

Elisa García Jaramillo

The importance and viability of implementing Outdoor Environmental Education A comparative study between schools in Colombia

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Elisa García Jaramillo

**The importance and viability of implementing Outdoor
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A comparative study between schools in Colombia

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Abstract

Environmental Education (EE) is a relatively new field which was internationally recognized in 1977. Moreover, it has been described as a multidisciplinary subject because it encompasses elements of diverse areas of study such as: ecology, economy, politics and philosophy. Its lack of trajectory as well as the complexity of its nature makes it a harder subject to approach, particularly in conventional school settings. Increased environmental concern has helped raise the question of how to address EE. Consequently, significant research has focused on EE pedagogy and several studies have shown that incorporating the outdoors in its practice can generate better outcomes. Therefore, the purpose of this research is to explore the viability of implementing Outdoor Environmental Education (OEE) in private schools in Manizales, Colombia and to promote its importance and implementation.

Considering the context and conditions of most schools in the city is key; groups have large numbers of students, resources are scarce and installations do not offer many possibilities. In this paper, I will present a hypothesis that limited accessibility to nature may be a determining factor that prevents teachers from implementing OEE in their classes. With this in mind, this research will compare the ways in which EE is taught at schools that have immediate access to nature -green schools-, and at schools that do not -regular schools-. This can help explore the implications of having accessibility to nature, and answer the following research questions:

- 1) What are the main differences between EE classes taught at regular and green schools?
- 2) How do teachers perceive and incorporate the outdoors in their classes? And
- 3) What challenges do teachers face when it comes to implementing OEE?

Current literature on EE and OEE was consulted. A brief historical perspective of the subject is provided, as well as information on current trends and the Colombian context. Given the characteristics of the research questions, a qualitative oriented methodology was implemented to address them. The researcher visited four urban private schools in the city and three teachers from each school were interviewed. The data generated was analyzed through thematic coding and decoding, and through the hermeneutic approach.

As expected, it was found that accessibility to nature does play a decisive role in the implementation of OEE, and on the way teachers' perceive the outdoors. However other factors such as teachers' motivation, planning, time and resources are also important. Furthermore, it was found that EE is not available to all students as only few get to actively engage in relevant activities and practices. Therefore the main conclusion of the project is that, despite what the Ministry of Education states, in practice, EE is still an under prioritized subject, and it is not given the emphasis it requires in formal schooling environments. This, in consequence, also represents the main hindrance for the implementation of OEE.

Keywords: Environmental Education, Outdoor Environmental Education, The Colombian context

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1. Introduction

This research explores the viability of implementing OEE in private schools in my hometown: Manizales, Colombia. It also aims to raise awareness about the importance of implementing effective EE methods and how using the outdoors can represent a significant difference in reaching better outcomes. The motivation for this thesis comes from my experiences in the Erasmus Mundus master's in Transcultural European Outdoor Studies (TEOS) program, which have led me to the following realization. The fact that there is life on our planet is nothing short of a miracle -not in the religious sense of the word- but because it truly is both astonishing and inexplicable. The circumstances that allow and sustain all living creatures and their ecosystems are extraordinary, ranging from our planet's position in our galaxy, to the atomic composition of the smallest organisms.

Shapiro, cited in Vélez (1998) explains that at least 20,000 enzymes have to function properly and precisely in order to enable life in a simple bacterium. From this, we can understand that even the slightest change in said conditions -both at astronomic or microscopic scales- could have prevented the origin and evolution of living beings on this planet. Equally remarkable, is the fact that nature has its ways to preserve life. Kemp (1994) states that there is a symbiotic interaction among all the elements in nature; they work together and/or separately to perpetuate their existence. This is the miracle of life. We see it every day, in ourselves and in every corner of the natural world around us.

In this program, I learned through theory and -more importantly- experience, the benefits that come from being outside, in the open air. Among other advantages, being in contact with nature provides a setting that allows meaningful learning, personal growth, emotional, spiritual and physical well-being. Furthermore, I recognized how precious nature -or life itself- is, and how troublesome and sobering it is that we are putting it at risk. Through the environmental issues that we are bringing into the world, we are jeopardizing what mother Earth has created in billions of years. It is imperative that we take responsibility for our actions and that we do something to solve these problems. Our livelihood and the livelihood of other creatures depends upon it.

Being a teacher who believes in the power of education, the best I can do is to spread the knowledge I have gained in this program, and to research the factors that can

improve the conditions of EE in my country. This is what motivates the theme of this work. Research has shown that being in touch with nature may foster environmentally friendly behavior (Stern, Powell, & Ardoin 2008; Larson, Castleberry & Green 2010) and contributes to the better appropriation of key concepts and issues (Auer, 2008; Hernández, 2013). These authors also examine which factors can be more influential and beneficial when it comes to using the outdoors for EE purposes. Based on this, it is important to note that taking the students to natural places does not solely suffice to provide meaningful OEE; lessons should be planned thoroughly and be guided by relevant research on the subject.

Unfortunately, however, having worked for over three years in different public and private schools in Manizales, Colombia, I can say that the practice of taking students outside of the classroom -at least in general terms- is quite uncommon. Although schools and teachers implement their methodologies autonomously -as long as these cover the objectives of the National Curriculum (Ministerio de Educación Nacional, 2012a), classes are mostly taught within the confines of the classroom. This can be due to reasons of logistics and economics. Planning and executing field trips requires extra resources: time, staff members, money and more.

While using the outdoors can be very beneficial in any subject, it is essential in the field of EE. Schools should ensure that students are provided with time and experiences in nature, particularly in this subject. Hence, the purpose of this research is to analyze what factors limit and/or enable the implementation of OEE in urban private schools in Colombia. To accomplish this, I will compare the way EE is taught in four private schools. They all have similar characteristics but there is a differentiating factor: two schools have immediate access to nature-green schools-, and the other two have no green areas in their installations -regular schools-. This will help understand if logistics is indeed one of the main obstacles, or if there are other underlying issues. Knowing the main reasons that interfere in the implementation of OEE is the first step towards overcoming them. In light of this, the following questions were formulated:

- 1) What are the main differences between EE classes taught at regular and green schools?
- 2) How do teachers perceive and incorporate the outdoors in their classes? And finally,
- 3) What challenges do teachers face when it comes to implementing OEE?

2. Literature review and theoretical framework

There is an increase in research that focuses on the importance of being in contact with nature in order to develop pro-environmental behavior. Chawla and Cushing (2007) list a series of studies whose results show that at least half to over 80% of environmentally active adults spent considerable time having direct experiences in nature throughout their younger years. Furthermore, other studies have shown positive results of OEE programs, not only in fostering environmental attitudes and sensitivity (Stern et al., 2008; Larson et al., 2010), but also in improving the assimilation of key concepts and issues embedded in the subject (Hernández, 2013). This study will draw on the work of these researchers to demonstrate the importance of using the outdoors for EE purposes, and to advocate for the implementation of OEE in formal school settings. Similarly, this study acknowledges some of the criticism given to this topic, as some researchers have found that not all participants present the same outcomes after OEE programs; rather, they may vary depending on the type of program and on the characteristics of the individuals involved (Hudson, 2001; Yoshino, 2005).

Although there is a scarcity of literature available on OEE in Colombia, there is some on other Latin American countries, as it is the example of Costa Rica. A current evaluation of the program '*Aula al Aire Libre*' or 'Outdoor Classroom' shows significant improvement in the concepts assimilated through OEE as opposed to traditional learning methodologies (Hernandez, 2013). Reviewing this program is especially important because the context where it takes place is more relatable to Colombia. This research will also be supported by the work of Palmer (2001), who explains the paradox of EE: a field whose urgency and importance is only doubted by few, but, at the same, is not prioritized in formal education around the world.

Following the guidelines established by Oliver (2004): the literature review, the clarification of concepts and the literature consulted on qualitative research methodology, will provide a theoretical framework that can support the academic foundation of this project as well as the adequate generation and interpretation of its data. Furthermore, it is essential to analyze the information found about EE in Colombia. For this, the website of the National Ministry of Education will take an important role in this research; it is kept up to date and it will provide insight on the policies, methodologies and practices associated with this subject.

2.1. Environmental Education

2.1.1. Brief historical background

Based on Gaarder (1994) the study of nature in the western civilization can be traced back to the fifth century B.C. In this period of time, pre-Socratic philosophy focused on natural phenomena and on reflections about the origins of nature, particularly connected to the four elements: earth, water, air and fire. Within time, these reflections evolved into the natural science subjects studied today. Interestingly enough, although throughout history the beauty and value of nature have been appreciated in different ways, it was not until the eighteenth and nineteenth centuries that the widespread notion of taking care of nature was first introduced by influential thinkers of the time such as Rousseau, Humboldt and Goethe (Palmer, 2001). While two or three hundred years may seem like a lot of time, in comparison to mankind's impact on the world, then it really is not. It might be worth questioning why it took us so much time –over two thousand five hundred years after the pre-Socratic philosophers, to realize that we need to take care of the natural environment around us.

By the end of the seventeenth century, a lot was accomplished in terms of hygiene and waste disposal. Doctors had identified a connection between air pollution and health problems. Moreover, they conducted research and developed statistics that showed how people living in cities had a higher mortality rate and lower life expectancy than those who lived in the neighboring countryside (Barles, n.d.). These studies contributed to a better use of waste disposal and garbage management and to all sanitary improvements made heretofore. Similarly, it was an important step in acknowledging the influence that we have on the environment and vice versa; the effects that the environment can have on our well-being.

There are many influential figures in the history of EE, in this section we shall consider some of the most important. In the nineteenth century, Ernst Haeckel, a German philosopher, naturalist and professor whose work on botany and zoology left a valuable legacy to the study of nature, coined the term 'Ecology', leading to the study of different species, their interactions amongst each other and their ecosystem (Merchant, 2007). In the humanities, the works of David Thoreau and John Ruskin are perhaps some of the most remarkable. They exalted the value of wild nature and the importance

of its preservation. This, understandably, helped pave the way of the environmental movement, which was rising around the world.

2.1.2. The twentieth century and the consolidation of Environmental Education

One of the most recognized international environmental organizations, the International Union for the Conservation of Nature, was founded in 1948. On its website, they describe themselves as being a leading authority in environment and sustainable development as well as having the largest professional network of the field (IUCN, 2014). In 1971 they provided one of the first definitions to the subject of EE as: “The process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among men [sic], his culture and his biophysical surroundings” (IUCN, 1971 p. 70). This definition may elicit some criticism when considering the language used, the focus on men -both in gender and as a species- and an apparent disregard of the intrinsic value of nature. However, it has relevance, not only because it was provided by an important organization, but being one of the first definitions, it has served as a basis for our current understanding of the field.

In 1977 the United Nations gave international recognition to the validity of EE through the Tbilisi Declaration, which was the outcome of the Intergovernmental Conference on Environmental Education, which took place in Tbilisi, Georgia. This declaration also contributed a definition of the field: its characteristics, goals, and relevance. It also established several guiding principles that need to be considered in its implementation. These are summarized as follows:

- It is a lifelong learning process.
- It deals with the interactions between the natural, social, and human world.
- It develops attitudes which lead to the improvement of natural and built environments.
- It aims to develop individual’s understanding, skills and feelings of empowerment needed to find solutions for environmental problems.
- It requires a holistic and multidisciplinary approach with opportunities for diverse learning experiences, emphasizing on direct experiential learning in natural environments (UNESCO, 1987).

