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**JOURNALISM AS A SUSTAINABILITY PARTNER:
How can content about the environment bring children
closer to nature?**

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Abstract

This qualitative study investigates, from the Cultural Studies' perspective, if and how journalism about the environment can bring children closer to nature. Attitude, knowledge, interest, and desire to have direct experiences in nature are addressed. Data from 34 Brazilian children (17 boys, 17 girls) aged 8-9 years, from a private Catholic school in Belo Horizonte are analyzed. The students, divided into four groups, participated in interest tests (by memory and by selection) and in focus groups with the support of online journalistic pieces about the environment. Four children were selected for individual interviews. Results indicate that journalism has potential to benefit the relationship with nature as a topic and a place to spend time. Theoretical and practical implications are discussed.

Keywords: journalism, environment, cultural studies, children, Brazil, sustainability

Kurzfassung

Diese qualitative Studie untersucht aus kulturwissenschaftlicher Sicht, ob und wie Journalismus zum Thema Umwelt Kindern die Natur näher bringen kann. Hierzu wird die Einstellung, das Wissen, das Interesse und der Wunsch von Kindern die Natur direkt zu erleben thematisiert. Die Daten von 34 brasilianischen Kindern (17 Jungen, 17 Mädchen) im Alter von 8-9 Jahren einer katholischen Schule in Belo Horizonte werden erhoben und ausgewertet. Die Schüler werden in vier Gruppen aufgeteilt und nehmen an Interessentests (Gedächtnis und Auswahl) und Fokusgruppen teil. Für die Tests werden als Grundlage verschiedene umweltbezogene journalistische Arbeiten aus dem Internet genutzt. Des Weiteren werden vier der Kinder für Einzelgespräche ausgewählt. Die Ergebnisse der durchgeführten Untersuchungen zeigen, dass mit Hilfe von Journalismus die Beziehung der Kinder zur Natur gefördert werden kann. Aus den gewonnenen Erkenntnissen werden theoretische und praktische Schlussfolgerungen abgeleitet.

Stichwörter: Journalismus, Umwelt, Kulturwissenschaften, Kinder, Brasilien, Nachhaltigkeit

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*“For a new generation,
nature is more abstraction than reality.
Increasingly, nature is something to watch, to consume,
to wear – to ignore”*

Richard Louv

1 Introduction

The environmental movements started centuries ago as a response to industrialization and became stronger in the second half of the 20th century (Nações Unidas no Brasil, n.d.). The consequences of the unbalanced relationship between nature and human activity are, therefore, old issues to be solved. From the incorrect disposal of domestic waste to the disappearance of species, the problems are numerous and multifaceted. Their solutions demand collective and constant efforts which are threatened in a variety of ways (e.g. political negligence) and can prevent sustainability movements from growing in relevance. This exploratory study focuses on one of these obstacles: the increasing distance between children and the natural environment.

Studies from different parts of the world indicate that children are increasingly spending less time outdoors, particularly in natural spaces. A commercial study conducted in ten countries, namely in Brazil, China, India, Indonesia, South Africa, Portugal, Turkey, United Kingdom, United States, and Vietnam pointed out that on average 56% of children spend one hour or less per day playing outdoors (OMO, 2016). Less than one in ten children in the United Kingdom regularly play in wild places. Children spend so little time outdoors that they ignore basic elements of nature like common species (Moss, 2012). Balmford, Clegg, Coulson, and Taylor (2002) found that for primary school students from the United Kingdom it was easier to identify Pokémon characters than native species.

Even in Norway, which has a large proportion of accessible natural areas, there is a gradual trend of children spending less time in green areas due to social factors related to time pressure i.e. children spend too much time doing homework and are too busy with organized sports in their leisure time (Skar, Wold, Gundersen, & O'Brien, 2016). These results are in line with the evolution of how American children have spent their time. From 1981 to 1997, the time dedicated outdoors and unstructured activities such as playing declined, while time studying and in structured activities like arts and sports lessons increased (Hofferth & Sandberg, 2001). From 1997 to 2003, another drop in outdoor activities was documented and the time dedicated to studying continued to rise. There was a decline in attendance at sports, but the majority of the children still participated (Hofferth, 2009).

It is not a goal of this research to investigate the reasons why children are spending more time indoors. Other scholars, however, indicated some motives: security reasons (Hofferth, 2009);

Kaymaz, Oguz,, & Cengiz-Hergul, 2017; Louv, 2010; OMO, 2016; Wenetz, 2013), unfavorable climate (OMO, 2016), parents' lack of time to go out with the children (OMO, 2016; Skar, Wold, Gundersen and O'Brien, 2016) as well as children's scarce time to go outside and also for free play (Hofferth & Sandberg, 2001; Louv, 2010, Skar et al., 2016). Besides, for some children attending an Elementary school in the United States, nature seemed unproductive and computers were more important because it is where the jobs are (Louv, 2010). Finally, growing urbanization makes it harder for children to find opportunities to be in touch with nature (OMO, 2016). Nowadays, 54% of the world's population lives in urban areas, a percentage that is projected to increase and reach 66% by 2050, which will mean an increase of 2.5 billion people (United Nations, 2015).

