational process. It is crucial that they contribute with the environment’s social representations and should be analyzed according to the Theory of Social Representations

established in 1961 by the French psychologist Serge Moscovici. His theory comprises a set of explanations that emerge through interaction and dialogue on day-to-day knowledge, and promote the construction of behavior, principles, communications and interactions among people. The above are relevant for the comprehension and transformation of reality (MOSCOVICI, 1978).

One may thus perceive the importance of social representations of the environment by which the needs of local society are identified, providing a directed activity through discussions and reflections on the issues and their solutions, with significant contributions for discussion on Environmental Education and Sustainable Development (PURKHARDT, 2015). The theme occurs in the third question of questionnaire: “What are in your opinion the main progresses and critiques with regard to Sustainable Development?” Results are given below (Table 2)

Table 2. Category of the main critiques related to sustainable development.

Categories	Some Quotes	Absolute frequency (%)	Relative frequency (%)
The Capitalist point of view	“Capitalist interests” (E3; E4)	9	53
	“Resistance to break with the capitalist economic system” (E11)		
	“Tied to (capitalist) development” (E1; E10)		
	“The capitalist system is still predominant” (E17)		
	“Sustainable development slowed down by economic development” (E14)		
	“Exaggerated consumerism” (E11; E17)		
Understanding the terms	“the way information is propagated makes difficult its understanding” (E3)	6	35
	“Information is transmitted in a simplistic manner”(E13)		
	“Lack of comprehension by society due to its elasticity” (E1)		
	“the term Sustainable is imposed on society” (E18)		
	“Terms are superficial” (E10)		
	“It’s only a term for EE and an obstacle” (E6)		
Environmental issues	“The environment as a source of eternally exploitable resources” (E5)	2	12
	“Exploitation and damage to the environment” (E10)		
Total		17	100

According to Table 2, the interviewees underscored the “Capitalist Point of view” (53%), followed by “Understanding the terms” (35%) and “Environmental Issues” (12%). The group provided the perspective that sustainable development is related to capitalist vested interests and is reluctant to break off the current economic system. The concept of sustainability is closely linked to economic development. Many interviewees agree with Boff’s idea (2004) that “sustainability is merely rhetoric and an illusion”, or rather, an imposed model that seek a new form of growth but still linked to the capitalist model.

Another important issue in current research is the close bonds between sustainable development, capitalism and consumerism. World society conceives consumerism as the materialization of

happiness and this attitude gives fundamental importance to economic growth. According to Santos (1998), capitalism produces serious social and political problems where social rights such as housing, education and leisure are personal rights of the citizens that “purchase” their life quality, discarding the fact that it is a social right of each citizen.

One should highlight that current consumer standard has severely damaged natural resources and consequently the supporting capacity of the environment. Decrease in consumption is highly important (COOPER, 2002). Within this context, suggestions such as consumption with awareness, sustainable, green, and others are, in the view of the interviewees, mere “terms”. They are terms coined to counterpoise capitalist interests but frequently fail to represent the core of sustainable development, with the consequent production of confusions and difficulties in comprehension by society. According to the interviewees, the proposal of sustainable development is interesting in so far as there is a re-orientation of attitudes and values followed by actions and public policies that effectively consolidate sustainable consumption.

Although the interviewees critiqued current sustainable development, they also reported their opinions on the progress of discussions on the theme (Table 3).

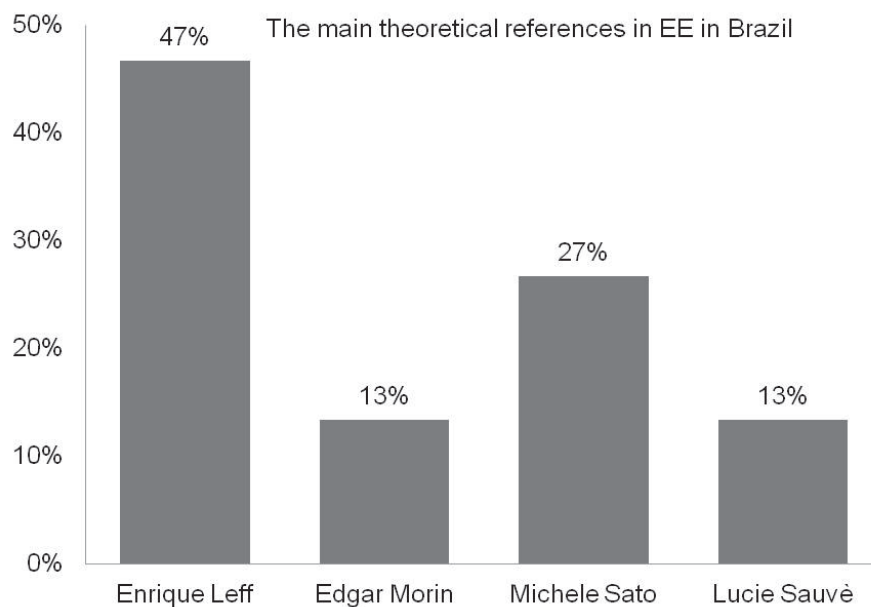
Table 3. Category of the main progress in sustainable development