Based on this, it is possible to understand why EE is considered a multidisciplinary subject. It deals with ecological topics that are studied through the natural sciences, but it also has sociopolitical and economical dimensions that are related to other areas of knowledge. This can represent both, potential and a significant challenge in the teaching of EE. Gonzales (2004) argues that one of the main obstacles of EE is the multiplicity and diversity of paradigms and discourses that are embedded within the subject. To mention a few, EE requires the teaching of biological concepts and processes, it involves the study of economical models (i.e. production, waste and consumerism) and technological developments that can help us find better ways to use natural resources and to revert some of the damage caused by exploiting them. As if this was not enough, there is a key element that is arguably more important than the ones listed above. EE also draws on deeper ethical questions on the way in which human beings position themselves with regards to other species and the rest of the natural world.

This debate was brought on by Arne Næss (1912 – 2009), a Norwegian philosopher and environmentalist, considered the founder of the Deep Ecology movement. Some of its principles, as listed by Drengson and Devall (2010), are:

- All living beings have intrinsic value.
- The diversity and richness of life has intrinsic value.
- Except to satisfy vital human needs, humankind does not have a right to reduce this diversity and richness.
- Decisive improvement requires considerable change: social, economic, technological and ideological (pp. 48-63).

Eco-philosophy calls for fundamental social and personal modifications to prevent further damage and amend the damage done. Based on Gurholt (in-press), it critiques modern materialist attitudes -arguably prevalent in the western world- and advocates for a simple, anti-materialistic life style, not only to conserve nature, but also to promote a better quality of life. The question of how these ideas can be realised and put into practice is not easy to answer, and thus some critics may argue that this approach is idealistic and unviable, however, many feel that there are underlying truths to this philosophy which should be considered with regards to this subject matter.

Considering all the factors above, it is clear that EE is a complex subject, which requires certain conditions as it encompasses multiple goals and multidisciplinary factors. It is not just about natural elements, ecological processes, and environmental issues, it is also - and arguably more importantly- about fostering values, attitudes and behaviors that will result in both establishing better interactions with nature and solving the problems we have wrought upon it. Therefore, extra attention must be given to its methodology, as the methods in which education occurs are just as important as its content. This may require a lot of time, research and practice, due to the complexity and multidisciplinary nature of the field. However, finding the most appropriate ways of implementing this subject is imperative, especially when we consider the severity of the environmental problems we face, and how quickly they can escalate.

2.2. Environmental issues

While this paper does not intend to explore the environmental issues per se (their characteristics, causes and consequences) it is important to include some general perspectives on them, in order to justify the relevance of this project. Although Harris (2012) explains that there is a lot of uncertainty related to the topic of global environmental issues, and that perceptions and opinions vary depending on the place, community and culture in question, some general characteristics can be agreed upon, amongst the international and scientific community. Perhaps one of the most important characteristics is the fast rate at which these issues are taking place. Several authors have identified the industrial revolution as the main trigger of environmental depletion and degradation (Kemp, 1998; Jarvis, 2000; Fridell, 2006). This started in the seventeenth century, roughly three hundred years ago, and if we consider the estimated age of the Earth as 4.5 billion years old we can conclude how much damage has been done, in so little time. However, such large figures are difficult to put into perspective, and thus Berry (1978) makes an interesting analogy in order to simplify the understanding of this issue: if we see the Earth as a one-year old planet. In this proportion, humans appeared one minute to midnight on December 31, and the industrial revolution – whose goals were to improve the quality of life, which it did, in many ways - took place in the last second of that year.

Starting with the historical disregard of our effects on the environment, the widespread consumption of natural resources, the industrial revolution -which accelerated and aggravated this issue- and ending with an economy based on consumerism, we are

indiscriminately exploiting the environment causing severe damage to the planet; some of which is considered irreparable. The World Wild Fund for Nature explains it better:

Nature is the basis of our well-being and our prosperity. Biodiversity has declined globally by around 30% between 1970 and 2008; by 60% in the tropics. Demand on natural resources has doubled since 1966 and we are currently using the equivalent of 1.5 planets to support our activities. (...) Natural capital- biodiversity, ecosystems and ecosystems services- must be preserved and, where necessary restored as the foundation of human economies and societies (WWF, 2012 p. 2).

The literature above may suffice to determine the importance of finding the most effective methods for EE, hence the relevance of this research. Although its focus is on OEE, it must also draw on the context of the main subject.

2.3. Environmental Education in the Colombian context

In Latin American countries, the development of the EE movement occurred on a par with the international context, at least in its beginning, and in terms of significant events. The regional meeting that represented the Central and South American regions at the Tbilisi Intergovernmental Conference was held in Bogotá, Colombia in 1976. At this meeting it was concluded, among other things, that EE is an essential element and that it must provide individuals and communities with the intellectual, moral and technical skills, that will allow them to comprehend and solve the problems wrought to the natural environment (Teitelbaum, 1978). In addition to establishing the characteristics and objectives for the field, elements specific to the region were also considered: the breach between the rich and the poor, social inequality, availability and distribution of resources, among other sociopolitical factors that play an important role in terms of social and environmental interactions (Gaudiano, 2001).

Although this discourse has slightly changed since the late nineteen seventies as more specific issues arose: sustainable development, fair farming and trading, the exploitation of the natural resources by local and multinational entities, to name a few, it still revolves around the same concerns related to both social justice and environmental protection. With this in mind and, as stated by Torres (2010), EE in Colombia, “Is intended to be rooted collectively and systematically in every social construct, starting with the family, the school, the neighborhood, and the State” (p. 2). Even though EE

was recognized as ‘an essential element’ at the Intergovernmental meeting in 1976, in Bogotá, and despite the fact that the subject has been directly connected with important social aspects -not to mention the environmental ones as well- it was only in 1994, through law 115 that EE was officially included in the educative system. This law states that the subject of EE is to be taught along side the natural sciences: biology and chemistry, both mandatory in the National Curriculum (Ministerio de Educación Nacional, 1994).

2.3.1. How Environmental Education is approached

EE is not only to be taught alongside the natural sciences, in addition to this, and through the decree number 1743 of the same year, the presidency mandates that every school must implement an environmental project in its curriculum. It is then entitled PRAE (or PRAES, in plural) which stands for ‘*Proyecto Ambiental Escolar*’ or ‘Environmental School Project’. These projects are regulated by the Ministry of Education. They are designed to be a complement for the natural science subjects and to function as an additional strategy for the teaching of EE. The Ministry of Education defines them as “Pedagogical projects that promote the analysis and comprehension of the environmental problems and possibilities at local, regional and national levels and which provide means to implement solutions according to the natural and sociocultural dynamics of their context” (Ministerio de Educación Nacional, 2013).

Calderón and Cerón (2005) explain that schools are autonomous in the design and implementation of their project. Principals, teachers and students work together to propose strategies and activities that can help achieve the goals of EE: imparting appropriate knowledge, promoting awareness, fostering environmental behavior. Some of the actions implemented for these purposes are: celebrating environmental days, doing research on local issues, having special lectures and training programs for teachers and students. Because of the wide range of objectives and characteristics, the PRAES require the involvement and participation of members of the extended community: family members, local authorities and other educative institutions such as vocational colleges and universities.

EE and the PRAES have been monitored and revised throughout the years and some changes and updates have been made to improve them. The last one took place in 2012, through the law 1549. It dictates, among other things:

- Every person [sic] has the right and the responsibility to participate in environmental educative processes.
- The Ministry of Education, the Ministry of Environment and other institutions involved are required to reinforce and strengthen the PRAES at all schools in primary and secondary education.
- The PRAES must offer concrete activities and actions that allow children and teenagers to develop environmental cognition as well as ethical and responsive behavior (Ministerio de Educación Nacional, 2012b).

While this particular law is empathetic in the importance of implementing EE in formal schooling, it is somewhat generalized. It does not provide any guidelines in terms of budget, time, or means available for its execution. These are determining factors necessary to abide by what is written, and to make the transition from paper to practice. Other relevant documents and literature consulted for this research did not include information on said conditions. And thus, the interviews with the teachers will be a key source of information on this topic, and will be useful to understand the practicability of the latest legislation. They are also essential to explore the methodology and methods of EE and the viability and implementation of OEE.

2.4. Outdoor Environmental Education

2.4.1. Clarification of concepts

Although sometimes the adjectives ‘outdoor’ and ‘environmental’ are used interchangeably (e.g. outdoor/environmental education), not all learning that takes place outside is environmentally guided. In fact, despite some of the definitions given to the field: “Outdoor Education means learning ‘in’ and ‘for’ the Outdoors” (Smith cited in Hammerman, 1980 p.33). Parkin (1998) argues that, although both Outdoor and Environmental Education should be interconnected, not all practitioners engage in pro-environmental behavior and that the discipline itself is not always connected to the environment. On the other hand, Sandell and Öhman (2010) suggest that embodied experiences in nature may help develop a sense of place which ultimately would lead to a better understanding and appreciation of the environment. Nevertheless, both adjectives are used in this paper, emphasizing that the learning activities and experiences provided, should always follow the guiding principles of EE. It is also

necessary to clarify what the words ‘outdoor and outdoors’ mean or represent in this research, as they are often used throughout this paper.

When stating the importance of taking the students outdoors or having outdoor activities, the equivalent in Spanish would be taking students *‘al aire libre’* or having *‘actividades al aire libre’*, which in English means in the open air. This denotes that they take place out of doors, without the confinements of man-made constructions such as classrooms, laboratories, halls and so on. However, in this research, it also implies that these places have significant green areas where students can have direct contact with nature and its elements: plants, soil, rocks, water and such. These places can be located within school grounds, if available, or they can be other places in the city or region: botanical gardens, natural parks, reservations, mountains and so on. It is important to clarify that the place itself does not need to be particularly special in any way, on the contrary, the closer it is to the participants home, and the simpler it is to access it, the more useful it would be to enhance the teaching of EE by using the outdoors.

2.4.2. Relevance

Several authors have stated the importance of being in contact with nature to promote environmental awareness and behavior. Larson et al. (2010) studied the problems associated with nature deprivation and the positive effects that an eight-day outdoor program had in the environmental orientations of 133 children. Their results suggest that EE programs that take place in other outdoor areas, stimulate positive environmental orientations, increase eco-affinity and improve the inclusion and outreach of other members of the communities. However, while these outcomes are promising, the long-lasting results of this research could not be measured in their study. This represents a limitation, as the effectiveness of any educative process should prove that it withstands time and that has long-term lasting effects. Significant learning experiences are those that last beyond short-term acquisition of concepts or skills and that have an influence in the way people make decisions and act (Fink, 2013).

Therefore it is important to consider the research conducted by Stern et al. (2008). They evaluate both the short and long-term effects of three to five-day environmental residential programs in a sample of 300 students. Immediate data showed that the participants had a significant improvement in four areas: stronger connections with

nature, environmental stewardships, more interest in learning and better awareness of the place and environment in which the programs took place. Data collected three months later showed that while the improvements seen in the first area had faded over time, it still remained relevant in the remaining three. Their results also showed that adequate previsit preparation, longer trips (five instead of three days), active teacher involvement and follow up visits had a big influence in providing more effective outcomes.

A recent analysis of the program '*Aula al Aire Libre*' or 'Outdoor Classroom' shows that students who participated in activities at a natural reserve had significant better results in their academic evaluation of ecological concepts and topics. A number of 1085 students took part in the outdoor classroom program. The students had three (one day) field trips over the course of a year and they were evaluated through a pre-test post-test method against a control group of 498 students. The author refers to theories of sensorial learning and the importance of interacting with the environment in order to provide students with meaningful learning experiences (Hernandez, 2013). Considering this program is important because the context where it takes place is more relatable to Colombia. In addition to this, that fact that it consists of spread-out day trips instead of multiple day residential programs, implies that it would involve less logistics, and therefore it would be easier to apply in other schools.

2.5. Research questions

Knowing the severity of the environmental problems that we currently face, the urgency to address them and the need to develop better interactions with nature -not only for the sake of the environment but also for our own benefit- EE must be given a priority in formal schooling. As mentioned earlier, different studies have shown the importance of using the outdoors to achieve better outcomes in EE. Nonetheless, OEE is not as common and widespread as it should be. Therefore, the main goal of this research is to analyze the factors that may enable or prevent teachers from implementing active OEE in private schools, in Manizales, Colombia.

As most urban schools in this city have little or no access to nature, a possible hypothesis is that their limited accessibility to green areas prevents the implementation of OEE. The schools would have to organize field trips in order to take their students outdoors, which usually involves considerable resources. However, few schools do have

relevant green areas within their installations: one of the biggest private schools in the city has a ten-hectare forest and another has an ecotrail (a path that leads through a natural area), two orchards and several gardens. This research will compare the methods used in EE classes in these schools with two other schools that have no access to green areas. In order to facilitate the reading of this paper, from now on the first schools will be referred to as 'green schools' and the second schools will be called 'regular schools'. By comparing the manners in which EE is taught at these four schools, this research aims to explore the role that accessibility to nature plays in the in the implementation of OEE. Other factors that may be involved will be in this topic will also be analyzed; these are stated in the research questions below:

- What are the main differences between Environmental Education classes taught at regular and green schools?
- How do teachers in all schools perceive and incorporate the outdoors in their classes?
- What challenges do teachers face when it comes to implementing Outdoor Environmental Education?

3. Research methodology

Qualitative research has been defined as an inquiry process conducted in natural settings, which aims at understanding human and social phenomena through the reporting of personal views (Creswell, 2013). Taking this into account, and considering that one of the objectives of this study is to analyze the current ways EE is taught in Manizales, Colombia, and the teachers' views and opinions on this matter, this study will contain qualitative oriented research. Since a parallel objective is to raise awareness on the importance of OEE and thus promote its implementation, it will be guided by the critical theory paradigm, which challenges current social constructs and is concerned with the transformation of individuals, institutions and society (Zou & Trueba, 2002). The first stage however, is to investigate and describe the status quo of how EE is implemented in Colombia. Thus, this research will confirm –or refute- the premise that OEE is yet to be consolidated in this context.

Having worked as a teacher for over five years at different educational levels and institutions, I know that the breach between what is written in official documents and what it is actually done in the classroom –or outside of it - can be wide. Relying on my professional experience, I have decided to conduct this research by focusing on the teachers' perspectives and opinions. Although information provided by the Ministry of Education and the schools will be consulted and considered, this research will focus on the teachers' answers in order to draw conclusions. They are the ones who can provide the most detailed -and arguably accurate- information about the methodology and methods of EE in their classes, the logistics and procedures necessary to implement OEE in their schools, and the hindrances that may prevent them from doing so.

3.1. Research method and design

As Walliman (2011) states, qualitative research tends to deal with people; their attitudes and opinions, and thus, this information cannot easily be quantified. One of the best methods for this type of inquiry is through words, either written or spoken. Therefore the data for this research will be collected through interviewing three teachers from each school. The interviews will be semi-structured as they provide defined answers to defined questions and, at the same time, allow more information to develop openly through the conversation. Comments relevant to this study will be first identified through the coding and decoding method (Gibbs, 2007); highlighting words and sentences that can help answer the research questions. In addition to this, the transcripts will be analyzed based on the hermeneutical approach, which aims at finding and understanding the meaning of texts through interpretation (Gadamer, 2008). Details of this process are provided in accordance with the chronological order in which the events took place. The schools' documents and websites will serve as secondary data to analyze the way they present themselves and the role EE plays in each institution.

3.1.1. Description of the context

Colombia is located in the northwest of South America. It has a population of over 45 million people. Manizales is a relatively small city – or more specifically the fifteenth largest in Colombia. It is located in the Andes mountain range, in the mid-west of the country (Figure 1). It has a population of 391.640 inhabitants and an area of 572 square kilometers. It has a total of 55 private schools, 21 of them located within the urban area (Centro de Información y Estadística, 2012).



Figure 1. Map indicating the location of Manizales. Image by Google.

The sample of this research will be private schools for two reasons: the first because the schools that have the green areas are private, and the second because it is known that public schools have very limited resources. Groups exceed 40 students per class and teachers work in hard conditions. The four urban private schools that were chosen in this research comply with similar characteristics, which enables them to be compared with each other by analyzing the differences and similarities in the manners in which they implement EE. The most relevant features they share in common are the following:

- The four schools are some of the biggest in the city in terms of number of students, staff and infrastructure.
- The four schools are located in the urban setting.
- The four schools are private.
- The four schools cater to the same social stratum (upper-middle class).
- The four schools teach at both elementary and secondary level.
- The four schools are Catholic (as are most of the schools in the city).
- The four schools have an average of forty students per group.
- None of the schools follows a particular educative approach.
- The four schools abide by the National Curriculum and by the policies of the Ministry of Education.

3.1.2. Participant schools

In this section, practical information of the schools will be provided: their trajectory operating as educative institutions, the number of students and a brief description of their physical installations. In addition to this, this section will refer to information taken and translated from their PEIS, which in Spanish stands for '*Proyecto Educativo Institucional*' or Institutional Educational Project. This is considered to be the most important document of the institution. It states, among other things, the mission, vision, principles and objectives of the school. While schools must abide by national laws and parameters, every school writes its own PEI, and has autonomy to establish the guiding principles that they deem most appropriate. Below, the mission and objectives written by the schools will be included in order to give some context and provide insight on how they characterize themselves. This information is available on the schools' websites. However, in order to maintain the anonymity of the institutions and their teachers, the reference to them will only be provided to the supervisor of this research.

Regular school one

Year founded: 1966

Total number of students: 1,120

Total number of teachers: 68

Student-teacher ratio: 16.5

Installations: This school is located in the west of the city about six kilometers from the city center. It has four main buildings where the classrooms are located, a small building with offices, a conference room, a small chapel, two computer rooms, two libraries, a chemistry laboratory, a cafeteria, a sports' hall with a basketball court, a patio and an outdoors soccer field.

Mission: To integrally form children and teenagers with Christian principles and values through participative and open methodologies that can enhance their skills and competences (...).

Principles/objectives

- To form people who have faith and live by the example of the Christian life.
- To educate by the example of the gospel and the love of others.
- To foster a positive environment accepting each other's individual differences.
- To form integral and free human beings.
- To develop a range of skills and competences: intellectual, cultural, physical and professional.

Regular school two

Year founded: 1972

Total number of students: 894

Total number of teachers: 40

Student-teacher ratio: 22

Installations: This is the smallest of the four schools, yet it is one of the biggest in the city. It is located in the city center. It has two main buildings where the classrooms are located, a small building with offices, a computer room, a library, two laboratories, a

small eating area and an indoors patio where students spend their break and which is also used for physical education classes.

Mission: The school intends to form students not only by teaching them, but also by providing them with tools that will enable them to engage in self-learning and autodidactic practice. This under the light of the gospel and the values needed to contribute to social justice.

Principles/objectives

- To provide its students with sufficient spiritual and human values so that they can self-sufficiently embark upon their life journey.
- To provide them with plentiful academic knowledge and resources so that they are prepared to face the future professional challenges.

Green school one

Year founded: 1954

Total number of students: 1,350

Total number of teachers: 92

Student-teacher ratio: 15

Installations: This is the biggest, oldest, and arguably most recognized school out of the four selected. It is also the biggest one of the urban sector and is located in the south of the city about five kilometers from the city center. It has seven main buildings where the classrooms are located, two buildings with offices, meeting rooms and a conference hall. It has also a medium-size church, five computer rooms, three libraries, two chemistry laboratories, a coliseum, two outdoor soccer fields, an outdoor volleyball field, several gardens, an orchard and a ten-hectare forest.

Mission: (...) We want to serve the country and the church by forming holistic men and women who are committed to their society, competent, critical and who are able to perform well in the historical moment in which we currently live in.

Principles/objectives

- To consolidate the educative proposal of the Jesuits company, the holistic formation of human beings and the academic development through the pedagogical example of our Saint (...).
- To serve and meet the expectations of the students and other parts involved through quality and excellence.
- To seek high levels of productivity in teaching and learning which will enable the sustainability of the school. To innovate, to have constant rapport with the families, to provide good infrastructure and to foster social responsibility, respect and the protection of the environment.

Green school two

Year founded: 1963

Total number of students: 990

Total number of teachers: 81

Student-teacher ratio: 13

Installations: This school is located closer to the outskirts of the city, however it still is in the urban area, about ten kilometers away from the city center. It has three main buildings, two cafeterias, a small chapel, three computer rooms, two laboratories, several gardens, two orchards and an ecotrail. The ecotrail leads into and around the school green areas -which account for less than a hectare- facilitating its access as students get to visit them and explore its elements by doing short hikes around the area.

Mission: (...) Inspired in the thought of our community and our Patron St. Francisco de Asis, we form holistic human beings (...) who will be able to perform their best in their personal, familiar, social and professional stages in order to build a better society.

Principles/objectives:

- To guarantee high standards of education by providing adequate planning and guidance of the processes involved in the institution.

- To form, based on the catholic principles of the Franciscan community, a holistic human being who is competent, who has ecological sensitivity and who is able to comprehend and apply its knowledge and skills.
- To assure a healthy work environment by having a highly qualified staff of professionals who live by the values of St. Francisco de Asis.

On this section it is important to clarify two aspects: first, although the student-teacher ratio ranges from 13 to 22, the average number of students per class is around 40 at the secondary level, and 30 at the elementary level. The reason why the ratio is smaller is because the teaching staff, as specified in the schools' documents, includes both permanent and supplementary teachers. Second, as stated earlier, the four schools are Catholic and their religious affiliations are evident in their mission, vision and principles. However, this does not affect how nature and the environment are perceived to the school or how the subject is taught to the students.

3.2. Data collection and analysis

The interviews were held in Spanish, as it is the researcher and the teachers' mother tongue. Three teachers of each school were selected for the interview process. The age of the teachers was not considered. Both male and female participants were interviewed, and they all complied with the following criteria:

- They are qualified teachers.
- They have an academic background which includes environmental studies at bachelors and/or masters level.
- They have at least one year of teaching experience.

The interviewing process lasted for eleven days starting in March 6, 2014. The researcher visited each school and talked to every teacher in private. Only the audio was recorded but pictures of the schools, their installations and green areas -or lack thereof- were taken to give perspective of the context. Having interviewed twelve teachers for an average of thirty minutes each resulted in over five hours of audio-recorded material. Transcribing the complete interviews would evidently have taken a significant amount of time and effort, and so, as suggested by Social Research Methods (2010), only the parts of the conversation that are related to the project were transcribed. In total, they accounted for twenty pages of written material; a sample of it can be found in appendix 3 to illustrate how the coding and decoding method was implemented.

3.2.1. Coding and decoding method

Once the irrelevant information was identified through the audio recordings, the rest was transcribed and translated by the researcher. The final transcripts were analyzed through the coding and decoding model which, based on Gibbs (2007), 'is a way of indexing or categorizing a text in order to establish a framework of thematic ideas about it' (p. 39). The transcripts were read twice to get a good sense and recognition of the main ideas and key comments. Then, following the structure of the model, important words and sentences were identified and highlighted. These were selected as they are relevant in order to answer the research questions, by searching patterns within the text. The second step was to regroup the codes found within three different categories. Saldaña (2009) explains that this process is necessary to consolidate the information, give meaning to the text and find explanations. The categories were identified with three different colors.

Bright yellow: are key codes found in the general methodology and characteristics of how EE is taught at the school.

Light blue: are concepts or sentences regarding exclusively to the area of OEE.

Gray: refers to the codes that convey the challenges and obstacles that teachers encounter when implementing activities or OEE practices.