Categories	Some Quotes	Absolute frequency (%)	Relative frequency (%)
Promote conscience raising	“More awareness on human activity on the environment” (E3) “Trying to promote conscience-raising in the population” (E17) “Greater awareness on impacts” (E3) “Propagation of environmental causes; sustainability even though seja superficial” (E5) “Sensitizing communities for preservation” (E11) “Dispersion of currents in environmental education” (E13) “Awareness that Technology will not solve the biodiversity issue” (E10)	7	41
Induce Reflection	“Access to critical discussions on sustainable development” (E2) “Diffusion of concepts and ideas” (E4) “Discussions and insertion of the theme in society” (E13)	6	35
Social concern	“Discussions, debates, reflections” (E18; E1; E10) “Seeking equality, rights and cultural valorization” (E11) “Development precedes each culture” (E18) “Discussions and insertions of the theme in society” (E13) “There is the cultural, social stance, not merely the economic one” (E13)	4	24
Total		17	100

With regard to the main progress in sustainable development, most interviewees highlighted that sustainable development “promotes great awareness on environmental issues” (41%), followed by the statements “it produces greater reflection on environmental issues” (35%) and “it brings about a high social concern” (24%). Sustainable development is progress since one may reflect on the existing issues, taking into account the social, cultural, public policies and the technological advances that promote patterns of control and maintenance of environmental quality.

Environmental education in Brazil is foregrounded on several authors who were studied and discussed by the interviewees with regard to the fourth question: The theoretical and epistemological referentials that foreground Environmental Education are several. Mention that which you think most relevant for an effectively transforming Environmental Education (Figure 3).

Figure 3. The main theoretical references in EE in Brazil most quoted by students.



The most quoted authors among theoreticians in Brazil were Enrique Leff (47%) and Michele Sato (27%), with Sauv  and Morin at similar percentages (13%). Enrique Leff, one of the great critics of capitalist economy, states, “the construction of environmental awareness should take into consideration the integrity of environments and strategies for a new economy based on equity and sustainability” (LEFF, 2011, p. 144).

Responses of interviewees comply with Leff’s observations. The author underscores that sustainable development is still highly associated with economic growth and fails to make a critique to the capitalist system. The author highlights the building of a broader perspective, a change in paradigms, called “environment knowledge” in which the need of a type of education that favors discussions and reflections within an interdisciplinary context of nature-society relationship is underscored. The author shows the importance of constructing “environmental knowledge” to understand the complexity of the environment; contrastingly, its lack worsened the current environmental issues (LEFF, 2006, p. 217).

Sato (2003) reports that environmental education is directly related to the current environmental context and insists that the teacher’s role is to propose new methodologies which may contribute towards an efficacious environmental education through an interdisciplinary practice.

In the meantime, Sauvé (2005) discusses that the goal of EE is to be neither a type of “education” for something nor a “tool” to solve environmental problems. According to the author, environmental education

[...] aims at inducing social dynamics, initially within the local community and, afterwards, in wider solidarity networks, to promote the collaborative and critical approach of social and environmental realities and an autonomous and creative understanding of the problems and their possible solutions (SAUVÉ, 2005 p. 317).

The author also underlines that environmental education goes beyond respect for the environment or its protection. It is the human relationship vis-à-vis the environment. Such a relationship provides different ways for the understanding of the environment which may be seen from the perspective of nature (conservation), as resource (management), problem (prevention and solution), system (understanding), a place to live in (knowledge), biosphere (living together) and as a community project (which requires all our endeavor) (SAUVÉ, 2002).

Morin (2000) reports that it is highly important to interpret reality with all its complexity. The context, invisible or visible, is thus understood more broadly since the interpretation of reality is more relevant than the elaboration of constitutions, laws and strategies which more often than not are restricted to theory:

[...] what worsens the difficulty in knowing our world is a type of thought that has been atrophied, instead of developing the capacity of contextualizing and globalizing (Morin, 2000, p.64).

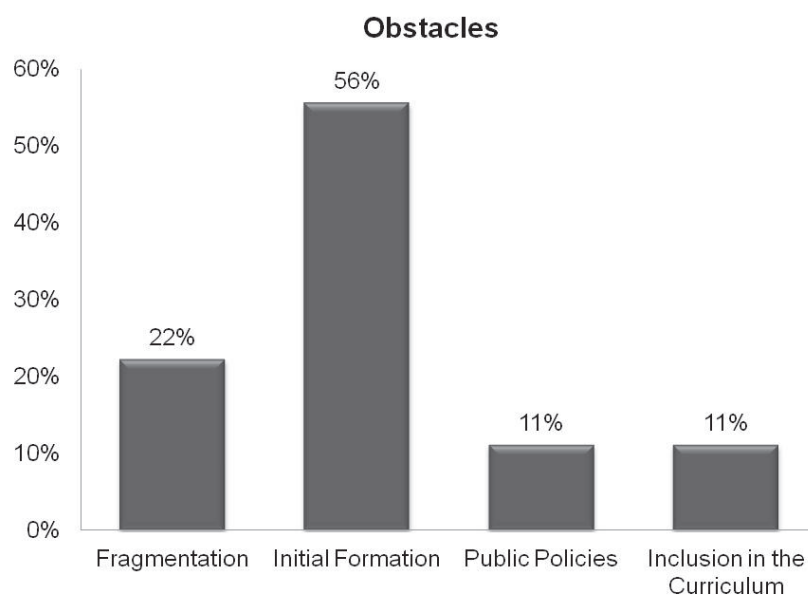
In the wake of the above perspectives, one may perceive the complexity of environmental education. A broader and more articulated perception is crucial since it destroys contemporary scientific paradigms and gives priority to multidisciplinary and transdisciplinary teaching (LOZANO et al. 2013), discussions on complex thought (MORIN, 2000), epistemological plurality and diversity (Santos, 2008) and epistemology and environmental rationality (LEFF, 2002, 2006).