Using different colors to highlight and classify the three categories facilitated the process of identifying specific themes; their recurrence and their relevance. Moreover, this can also determine generalizability within the research (Saldaña, 2009). The themes represent the relevant factors in each category and their presence and recurrence as well as the differences and similarities found among the schools may be essential to address the research questions.

3.2.2. Ethical considerations

This project complies with the ethical requirements established by Norway and Colombia. The first step was contacting the principals of the schools. Once they were informed about the project and approved the involvement of their institutions, the teachers were approached. The participants were also informed through a conversation and on paper about the nature of the study and the purpose of the research. They received a letter and they signed consent of participation. Furthermore, it was made clear that their participation was voluntary and that they could withdraw it at any given

time. Only my supervisor had access to the schools and participants' identifying information, and they will remain anonymous throughout the process. Social research done in Colombia does not require the issuance of any notification; but it asks the researcher to get written consent of the participants (Colciencias, 2010). Norway requires both written consent and a formal application to the Norwegian Social Science Data Services (NSD). This organization emitted the ethical clearance for this research in February 19, 2014. This document can be found in appendix 1.

3.2.3. Limitations of the study

There are three main weaknesses that I can identify in this research. The first was acknowledged early in the process concerning the lack of literature available in the subject of OEE in Colombia. Although there is a good research base on this field which was consulted and proved to be useful for this project, not much was found that could relate to the Colombian context. While it would have been useful to consult OEE research done in Colombia, the lack thereof further supports the relevance of this study. The Colombian sources consulted were mainly State documents from the Ministry of Education and literature on EE in general, not covering this specialty. This limitation was an uncontrollable factor; the remaining two, however, were not.

Because the purposes of this research is to explore and compare how EE is taught in different schools and to analyze the conditions that may enable or prevent the implementation of OEE in said institutions, the teachers were chosen as the best participants to help answer these questions, and so they were chosen for interviewing. Nevertheless, it would have been very insightful for this research to have consulted with the schools' directors as well, to have more perspective on the subject. In their role, they make important decisions about the school's PEI, which in itself has an influence on the classes, schedule and priorities of every school. Moreover, they can refer to aspects of national law, budget and standards and how they are applied at their schools.

Finally, after talking to the teachers, it would have been very interesting to talk with some of the students as well. Those who are PRAE representatives -and are more actively involved in the EE activities- and a control group of students who are not PRAE representatives. Talking to them would have been very useful; analyzing their answers and comparing their take on EE and OEE at their schools. This is not relevant to the main purposes of the study, but it would have been beneficial to its additional

goal: to promote the implementation of OEE in Colombia. Presumably, significant differences would have been found between both student groups, thus potentially supporting the importance of assuring comprehensive EE and OEE for all students. This was not possible due to lack of time and to ethical considerations. I would not have gotten the approval for these new interviews from the NSD within time to conduct the interviews.

3.2.4. Validity and reliability of the research

Validity and reliability are important elements that need to be considered when doing any type of research. If a research is neither valid nor reliable, its results and the processes involved are rendered irrelevant. While reaching absolute certainty may not be a realistic option, there are some parameters that can help maximize the validity and reliability of a research project (Patton, 2002). The validity of this research is rooted in the selection of the participants. Since the schools are some of the biggest in the city and they cater to a relevant proportion of students, they represent a relevant sample of the population. The number of teachers who were interviewed also contributes to this factor. Twelve participants took part in this research which facilitated the process of identifying recurrences, differences and similarities among the institutions.

In qualitative research, reliability is mostly dependent on the researcher (Patton, 2002; Kumar, 2009). The results of the research can be significantly altered by the design and the implementation of the methods, as well as by the interpretation of the data generated from them. In order to minimize these potential risks, enhancing the transparency of the research process is essential. To accomplish this, and as suggested by Strauss and Corbin (1998), this research describes thoroughly the manners in which the data was collected and analyzed. Moreover, the presentation of the data was divided in two stages. In the first stage, it is presented as stated by the teachers, and some fragments of the transcripts are included in this section. In the second stage, their statements are analyzed and connected with relevant literature, as well as with the interpretation of the researcher.

Finally, the schools were selected under the same parameters, with the exception of the green areas of the green schools' installations. The same number of teachers was consulted in each institution and they were all asked the same questions. These were clear and easy to understand, and were asked in a way that allow the teachers to express

their opinions without giving intended room for socially accepted responses. The strengths of the data lie in the number and the characteristics of the participants, the fact that each PRAE coordinator was included, and the types of questions asked. The formulation of the interview guide was conducted in a manner that assured not only the answering of the research questions, but also allowing the discussion and reflection in other topics that may have not been considered in the beginning. On this note, a weakness found in the data collected is that the questions revolved around the status quo of EE at schools and, while some past perspective was given in terms of how it had changed over some years, the interviewees were not asked about the near future plans and strategies for the subject. This presents a limitation because it would have been useful to explore the future plans the institutions and/or the teachers have for EE.

4. Presentation of results

This section presents some of the teachers' comments and perspectives, particularly those relevant to answer the research questions.

4.1. Participants

Tables 1 through 4 show the teachers' academic background and experience

Table 1 *Teachers at regular school one:*

<u>Teachers</u>	<u>Academic background</u>	<u>Experience teaching EE</u>
Teacher 1-PRAE coordinator	BA in biology and chemistry education	Ten years
Teacher 2	BA in biology and chemistry education	Eight years
Teacher 3	BA in biology and chemistry education	One year

Table 2 *Teacher at regular school two:*

<u>Teachers</u>	<u>Academic background</u>	<u>Experience teaching EE</u>
Teacher 4 -PRAE coordinator	BA in biology and chemistry education	Twenty years
Teacher 5	BA in biology and chemistry education	Ten years
Teacher 6	BA in biology and chemistry education	Two years

Table 3 *Teachers at green school one:*

<u>Teachers</u>	<u>Academic background</u>	<u>Experience teaching EE</u>
Teacher 7-PRAE coordinator	MA in EE and sustainability	Six years
Teacher 8	BA in biology and chemistry education	Nine years
Teacher 9	BA in biology and chemistry education	Three years

Table 4 *Teachers at green school two:*

<u>Teachers</u>	<u>Academic background</u>	<u>Experience teaching EE</u>
Teacher 10-PRAE coordinator	BA in EE and sustainability	Two years
Teacher 11	BA in biology and chemistry education	One year
Teacher 12	BA in biology and chemistry education	Six years

Acronyms: _____

PRAE: Spanish for '*Proyecto Ambiental Escolar*' -Environmental School Project
EE: Environmental Education

The participants are identified by numbers according to their respective schools. In this way, the first six teachers belong to regular schools, and the last six to green ones. This is intended to simplify the recognition of the teachers and their institutions when they are quoted in the presentation of the results. In addition to this, every school has a PRAE coordinator who is in charge of the EE projects at every school. Because of their leading role, they will be referred to as such, and their school will be specified e.g.: ‘The coordinator at regular school one’.

4.1.1. Their academic background

Eleven out of the twelve teachers interviewed took their bachelor’s degree in biology and chemistry education. They explain that in this program they learned about the concepts and theories of the natural sciences and the best way to teach them to students from elementary to secondary level, including the area of environmental issues and education. Only one of the teachers did a bachelor specialized in EE and sustainability and another got a masters in the same field. They both work at the green schools and are the coordinators of their respective EE programs. When asked about their motivations to specialize in the subject of EE, these last two were more emphatic and detailed in their answers. The coordinator of green school one responded: “For the love of nature. I have always loved it –since I was little- and felt a strong connection with it. I love animals, plants, being outdoors.” While the coordinator of green school two talked about his passion for agronomy, plants and his concern for the environmental issues:

Well, initially I wanted to study agronomy, I really like plants, working with the soil, you know. I wanted to have a farm with organic fruits and vegetables (...) but then as we learned more about the environmental issues, I changed my mind. I thought this was...let’s say more appropriate and needed (Coordinator green school two).

Some of the other teachers also referred to their interest and appreciation of nature in their answer while others had their subjects themselves (biology, chemistry, and pedagogy) as their main motivation.

4.1.2. Their opinions regarding Environmental Education paradigms

When asked whether EE should focus on the teaching of facts, concepts and issues, or if it was more important to focus on the way us humans view nature and our relationship and interaction with it, the majority of the interviewees (nine out of twelve) did not say much on the subject. Their answers were short and somewhat superficial: ‘They are both important’ said teacher 3, and teacher 9 responded: ‘Both are necessary and complementary’. The remaining three gave deeper answers and emphasized on the importance and value of nature and how our species needs to change the ways we interact with it. Teacher 2 from regular school one said: “It is a difficult question. For centuries we have done with the environment as please -and we still do- but now we see the consequences and we know we have to change something”. The PRAE coordinators at the green schools also gave more thought to the answer. They spoke of the need to respect and value nature, and about the importance of having a more harmonious interaction with our surroundings.

4.2. The objectives of Environmental Education at their schools

In this part of the interviews the teachers had similar answers and the following three objectives were common in all schools:

- Promoting environmental awareness.
- Assimilating the relevant concepts and issues.
- Teaching the students how to take care of the environment.

More specific objectives were connected with the schools’ PRAES:

- Encouraging students to recycle both at school and at home.
- Helping students identify and find solutions to local environmental problems.
- Showing students how to save energy, water, and the importance of doing so.

In the green schools, in addition to objectives like those mentioned above, four out of the six teachers made reference to the importance of respecting and protecting nature. The coordinator at green school two explained the need of having students appreciate and care for their environment and reflected on the challenge that this imposes:

We have to make the students fall in love with this (nature) we have to make them care about it. We have to move the masses. It is a hard question, how can we promote EA in the guys? Through education, I think. We have to get the

students to care and to know how the environment works and how we affect it (Coordinator green school two).

4.3. The methodology of Environmental Education at their schools

In this aspect, all teachers referred first and foremost to the Environmental School Projects called PRAES. This is the main tool used for this subject and, as it is standardized by national parameters, it works similarly in all schools. Each school has a committee formed by certain NS teachers –one of them who is selected as coordinator by the principals or the PRAE members- and two or three student representatives from higher grades. This committee is in charge of doing most of the work related to EE in each school. They make a diagnosis of their context by identifying the main issues that need to be tackled and the most appropriate ways to do so. The committee meets once or twice a month to make sure the program is working well, to come up with strategies to improve it and to organize activities and campaigns that promote environmental awareness in their school. The campaigns usually take place once or twice a year and they last for a day. The activities of these campaigns can include showing films or documentaries that depict on environmental issues, collecting funds for the maintenance of the school's green areas and parading down the streets while collecting garbage, to name a few.

At regular school one for example, their PRAE coordinator explains: “We made a diagnosis of the school to see what we needed the most. We got several issues or problems that we had to deal with: like garbage management and noise. The acoustics in the school is complicated.” Although the interview was conducted in an office and during class hours, we could hear a lot of noise in the background. This school is located in the city center and it has enclosed installations; these elements create noise pollution, which can have a negative effect in their environment. For this reason one of the main objectives of their PRAE is to encourage students to speak, play and interact considering their context, and not being too loud. This, at the same time, aims at giving an important lesson on how our actions have an effect on the place and on our well-being. In this particular case it is referred to the problem of noise pollution, but it can be further applied to all the other environmental issues.

Following this line of thought, one of the main methods of implementing EE at all schools is through recycling. Every school has a recycling project as part of their PRAE.

They all have a separate basket for paper disposal at every classroom and common areas. Regular school two, in addition to paper, also separates plastic and it reuses some of these materials for arts and crafts classes. At this school, the student representatives of PRAE take turns during the breaks to work as ‘environmental officers’ making sure that students use the plastic and paper baskets. Green schools one and two also do different activities that aim at promoting and assuring appropriate waste disposal. Green school two had a campaign in which they asked students to bring old batteries and electronics that they were not using at their homes. The PRAE representatives explained to all the other students that these elements are harmful to the soil and that they can also be reused.

All the teachers also state that, as a complement to the PRAES and because EE is a multidisciplinary area, its topics are covered in the subjects of biology and chemistry. These are mandatory subjects in the National Curriculum of education (Ministerio de Educación Nacional, 2012a). Biology is taught in both primary and secondary level and chemistry only at the latter. The hourly intensity of these subjects ranges from four to six hours per week for each subject. When asked how EE was taught within these subjects, teacher 3 from regular school one replied: “We talk about pollution, soil degradation and landslides in biology class. Their causes and consequences and how they can be solved. We also study global warming in chemistry class, and the ozone layer -things like that”. Other teachers at both green and regular schools had similar answers. Teacher 5 added: “This type of topics can be found in the textbooks we use. Sometimes the book might be somewhat outdated, but it is good because it is easier to work with them in class”.

As it can be seen in this section, the methodology used to plan and implement EE is practically the same in the four schools. The strategies vary from school to school but in general terms they all have the same structure and follow similar parameters. To summarize:

- EE is imparted by NS teachers.
- Every school has a PRAE as the main tool to implement EE.
- There is not a specific subject for the area.
- Topics related to EE are included in biology and chemistry classes.

- The classes are guided by textbooks but teachers are free to plan and apply different activities as they deem most convenient.

4.4. Outdoor Environmental Education

While there are not many differences in how EE is approached among the schools, the case is not the same for OEE.

4.4.1. At regular schools

Teachers from regular school one explain that the way they implement OEE is by taking the students out on field trips. Teacher 2 said: “Last week we went with group 11 B (senior year group) to the botanical garden and next month we’ll go to the sanitary landfill with some of the students of PRAE”. When asked about the frequency of these trips teacher 2 explained that they try to take every group out at least once a year and that the PRAE students go to relevant places: a garden, a park, a mountain, a laboratory, more often -about every two months depending on the program they are working on. A similar situation occurs at regular school two: OEE is also implemented by taking students on field trips, once or twice a year. All teachers agree on the importance of taking students on field trips; however they have different views in highlighting the potential benefits that come from them. Teacher 5 focused on the academic dimension by saying: “It is very good for the students to have experiences in other places -to see new things. They learn better this way”. Teacher 6 of the same institution made a distinction on how the place chosen for the field trip should correspond with the objectives established for the trip. He explained:

Field trips are different and it all depends on the objective of the activity; if it is to promote environmental awareness, then taking them to the Universidad de Caldas -you know, where they have the botanical garden, -or to los Yarumos (an ecological park and reserve), is essential. They need to have contact with nature to achieve this (Teacher 6).

Regular schools

School one



Figures 2 and 3. School's entrance and main patio/sports court. Photos by author.

School two



Figure 4. School's main patio and soccer court. Photo by author.



Figures 5 and 6. Main entrance and recycling project. Photos by author.

4.4.2. At green schools

In addition to taking students on field trips about once a year, the green areas are used in the NS subjects as well as at their PRAE. At green school one, their PRAE revolves around the forest they have in their surroundings and one of the main objectives is to protect it and to use it for pedagogical purposes. In their diagnosis stage, the PRAE coordinator proposed doing a reforestation of the area. After being approved by the school board and the local authorities, they cut down invasive species trees that were harmful for the ecosystem and planted over a hundred local ones. The teacher clarifies that, for logistic reasons, only twenty students took part in this, but that all the others were involved in other ways (collecting funds, informing their parents and their community) and they were always kept up to date on the progress of the project. Once this main task was accomplished, they started bringing their groups to learn and to work on other projects. They created an orchard where students can plant vegetables and they are also working on an ecotrail to facilitate and control the access and mobilization throughout the forest and the other green areas.

At green school two the PRAE committee also uses their green areas in similar ways, except for the fact that they have not done any reforestations. They have an ecotrail, two orchards and several gardens, which are mainly looked after by the student representatives, but the rest of the students get to go there as well during biology and

chemistry classes or during activities related to PRAE. For example, one of the second grade groups (seven or eight year old students) planted ten tomato trees in their classroom. When the plants were big enough, they were re-planted in the orchard and now all the second grade groups, which are three in total, look after the trees. They take turns to go to the orchard to water the plants, cut off the dry leaves and apply natural fertilizers. They have not gotten any tomatoes yet, but the teacher says her students still care for the plants very much, and are always happy to go and visit them.

It is important to note that the green areas at both schools have not always been used for EE purposes; rather this has come from recent initiatives from specific teachers. At green school one, the reforestation project started two years ago and at green school two, the ecotrail was created in 2007. The orchard and the gardens have been there for a long time now, but it was only in the past years that students got involved in the maintenance of these places. The logistics to plan and execute visits to these places at both schools seemed fairly simple: they make the lesson plan, present it to their coordinators and reserve a time to go. The coordinator approves their visit or makes some suggestions and modifications prior to its approval. The teachers decide how often they want to take their students outside. Four out of the green school teachers expressed ideas like “as often as possible” (Teacher 8), or “at least once a week” (Teacher 9).

In terms of the importance of taking students outdoors, the majority of teachers at green schools were more enthusiastic and detailed in their answers. They all gave examples and some of them shared interesting experiences and anecdotes that they have had when doing so. Here is one of them, by teacher 12 at green school two:

One day I had a class with group 9C, and when I got to the classroom I was very surprised. Everything was very clean and the students were all in their place... usually the classroom is not tidy and you find students all over the place; so I was surprised. Then one of the students stood up and said that they had already done the task of the day so that they could go to the trail earlier, because we had planned a visit for the day. I checked the homework and the reading exercise, and it was true; they had all done more work so we could spend all the class outside. It was very nice to see them so motivated (Teacher 12).

Although this is not a common situation, it is a good example of what all the teachers at green school had to say about the students’ attitudes when they are taken outdoors. The

students really enjoy and appreciate this, and so they are on their best behavior when they are taken out so that they can get to come back again. Teacher 8 says: “We tell the students the plan, the rules, the activities and they really like it, so they behave really well. They ask questions and they get very involved. They always ask for more”. In addition to this, five out of the six teachers also see a good connection in terms of learning. As an example, teacher 7, the coordinator at green school one, said:

We always hear about landslides; it is different to hear it or watch it in the news than going to a place of a landslide and actually see it. Learning the roles of nature. The importance of trees to protect the land and to protect us of course, with the forest being so big and having so many elements, all this is possible (Coordinator green school one).

Another interesting aspect is that not only do the students benefit from taking the classes outside; the teachers also feel positive effects themselves when they carry out such activities. Although it might imply a little more work, they say it is worth it because going to the forest, the garden or the ecotrail is “relaxing” (teacher 8, 9 & 11), “peaceful” (teacher 8 & 12) and “inspiring” (teacher 8, 9 & 12). When talking about these effects, three teachers also say that it is important to break the routine and connect with nature, for themselves and for the pupils. Teachers 8 and 12 established comparisons about their experiences in the field while they were working at schools that did not have any green areas. They both concluded that the conditions for teaching EE are improved if they are able to use the outdoors. Finally, teacher 9 noted that they feel they are doing a better job: “It is very rewarding to come back from the forest, the students are happy while they are learning; that is hard to achieve! (laughs)”.

Green schools

School one



Figure 7. Picture taken outside of the school showing its installation and forest. Photo by author



Figure 8. PRAE representative students planting trees. Photo taken from the school's website.

School two



Figure 9. Picture showing the green areas in the school's premises. By author.

4.5. Challenges in implementing Outdoor Environmental Education

4.5.1. At regular schools

The challenges to implement OEE at regular schools are directly connected with the logistics needed for field trips and the limitations that they represent considering the context. Teachers said things like: “The groups are big”, “You need extra staff”, “Transportation is expensive”, “It takes time”. In addition to this, some of them also explain that field trips take time, and fitting them into the already tight school schedule can be complicated. Teacher 6 at regular school two had a more optimistic perspective, to illustrate it I will share a fragment of the transcript:

Interviewer: Here in Colombia –as opposed to other countries- where the groups are big or resources are limited, how challenging is it to provide students with these experiences? What are the logistics involved to accomplish this? (silent pause)... how easy or difficult can this be?

Teacher 6: Well the word ‘difficult’ sounds like ‘impossible’. In my opinion it is possible. We can organize fun activities that bring the students to the open environment. How can we do this? We can motivate them through a match; organize constructive dynamics, which they like a lot (...).

However, when asked about the logistics involved to carry out this type of activities, the teacher referred to the environmental or field trips, which represent some logistic and economic challenges as the ones mentioned earlier.

4.5.2. At green schools

When it comes to field trips, green schools face the same challenges as regular schools do: large groups, not enough staff to assure safety and discipline and arranging transportation can be difficult and expensive. Finally, going on field trips does require extra time. With regards to taking the students to the schools' green areas: the forest, the orchards, the ecotrail and/ or the gardens, transportation is not an issue, nor the fact that the groups are large -as long as they are dealing with students who are thirteen or older. Half of the teachers mentioned that taking children or young teenagers out of the classroom is a bigger responsibility, and that is why they are not able to teach OEE as often as they wish. Teacher 12 said: "I work with the younger kids and it is a bit more challenging and you have more responsibility". Another teacher explained that in order to take their students outdoors, the teachers would need at least two other staff members to accompany them in their activity. This would create a ratio of 13 students per adult, which is better but still not ideal, especially when talking about younger children.

Another difficulty when implementing OEE is not only that the groups are large in number, but that every teacher is in charge of several groups. Every teacher has an average of six groups. This has an effect in the frequency at which the same students get to have classes outside. Even if the teacher is eager and willing to plan and execute OEE activities through their biology and/or chemistry class, these trips to the green areas need to be distributed fairly among the groups that he or she is in charge of teaching.

Interviewer: How often do you go (to the forest) and what activities do you do?

Teacher 11: Per group? About once a semester or every three months per group because there are many groups, of course. We do different activities, from looking at the elements in the forest to working hands on with it. Now that we are developing the ecotrail, the students help us with that and they really like it. We also use it for the PRAE, which is very important.

Three out of the six teachers feel this is not a desired frequency as they said:

"Unfortunately, not very often" or "not very often" and "I wish I could do it more".

Another factor connected with this limitation is time. Even though going somewhere within the school area is understandably easier and requires less time than going on field trips to other places, some teachers explain that taking their classes out to the forest, garden or orchard, also requires time which poses an issue for its frequent practice: “(...) going out takes time, getting ready, walking, coming back. So if we have tests coming or we have to get units of the book we have to stay in the classroom”. As stated by teacher 12, their generalized concern is mostly connected with the topics they need to cover and to prepare the students for tests.

4.5.3. Thematic analysis

Tables 5, 6 and 7 show the themes found in the analysis of the transcripts. Each table corresponds to a research question and the breakdown of the topics follows the structure of the interview (Appendix 2).