In this context, research on teachers’ formation is important since it triggers a critical, reflexive and innovatory pedagogical activity that makes teachers reflect on their practice and decisions focusing on sustainable development and also proposes new methodologies that may contribute towards efficacious environmental education through interdisciplinary practice (SATO, 2003).

Finally, a discussion on teachers’ formation in Environmental Education in Brazil was suggested: *Discuss the difficulties and possibilities in teachers’ formation in Environmental Education in Brazil.*

According to the interviewees, teachers’ formation in environmental education in Brazil has to cope with several obstacles (Figure 4).

Figure 4: Main obstacles mentioned



The graph reveals that the most important obstacle was limitations within teachers' initial formation (56%), followed by fragmentation in teaching (22%), lack of public policies (11%) and the difficulty of including environmental education in the curriculum (11%).

According to Guimarães (2010), teachers, mediators in the dialogue with the students, should receive a type of formation built on interdisciplinary, reflexive, creative and innovatory stance that would allow them to analyze the complexity related to natural and social processes.

Teachers' initial formation was considered an obstacle mainly due to the primordial need to approach environmental education in higher education. The university is not prepared to cope with such a challenge (SATO and SANTOS, 2001). Further, interdisciplinarity is a barrier that should be overcome due to the fragmentation of the disciplines, ranked as second in the list of obstacles in teachers' initial formation (22%).

The obstacles in teachers' formation mentioned in the interview are related. Since initial formation must be interdisciplinary, it should overcome fragmented knowledge, especially university knowledge. However, new proposals on discussions, organizations and establishment of public policies that would consolidate environmental education within the curriculum should arise from universities. The above would include environmental education and sustainability in institutions for teachers' formation (MCKEOWN and HOPKINS, 2007).

A type of complexity relevant to teachers' formation due to a new concept in the education process should be underlined. In the wake of the current economic and social model and to scientific and technological progress, teachers' involvement in the process is essential. Education should meet the demands of current model through constant teachers' formation. Teachers should always be updated and work within a socialized stance with other teachers through discussions, experiences, information and innovations. According to Lozano et al. (2013), professional capacity will be a help to all in the integration of sustainable development and in the process of decision-taking in society.

4 | FINAL CONSIDERATIONS

Environmental issues have caused significant changes in world society due to environmental changes that jeopardize not only the environment but the planet's social, economic conditions and life quality. Through its reflexive and critical stances, environmental education tries to develop new attitudes and values that forecast sustainable development

Current analysis showed that environmental education is already being taught in basic education, albeit within a conservationist stance. Interviewed subjects reported lack of knowledge on the manner EE is taught within a critical and reflexive mode in the school. They also underscored that this fact occurs due to gaps in one's professional formation, initial and continuous. Several participants insisted that they had never taught EE in class due to the simple fact that they never had any contact with the discipline during the undergraduate course. Research revealed that, although initial formation is a urgent requirement, it is still shunned due to the many stumbling blocks that need to be overcome. Obstacles included initial formation, difficulty in the inclusion of environment studies in the higher education curriculum within an interdisciplinary stance and fragmented disciplines. All these factors impede the university and teachers to accept the challenging proposal for environment studies in the curriculum.

Although interviewees' knowledge on environmental education is limited, they revealed an aspect which is relevant to the issues discussed in environmental sustainability. In fact, they were critical when they related sustainable development and economic development. They remarked that in spite of several theories that deal with and defend current sustainable development, the neoliberal model in economic growth is still rife.

Thus, it was concluded that given the current context, environmental education, though not yet consolidated in the curriculum, is gaining spaces in all levels of education. The effectiveness of environmental proposal depends on relevant changes in public policy, the shift in paradigm, the formation of a society guided by the citizens, building new values and a sustainable society. Currently, there is a pessimistic view about the real role of environmental education and sustainable development, however, it is essential to be optimistic, because they are essential processes for building societies fairer and more egalitarian.

| ACKNOWLEDGEMENTS

The authors would like to thank the Post-graduate program in Education in Science and Mathematics of the Universidade Estadual de Maringá and to Capes for funding (PNPD). Thanks are also due to all postgraduate students who participated in the interview.

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