Table 5

Research question 1: methodology and characteristics EE

<u>Recurrent themes</u>	<u>RS teachers</u>	<u>GS teachers</u>	<u>Total</u>
Taught by NS teachers	6	6	100%
Taught through PRAE	6	6	100%
Taught within NS subject	6	6	100%
Student representatives to PRAE	6	5	91%
Multidisciplinary subject	6	5	91%
Use of textbooks	6	6	100%
Recycling projects	6	5	91%
EA campaigns	4	6	83%
Learning concepts and issues	6	6	100%

Table 6

Research question 2: methodology and characteristics of OEE

<u>Recurrent themes</u>	<u>RS teachers</u>	<u>GS teachers</u>	<u>Total</u>
Going on field trips	6	2	66%
Family involvement	1	5	50%
Community participation	2	4	41%
Going to green areas	2	6	66%
Hands-on learning	1	4	50%
Planting and harvesting	0	5	50%
Positive adjectives, ie. 'inspiring'	1	6	58%
Positive SS attitude and behavior	0	6	50%

Table 7

Research questions 3: challenges in implementing OEE

<u>Recurrent themes</u>	<u>RS teachers</u>	<u>GS teachers</u>	<u>Total</u>
Not enough time	6	6	100%
Limited SS take part in PRAE	6	6	100%
Infrequent campaigns	6	5	91%
Infrequent field trips	1	4	41%
OEE depends on the teacher	2	5	58%
It requires many resources	6	1	58%
Harder to teach OEE to children	1	4	41%

Acronyms:

OEE: Outdoor Environmental Education EE: Environmental Education NS: Natural science
EA: Environmental Awareness PRAE: Environmental School Project SS: students

5. Discussion and findings

The section above presented some of the teachers' comments and perspectives, and a thematic analysis that illustrates their frequency and their relevance to the research questions. Based on this, a hermeneutical analysis of the resulting text was conducted. It is grounded on the interpretative process of the researcher, and on the literature consulted for this study. The presentation of the analysis will be divided in three subsections: 5.1, 5.2, and 5.3, which respectively correspond to the first, second and third research question.

5.1. Environmental education in Manizales private schools

This subsection presents the analysis conducted in order to address the first research question of this study.

5.1.1. Teachers' background and opinions on Environmental Education paradigms

On this subject, the answers to the question '*Do you think EE should focus on science (facts and issues) and/or philosophy (the way we see nature and the way we interact with it)?*' which intended to analyze the personal paradigm by which teachers are guided regarding how they view our interaction of nature, did not provide relevant information that could be interpreted and analyzed. For the most part, the teachers' answers seemed to be biased, or to pose socially accepted responses. Nine out of the twelve teachers responded superficially to it by saying, as an example, 'Oh yes, they are both important' making it an unreliable source of information. Furthermore, the conversation revolved around ecological topics, issues and notions, without referring to the social and ethical aspects embedded in the field of EE. Their academic background, and the fact that only NS teachers take part in the PRAE committees, may be the main causes for their inclination towards the ecological field and the apparent disregard of the social and philosophical implications of EE.

The remaining three teachers were more thoughtful and opinionated when answering the question. They all mentioned in one way or another, the need to reassess and modify the way we see nature and the ways we interact with it. While correlation does not necessarily mean causation, it is worth mentioning that these three teachers were the only ones specialized in the EE area. Hence they may have encountered this debate in their graduate studies, while the other teachers have not had the space to reflect on this. Within the relatively new field of EE, this philosophical debate does not have a long

trajectory, having been introduced by Næss in the beginning of the twentieth century, but gaining more international recognition in the late 1970s (Gurholt, in-press).

5.1.2. PRAE: The positive aspects

The methods used to teach EE in the four schools are mainly -and arguably, solely- through the PRAES. Abiding by law, every school must have a PRAE. They are run by a committee, which is composed by NS teachers, student representatives and a coordinator. If we look back to the early 1990s, before the legislation that established these programs, this is a step forward in the assurance that EE has a time and a place in formal schooling. In addition to this, The PRAES show other positive aspects that can be seen on the data collected for this research. From the conversation with the teachers, it could be noticed that they feel content and proud of the projects that they have chosen to implement in their schools. A reason for this might be because they have the freedom to plan and design their own strategies depending on the needs of their schools. Consequently, the PRAE committee – again, conformed by NS teachers and some students- can choose what to work on and how to work on it. They can be creative and use their own ideas. This is understandably more motivating than implementing strategies or projects made by others.

Another positive aspect of the PRAES is that they promote cooperation between different institutions and organizations. As stated by Torres (2010), one of the general objectives for these school projects is that they can bring together other members and sectors of the community to work towards the same goal. Based on this, state-funded institutions are required and encouraged to take part in the school projects if appropriate or necessary. For instance, a public technical college got involved in the reforestation process which is part of the PRAE at green school one. Another example is that teachers are welcomed to bring their students to the city's parks, reserves or botanical gardens not having to go through too much bureaucracy. Also, PRAE committees have had the possibility to attend specialized lectures or go through practical training needed for their project. It is positive that the schools have the assistance of other institutions to realize their PRAES. Even though the extent of their involvement might be limited and sporadic, their support does seem to make a difference and it is a stepping-stone in reaching the objectives of EE in Colombia which, as seen on the literature review, intends to involve different social sectors and work together at the local, regional and national levels.

5.1.3. PRAE: The weaknesses

As the PRAES have advantages, they also present several disadvantages for the implementation of EE. Although these are not stated in any official document -nor were they explicitly referred to by the teachers- they are clear when analyzing the data collected for this research. Looking at the information and definition given by the Ministry of Education (available in the literature review section), the PRAES seem to be a good way to approach EE. They are mandatory in every school; they focus on the immediate place and context by assessing the needs of the region, designing plans and responses to address those needs and organizing campaigns and activities that involve the students and other members of the community (Ministerio de Educación Nacional, 2013). These, on paper, appear to be sensible and comprehensive strategies. In practice however, the conversation with the teachers reveal a different scenario.

The manners in which the PRAES are structured and applied represent several limitations in terms of promoting and implementing EE. The main one, as seen in the interview section and in Table 1, is that the projects that are carried out in each school only involve a few students per group or grade. Only the PRAE representative students have regular meetings with the PRAE committee, take active part in the projects proposed by it and go through the training offered by other institutions. This means that the majority of the student body does not get to participate in such activities and thus, most of the students are not provided with the learning opportunities needed in order to reach the objectives EE. Practically, the only way they get to participate is through campaigns that take place once or twice a year, depending on the school. Although there are no current guidelines on the frequency that EE classes should have (Stevenson, Brody, Dillon, & Wals 2013), it is safe to say that once or twice a year is not enough.

Another limitation identified in the interviews, and which is also evident in its name, is that they are environmental school projects. This denotes that they are special undertakings and that they are not part of the ordinary educative processes. To better convey this interpretation, the use of an analogy would be helpful. A school project in literature class for example, can consist of the presentation of a play that the students have read in class. This requires planning, resource and practice. This can be a good tool to engage students in the subject, to use different learning styles and to let students show their talents and preferences, may that be in script writing, acting, costume design etc. A similar process occurs in the PRAES: the committee selects a special

undertaking, the student representatives have different chores and responsibilities and it is presented in a special setting: a campaign, a parade, or a school visit in which all the other students participate. Therefore, adding to the issue that only few students take active part in the PRAES, another issue is that while the project of performing a play is embedded in the literature subject, the PRAES are isolated. They lack the support and backbone of continuity because they are not connected to a specific subject.

This might seem contradictory as the law 115 of 1994 states that EE is to be taught alongside the NS subjects, and the teachers reiterate that they include topics related to EE when they teach biology and chemistry classes. Nonetheless, as it is seen on the interviews, this is done only regarding to some concepts and issues; mostly when the topics are included in the guiding textbook. In biology class, for example, they discuss environmental issues such as pollution, deforestation and soil degradation. In chemistry class they can cover the topics of climate change and ozone depletion. While this is important, it only covers the ecological aspect of EE and it lacks the reflection on its ethical, philosophical and sociological dimensions. Consequently, the current strategies used to address EE are insufficient to reach the goals of the area as established by UNESCO (1987) and the Ministry of Education, Ministerio de Educación Nacional (2012b, 2013), which go beyond the learning of concepts and issues.

Finally, another important issue identified is the superficiality of the projects and the discourses around them. For instance, a lot of emphasis is given to recycling, and although this is very important, it is well known that the process of recycling also demands energy, materials, and it is taxing on the environment. There is a phrase that can explain this in simple terms: “Do not use, re-use, recycle”. The ideal is to avoid the purchasing of many things in the first place, which brings another debate on the devastating effects of consumerism, which is arguably the root of the environmental issues we currently face. None of the teachers made any reference to this, and if they did not bring it up during the interview it is unlikely that the students are reflecting on these matters in their classes. They also did not comment on the intrinsic value of nature, and the ethical obligations that the human species has on other organisms. As mentioned earlier, this might be connected to their lack of specific training as it was seen in the question regarding the EE paradigms.

5.2. Outdoor Environmental Education in Manizales private schools

This subsection presents the analysis conducted in order to address the second research question of this study.

5.2.1. At regular schools

The conversations with the teachers proved the initial hypothesis of this research, which estimated that the lack of accessibility to green areas would impose an obstacle in the implementation of OEE. At regular schools, the fact that OEE activities can only be implemented through field trips and the additional time, resources and logistics that these require, makes it difficult for the teachers to plan them and execute them on a regular basis. Thus students are only taken outdoors rather sporadically: once or twice a year. This was expected and it does not represent a crucial finding of this research. Nonetheless, it is essential to go through the academic process and collect the information directly from the relevant sources, in this case, from the teachers.

Fortunately however, as it is required that public funded institutions cooperate and take part in the EE processes particularly through the PRAES (Torres, 2010), schools have the opportunity to take their students for visits to these institutions. The main place they go to is the Universidad de Caldas, the second biggest public university in the city. This institution offers undergraduate and graduate programs in relevant fields: biology, agronomy, veterinary, environmental studies and others. This makes it an ideal place to teach OEE because their campuses have, among other installations: a botanical garden, a farm, an ecological reserve and, in addition to this, they have professors who can get involved and help the teachers in the OEE classes. Students at both schools have gone on guided tours to some of these places. They have also received lectures –appropriate to their level- from university professors.

Although teachers recognize the importance of providing students with OEE activities in order to enhance the assimilation of concepts and/or to promote environmental awareness, they explain that the frequency is rather limited, because of the conditions that these trips require. Teacher 2 from regular school one, mentioned that the PRAE representative students get to participate in OEE trips more often. The positive tone in which this was said is both encouraging and disappointing at the same time. On one hand it is good that this teacher recognized the importance of these activities; on the other hand however, it is unfortunate that he seems content with the fact that they are

only regularly available for PRAE representatives, and not for all the students at the school. It is appropriate to mention that this teacher has been working in the NS and EE subjects for eight years, and so this could mean that he sees improvement compared to earlier years, in the sense that now at least some students have these possibilities.

This may explain the paradox seen in the teachers' tones and perspectives regarding the ways EE takes place at their schools; they seem proud of their PRAES and with the teaching of EE through the NS subjects. Conversely, they also express concern for not having enough time to address it properly, and they regret not being able to implement certain activities as often as they would like. This shows that while there has been some progress, there is still a lot more to be done. Because these schools are not able to practice OEE regularly, little information was given on this part of the conversation. Consequently, not a lot can be interpreted from what the teachers said in this section of the interviews. Interestingly however, what was left unsaid can also provide interesting analyzing opportunities, particularly when it is compared with the perspectives and opinions of the teachers who work in the green schools.

5.2.2. At green schools

How teachers perceive the outdoors

While the teachers at regular schools did not show enthusiasm when talking about nature or the outdoors – As it can be derived from Table 2, only one of them referred to the benefits that can take place when being in contact with nature. All the teachers at the green schools used positive adjectives to describe their experiences in the outdoors. Words such as 'relaxing', 'peaceful', 'motivating' and 'inspiring' are recurrent in the transcripts of the section in which OEE is discussed. All of them mentioned at least one of these words, and they were fairly descriptive about the positive emotions they have had when going to the forest, the orchard, the garden and/or the ecotrail. A few teachers referred to their past experiences working in other schools, and they expressed appreciation and gratitude for having access to these green areas as it is well known that this is not common in other schools in the city.

When talking about the advantages of using the outdoors in their classes, the six teachers emphasized not only in the ways in which they enhance the educative process but also, on the effects that they have seen on themselves as individuals. It was very encouraging to hear the teachers talk about their emotional responses towards the

outdoors, and to see that they perceive them in such welcoming manners. This can be supported by the work of Bell, Van Zon, Van Herzele and Hartig (2011) who explain that having access to nature in the work place can bring multiple and different benefits to the employees. Equally or even more motivating is the fact that the students also seem to value and appreciate going to these places. As the six teachers reported it, all students enjoy having OEE activities; this is not surprising and it is even expected, as it is well known that students would rather not spend too much time in classrooms.

How teachers incorporate the outdoors

One of the hypotheses of this research was that having an average of 40 students per group was an undeniable impediment for OEE. Before collecting and analysing the data, I thought that taking large groups outside of the classroom would mean major challenges in terms of discipline, efficiency and even safety. To my pleasant surprise, the teachers explained that because the students enjoy this type of activities so much, they behave really well when they go outside. They are attentive, respectful and they follow all the necessary instructions. Consequently, teachers do not need extra staff when they take their students outside. One teacher can manage having forty students -as long as they are thirteen years old, or older.

As teachers explained the type of activities that they prepare when they take their students outside, two distinctions were made: one, when the students are taken on field trips and two, when the OEE classes take place at their schools. As it is in regular schools, when green schools take students on field trips the places they visit are mainly state educative institutions, as they have a responsibility to cooperate with EE projects (Torres, 2010; Ministerio de Educación Nacional, 2012b). Teachers 6, 8 and 9 used the example of the Universidad de Caldas saying that trips to its botanical garden are the most common. The coordinator at green school two however, commented with excitement that three groups from their school had been to the university farm in the past year. Perhaps this is partially due to his personal interests in agronomy. There, the students could see and learn about cows, pigs, ducks, fish and chickens. They also explored fruit and vegetable plantations, which are native to the region.

The methods used to teach OEE at school grounds are different. Instead of going on sporadic field trips to places where staff outside the school provides the OEE experience, both schools have incorporated their green areas into their PRAES. Following the due

process, the PRAE committee has made a diagnosis that evaluates the state of their place, the ways in which it can be improved and to establish its strengths as pedagogical tools for EE. At green school one the committee found that their ten-hectare had invasive trees that can be significantly harmful to its fauna (Wittenberg & Cock, 2001). Therefore their main project was to plan and execute the reforestation of the area with native species. It started two years ago and is now in its final stage. The specific tasks that this entailed involved raising awareness on the issue to the school and outside community, raising funds to execute the project, getting training and advice from relevant public organisations and finally cutting down the existing trees that were affecting the ecosystem and reforesting the area with native species.

Teacher 7, the PRAE coordinator at green school one, proposed it to the committee and it did not take long for the project to be approved and to reach levels outside of their own institution. Her tone when talking about this whole process is moving and compelling. The motivation, commitment and the effort needed to carry out this type of undertaking was evident during the interview with her and the other two teachers and PRAE committee members. This is a remarkable achievement, which has been beneficial not only for educational purposes but also for the betterment of the region. However, this project presents the same limitations found in the PRAES. Only a few students participated in the processes concerned. Although all the students were involved in some ways: they were informed and kept up to date, they learned about the forest, the importance of protecting it and they helped to collect funds, only the students who belong to the PRAE committee were able to have constant and hands-on tasks and responsibilities.

The methods used to implement Outdoor Environmental Education

Although not many students were able to go to the forest during the reforestation process, the place is now used to impart OEE to all the students and not only to PRAE representatives. Teachers visit the place to work on lessons in their biology or chemistry class when possible and appropriate. They learn about ecological aspects such as photosynthesis, the carbon cycle and more. The coordinator at green school one provided an interesting example by explaining that it is more meaningful for students to learn about landslides when they are able to see –and feel– the soil, see the trees, their roots and how all these elements are connected, rather than just looking at pictures and

hearing about it in class. This is interesting because it relates to the context and the region. Manizales is located in the Andes mountain range, and due to the characteristics of the area, the weather and human induced erosion and deforestation, it is often subject to numerous and dangerous landslides (Ecoexploratorio, n.d.). Reflecting on the impact that we have on places, and vice versa, is one of the underpinning notions of Place-based pedagogy (Wattchow & Brown, 2011) and, although none of the teachers mentioned this field during the interviews, it is being put into practice with this type of activity. This example is also relevant because it reveals elements of sensory learning theory (Auer, 2008) as well as the importance of providing embodied experiences for EE (Sandell & Öhman) and for Place-based Education (Wattchow & Brown, 2011). These are some of the factors that make OEE more efficient than learning through traditional schooling methods.

At green school two, students are also provided with this type of learning experiences. They can also participate in hands-on learning by working in the ecotrail that the school has created in order to facilitate access to the green areas. Students also work in the orchards, harvesting seeds, watering and fertilizing the plants. As shown in Table 2, five out of the six teachers at green schools gave examples of gardening activities as a means of providing OEE. The same number of teachers also mentioned how these places -the forest, the ecotrail and the orchards- are a good vehicle to establish family involvement in the EE processes. Students are encouraged to share with their families the projects that the school is working on, and some family members, depending on the degree of their involvement with the institution, have been invited for visits and/or have participated in the schools' PRAES. Larson et al. (2010) emphasize on the significance of connecting people from different backgrounds through activities aimed at promoting environmental literacy and eco-affinity, they also explain that OEE is a good platform to accomplish this.

5.3. Challenges in implementing Outdoor Environmental Education

This subsection presents the analysis conducted in order to address the third and final research question of this study.

5.3.1. At regular schools

The challenges that are exclusive to regular schools revolve around the fact that they lack access to green areas and therefore can only implement OEE through field trips.

The implications this entails have been discussed before, mainly regarding the need of extra resources. It has been previously established that field trips, and consequently OEE practices are rare and sporadic in these schools.

5.3.2. At green schools

An obstacle that was not mentioned by the regular school teachers, but that was referred to by four out of the six green school teachers interviewed (Table 3), is that it is more difficult to take children to the schools' green areas. While the teachers explained that taking large groups was not problematic in terms of discipline and safety when dealing with teenagers, when working with children the situation is different. Despite the fact that the groups are slightly smaller (an average of 33 students instead of 40), students from elementary levels -who are between four and twelve years old, can not be taken to the schools' green areas unless at least another school staff member can accompany them in their visit. The safety motives behind this are evident. In Colombia, unlike in other countries, most schools –not to say all schools- do not have teacher assistants that can help in these tasks. As a consequence, children at green schools are provided with even less OEE practices than the older students.

Although studies by Palmer (2001) show that children can acquire knowledge on somewhat complex ecological concepts and environmental issues and thus should be instructed on it, Davis (2010) believes that providing them with significant time learning and playing outdoors is more relevant for sustainable education. Throughout this research it has been argued that spending time in direct contact with nature can be very beneficial. People of all ages should spend time outdoors -especially when trying to accomplish the goals of EE- and this should start in the early stages of life. Gurholt (in-press) analysed how different people experience the outdoors throughout their lives. Her study suggests that young people tend to have a more intense appreciation of the outdoors, and that as adults they value their childhood experiences in nature. While this study is placed in the Norwegian context and connected with its *Friluftsliv* or 'open outdoor life', the importance of providing children with outdoor play and experiences in nature is transferable to any country and context. With this in mind, it is rather unfortunate that children, despite studying in schools with green areas, are not taken to them regularly.

5.3.3. At all schools

Considering that OEE requires extra resources, if and when these resources are available, implementing OEE depends directly on the teachers. This is the case for all schools. Teachers are the ones who organize field trips and, at green schools, teachers decide if they want to take their students to the schools' green areas. This represents both advantages and disadvantages. It is positive that teachers have autonomy in their classes; on the other hand, if teachers are not able, or do not want to plan this type of activities, their students will not go through OEE processes. The schools have not established any OEE programs or activities as part of their curriculum or their Institutional Educational Project. In fact, even though both green schools have a trajectory of over fifty years, their green areas started being used for OEE purposes just a few years ago, when the PRAE coordinators took the initiative to do so.

It is worth to reiterate that these two teachers are the only ones who have specialized in the subject of EE. This may support Calderón and Cerón (2005) in their critique of how Colombian schools have relied the responsibility of EE solely on NS teachers, overlooking the importance of having specialized professionals in the field. In addition to assuring the presence of teachers with relevant academic background in the field of EE, the Ministry of Education should also establish the importance of involving teachers from other areas such as philosophy, the social sciences and physical education. Thus recognizing the complex nature of the subject, and being consequent with the narratives presented in official documents. This would contribute to make the teaching of EE truly multidisciplinary.

Although it was not explicitly said during the interviews, it could be interpreted that while the teachers have a determining role planning and executing field trips by coordinating all the logistic procedures: they take the initiative, they ask for permission and transportation, they contact the host institution and they accompany the students on the trip but, when the class arrives to the place, the activity is taken over by another person. The NS teacher stands aside and someone from the host institution takes charge and gives the tour and develops the activities for the day. This is understandable as an employee from the institution is arguably the most appropriate person to lead the visit. However it is advisable that the teachers also take part in the activities concerned. Stern et al. (2008) found that there are several conditions that can improve the results of OEE

projects, among them, they concluded that when the main teacher participates in the session, alongside those coordinating the activity, the students show better outcomes in short and long term basis. This is a relatively minor detail that can be easily corrected; there are more significant obstacles that require further consideration.

As seen in table 3, both regular and green schools face similar challenges in the implementation of OEE. All teachers -twelve out of the twelve- referred to two main issues: number one, not having enough time to implement OEE; and number two, the fact that only a few students take active part in the PRAES, which represents an obstacle for both EE and OEE. As stated earlier, these challenges are recurrent in the discussion regarding the methodology and methods of EE at all schools. This helps answer the initial questions and represents perhaps the main finding of this research: despite the teachers' efforts and the undeniable significance given to the field of EE by the Ministry of Education, this subject is not considered a priority in school settings. As a result, environmental awareness and behavior is promoted through infrequent campaigns, projects and field trips, and EE literacy is included, when possible and relevant, in the NS classes. Ironically, the multidisciplinary nature of this subject as explained by Gonzales (2004), instead of working in its favor by demanding more time and attention, is doing the opposite, by being included on the side of mandatory curriculum subjects such as biology and chemistry.

6. Conclusion

The motivation for this research stems from acknowledging the severity of the environmental issues we have wrought on the world and the urgency to address them. It is clear that we all have a responsibility to take action and face these problems, no matter our nationality, background and profession. As a teacher, I believe that education is one of the best ways to foster people's minds, values and behaviors and thus, my role in taking action is through EE. Having experienced the benefits of being in contact with nature, and having learned about the positive impact that OEE programs and activities can have on promoting eco-affinity, environmental awareness and behavior, guided the specific topic of this thesis. Its purpose was set to promote the implementation of OEE in my hometown Manizales, Colombia and to analyze the factors that may prevent its implementation.

The consultation of relevant literature helped build a basis and a background for this project, both at international and national levels. Relying on other studies that have shown the benefits of using the outdoors for EE contributed in justifying the importance of OEE, which consequently can help promote its implementation. The fact that no significant research was found on OEE in the Colombian context, consolidates the need for this promotion and for the first goal of this research. The second and main purpose, to analyze the factors that prevent or enable the implementation of OEE in private schools in Manizales, was targeted by establishing a hypothesis and answering three research questions. These were addressed through a qualitative approach, using the method of semi-structured interviews.

The first question "What are the main differences between EE classes taught at regular and green schools?" can be summarized like this: all schools use the same methodology to implement EE. While the methods vary and depend on the physical and contextual characteristics of each school, they all share the same structure as they follow regulations established by the Ministry of Education. All schools have a PRAE, designed to increase environmental knowledge, awareness and behavior, but only few students take active part in what this entails, while others only participate on special campaigns and occasions. At all schools, EE focuses on recycling projects, waste disposal, and pollution. In addition to this, at green schools, the methods revolve around

the natural areas within their installations, which enable some level of OEE. Finally, it was found that the discourse behind these methods is rather simple and that EE at schools focuses on the ecological aspect disregarding the social, ethical and philosophical dimensions of the field.

The second question: “How do teachers perceive and incorporate the outdoors in their classes?” provided significant differences among regular and green school teachers. While the first did not say much on the subject and focused on the learning in context factor, the latter gave detailed and emotive explanations. They not only referred to the learning advantages that the outdoors can provide, they also emphasized the positive emotions and reactions they and their students experience when the classes are taken in the schools’ forests (green school one) or ecotrail and orchards (green school two). Furthermore, the green school teachers provided specific examples of the activities they execute in the outdoors, giving insight on the methods that are implemented in OEE classes. The regular school teachers on the other hand, only made brief comments on how often they go on field trips and the activities that their students are offered in them, which consist of mostly tours and lectures.

The last question “What challenges do teachers face when it comes to implementing OEE?” confirms the hypothesis that having accessibility to nature plays a determining role in the implementation of OEE. However, two other important aspects were also identified: first, OEE activities depend mostly on the teachers. If they want to plan a field trip or if they want to take their students out of the classroom, they can, but it is not mandatory to do so, as this is not included in the schools’ curricula or PEI. Second, if the teachers want to implement OEE, they need to count on certain resources in order to do so. At regular schools these resources are mainly time and transportation, as they need to go on field trips to implement OEE. At green schools, the resource needed is time. Unfortunately at all schools, this is rather scarce. This is the main challenge that teachers face when it comes to implementing OEE; teachers do not have enough time to cover EE thoroughly alongside the mandatory subjects, which consequently limits the inclusion of OEE projects and activities. And finally, it is worth restating in this last question that EE is only directed at PRAE representative students, and not at the entire student body.

Looking back and seeing things under perspective it is safe to say that few stepping-stones have been laid. From the times of the Intergovernmental Conference held in Bogotá, which represented Latin America in Tbilisi in 1977, to acknowledging and including EE in the educational law in 1994, making the PRAES mandatory in all schools. While this may have been a good start to approach EE, twenty years have passed and now these strategies need to be revisited and revised; in fact it is long overdue. The dichotomy of how EE is presented in official documents and how it is taught at schools is very clear. On paper a lot of importance is given to the field, but the strategies proposed to address it are not up to par. For complex reasons that go beyond this research, it is taking a long time to give EE the place it deserves and needs in formal schooling, with the aggravation that promoting sustainable ways to interact with the environment is indeed a priority and there is no time to spare.

6.1. Recommendations for the institutions involved and future research

Based on this study, there are two strategies that the schools can easily apply, and that could represent significant improvements in the teaching of EE. The first would be to include teachers from different subjects in the PRAE committees, particularly from the social sciences and physical education. The philosophical issues and the ethical debate of the field must be considered and presented to the students. Likewise, the importance of the embodied experience in nature and the outdoors, as well as the joy and the positive interaction among the students -and their teachers- is essential to achieve the best results possible, and thus the need of the inclusion of physical education teachers.

The schools that participated in this research comply with the requirements established by the Ministry of Education. Devoting additional time to the subject of EE and making it a priority in schools, perhaps by including it as a mandatory subject goes beyond their jurisdiction. However, the schools could ask the relevant authorities to reconsider the way EE is being approached and to establish strategies that assure it reaches to all students on a regular basis. Future research based on this study could examine the possibility of implementing periodic and mandatory OEE programs for all students at least twice a year. These would need to be carefully structured, as it takes more than just going outside to implement effective EE. Hence they should rely on previous studies such as the ones mentioned in this thesis.

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8. Appendices

8.1. Appendix 1. Ethical guidelines and clearance

- All participants were informed about the purpose of the project.
- All participants were informed about the data collection method and analysis.
- Data will be stored in computers and in an external harddrive, and it will be protected by password security.
- All participants gave written consent to participate in the project.
- All participants were informed of their right to withdraw their consent at any point of the process and without the need of stating a reason.
- All participants will remain anonymous.
- The names of the institutions will not be included nor references to their websites.
- The participants and the institutions have access to the thesis and its findings.
- The researcher applied and obtained clearance for this project. See below.



Kirsti Pedersen Gurholt
Seksjon for kroppøving og pedagogikk Norges idrettshøgskole
Postboks 4042, Ullevål stadion
0806 OSLO

Vår dato: 19.02.2014

Vår ref: 37566 / 3 / LT

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 10.02.2014. Meldingen gjelder prosjektet:

37566	<i>The Importance and Viability of Implementing Outdoor Environmental Education: A Comparative Study between Schools in Colombia</i>
Behandlingsansvarlig	Norges idrettshøgskole, ved institusjonens øverste leder
Daglig ansvarlig	Kirsti Pedersen Gurholt
Student	Elisa Garcia Jaramillo

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 30.08.2014, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Katrine Utaaker Segadal

Lis Tenold

Kontaktperson: Lis Tenold tlf: 55 58 33 77

Vedlegg: Prosjektvurdering

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Auditingkontorer / District Offices:

OSLO NSD: Universitetet i Oslo, Postboks 1055 Blindern, 0316 Oslo. Tel: +47 22 85 52 11. nsd@uo.no
TRONDHEIM NSD: Norges teknisk-naturvitenskapelige universitet, 7491 Trondheim. Tel: +47 73 59 19 07. kjre.svarvalbvt@ntnu.no
TROMSØ NSD: SVU, Universitetet i Tromsø, 9017 Tromsø. Tel: +47 77 64 43 36. nsd@svu.uib.no

8.2. Appendix 2. Interview guide

<u>Question</u>	<u>Intended purpose</u>
What is your academic background?	<i>To know the teacher's level of study and if he/she has conducted research on the topic.</i>
Why did you choose a career within this field?	<i>To examine the teacher's motivations to work in the natural sciences and education.</i>
For how long have you worked as an EE teacher; here and/or in other schools?	<i>To explore the teacher's experience and background.</i>
How does the Environmental School Project work in this school?	
What is the hourly intensity for EE in the school? How often do you teach EE?	<i>To establish the time and relevance given to EE.</i>
What are the main objectives of the classes?	
How do you reach these objectives?	<i>To identify the methodology used for EE.</i>
Should EE focus on facts and issues and/or on the ways we see nature and the way we interact with it? Please explain.	<i>To explore the teachers' personal opinions on EE paradigms.</i>
How can teachers raise environmental awareness and foster environmental behavior in their pupils?	
What role does nature and the outdoors play in your classes?	<i>To explore the teachers' opinion on OEE.</i>
Have you taught EE classes outside of the classroom, if so how?	<i>To examine if and how OEE is applied in the school and the teacher's views of OEE.</i>
What are the logistics involved in order to have classes outside the classroom?	<i>To identify the possibilities and/or hindrances involved in the process.</i>
Is it 'worth the hassle'? Why/why not?	<i>To examine their perception of the outdoors.</i>

8.3. Appendix 3. Transcript sample (Translation)

Transcripts accounted for nineteen single spaced pages. A couple of pages are presented as an example of how the coding and the coding method was applied.

Teacher 3. From regular school one.

BA in biology and chemistry. One year teaching experience.

Could you tell me how the PRAE works in this school?

The program is managed by a committee formed by **natural science teachers** and **voluntary students** who wish to take part in the project; about **two students per classroom** from the **older grades**. We made a **diagnosis** of the **school** to see what we needed the most. From this analysis we identified several issues that we had to deal with: **garbage management and noise**. The acoustics in the school is complicated.

Right, we can hear the noise now even when there are no classes.

Yes, we have to analyze and consider the **context of the school**. The fact that it is **located downtown** makes it really **loud**, for example. And as I said the acoustics of the **installations** doesn't help either. So what we have to do here is to promote **environmental awareness**, to see how our actions have different repercussions (...).

I see, and what are the strategies to accomplish these objectives?

The first is a **recycling project** which invites students to **recycle** material: paper, cardboard and such. We **encourage and promote** it by offering small prizes to the classroom that recycles the most within a period or a month. The second strategy is to go on '**Salidas ambientales/ environmental trips**' to **promote environmental awareness** and third we created a special group 'CEA' which has different roles. It has **environmental patrols**: students who go around the school and make sure that other students **recycle, clean up** after themselves and do the right thing. These patrols have been successful because it has helped students to be always aware of appropriate waste **disposal**. Another important aspect is a **research** group we have with older students. It is about recycling **plastic into jean fiber**. In October we will present this project at a conference in Bogotá. This group has ten students and two teachers (...).

Could you tell me more about the environmental trips?

Well, it applies to **all the grades**; from elementary to high school. We go to **Yarumos park**, the **sanitary landfill**, the **botanic garden** or other relevant places in the city (...). Let me tell, you that the area of environmental studies, at least in private schools, is **not prioritized**. Schools here **don't have teachers devoted exclusively** to the area (...).

Are the natural science teachers the only ones in charge of these projects?

Yeah, exactly. And it is not all the teachers, some teachers from the area. So we **don't have enough time** and we have to **work on it on the side**.

Teacher 7. PRAE coordinator at green school one.
MA in EE and sustainability. Six year of teacher experience.

What activities do you do with the students?

It depends on their age and the resources we have. But we learn about the native vegetation, the soil, the state of the soil, the species that live in the forest. We also had a reforestation project. We had some training with *Corpocaldas* (A public urban planning organization). You know, this is a protected area, we learned that there were some pine trees that were harmful to the area, so we started with the reforestation of 300 trees, we cut the trees that were harmful and then we planted native species that are good for the ecosystem(...).

And how did you involve the students in this project?

They did fund raising for the reforestation, they also helped in the execution of the project, they helped harvesting, cleaning the area, making the holes.

Which students or how many?

It depends on the task (...). They all got involved in one way or another, but going to the forest for most of the work were mainly the students in the PRAE committee. Four students per classroom were mostly involved and they really helped. They were very active and enjoyed it a lot (...).

What role does the forest and the outdoors play in EE classes?

Well, in many different ways. The garden is a very good way to have them involved; teach them how to plan something and how to take care of it, then harvest it and getting their families motivated with the species or fruits, the cilantro the tomatoes etc. But also considering the context, Manizales is a city with many mountains. We always hear about landslides; it is different to hear it or watch it in the news than going to a place of a landslide and actually see it. Learning the roles of nature. The importance of trees to protect the land and to protect us of course, with the forest being so big and having so many elements, all this is possible.

Very interesting, so you would agree with research on how important it is to take kids to nature within EE classes.

Yes, absolutely, it is very important. Not only the forest, we also plan field trips to the botanical garden. It is a bit more complicated but it is good to go there. Luckily it is not too far. We have gone walking even, when we happen to have extra staff.

How can you have extra staff? Can you ask for it or how does it work?

No, no. We don't ask for it, but sometimes there are trainees at school, who are doing teaching practice. They can help with activities like this, but it is not very often.

8.4. Appendix 4. List of acronyms

- EA: Environmental Awareness.
- EE: Environmental Education
- NS: Natural science
- NSD: Norwegian for *Norsk Samfunnsvitenskapelig Datatjeneste* -Norwegian Social Science Data Services
- OEE: Outdoor Environmental Education
- PEI: Spanish for: *Proyecto Educativo Institucional* -Institutional Educational Project.
- PRAE: Spanish for *Proyecto Ambiental Escolar* -Environmental School Project.