Indoors children have a lot to distract themselves and electronic devices such as televisions and computers may contribute to making this environment more entertaining, as will be explained in the next chapter. To disconnect from nature, however, is a problem for children themselves, who could develop health problems and lose the benefits gained through contact with it (Louv, 2010; Moss, 2012). There is scientific evidence that shows when in contact with nature, children's development and overall health improve. A simple view out of a window to green landscapes was found to improve students' attention and helped them recover faster from stress (Li & Sullivan, 2016). In England, Germany, Lithuania, and Spain, evidence showed that neighborhood green spaces had protective effects on children's mental wellbeing (Feng & Astell-Burt, 2017). Similarly, several studies suggest that the exposure of children to nature may reduce the symptoms of attention-deficit disorders and it can also improve children's cognitive abilities and resistance to stress and depression (Louv, 2010). Additionally, since outdoor spaces are unstructured and rich, they are likely to favor decision making and problem-solving to a child (Burdette & Whitaker, 2005). Needless to say, not only children but also adults benefit from this type of contact (Louv, 2010).

To be separated from nature, therefore, prevents children benefiting from it. Louv (2010) called the nature-deficit disorder a phenomenon that "describes the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses" (p.36). This is not a diagnosis, but a concept that offers a way to think about the problem and the solutions.

It is also a problem for nature since, once they are adults, they tend to neglect nature's importance to society. Louv (2010) claimed that the closer nature is to children, the more it is

valued and protected by them. In the words of Attenborough (2010): “No one will protect what they don’t care about; and no one will care about what they have never experienced” (Moss, 2012, p. 13). Moreover, “how the young respond to nature, and how they raise their own children, will shape the configurations and conditions for our cities, homes – our daily lives” (Louv, 2010, p. 3). Direct contact with the natural world is likely to influence the way they think about it (Leach, Driver, Scott, & Wood-Robinson, 1995) and was found to be, especially as children, the most important influence on the later attitude towards the environment (Pergams & Zaradic, 2007) and by far the most important factor for the development of long-term environmental awareness and concern in Australia, Canada and the United Kingdom (Palmer, Suggate, Robottom, & Hart, 1999). Similarly, Broom (2017) showed connections between positive perceptions of experience in nature during childhood and positive attitudes towards nature among young Canadians adults. To be in nature, interact with it and learn from it helps to mobilize its conservation (Profice, Santos, & Anjos, 2016). Other studies associated experiences in nature at an early age with the likelihood that adults engage in responsible environmental behaviors (Chawla & Cushing, 2007; Cheng & Monroe, 2012). If the new generations do not value nature, who is going to continue the historical movements for sustainability?

With different emphasis, this disconnection manifested in the lack of interaction and poor knowledge of the natural world has been documented in varied formats beyond research, such as documentaries (e.g. *Project Wild Thing*, 2013; *Way Beyond Weight*, 2012), journalistic articles (e.g. Monbiot, 2012; Mendonça, 2016), events, and reports from Non-Governmental Organizations (e.g. Children & Nature Network, Instituto Alana, National Trust). Although increasingly evidence is being produced in universities, more still needs to be produced and made available. Most of the studies have restricted access and still focus mostly on only one aspect of the issue: on the benefits of staying in contact with nature (Instituto Alana, 2016). Besides, there is no commercial incentive to investigate this topic, as when children are outdoors they are not generating capital (Louv, 2010). Finally, although there is some research about young people’s *existing* attitude, perceptions, and knowledge towards the natural environment (Bonnett & Williams, 1998; Connell, Fien, Lee, Sykes, & Yencken, 1999; Fien, & Baker, 2006), only few address possible solutions for this disconnection. Finally, although the media is recognized to play a role in informing and influencing children’s attitudes (Eagles & Demare, 1999), it has been rarely investigated as a solution. Media and nature are rather treated as a dichotomy.

Since 1972, the United Nations (UN) recognizes that environmental education is crucial to fight the environmental crisis and all educational sectors must be involved, namely formal, non-formal, and informal. The latter, still according to the UN, regards media and journalism. The UN considers education the primary agent to affect social changes that would lead to sustainable development. Moreover, to achieve the UN's long-term sustainable development goals (e.g. ensure sustainable consumption and production patterns), it is necessary to change the way people think and act involving all citizens, including children and young generations (Unep, 2005). Certainly, journalistic content is not the only possible way to educate for sustainability. Games, for instance, might serve as tools as well (Lee, Ceyhan, Jordan-Cooley & Sung, 2013), however, this study is focused on the potential contributions of journalism.

Based on the aforementioned and adopting the notion that journalism is an informal education tool, the aim of this work is to answer: *RQ1: How do children decode journalistic content about the environment and does it shorten the distance between nature and children?* This “distance” is measured with consideration of the following factors: knowledge, attitude, interest, and desire to go outdoors, as this will be further exposed in the Research Questions chapter. Children aged eight and nine years old participated in focus groups, two types of interest tests, and interviews. The intention is to address the research gap related to the topic of disconnection between children and nature in a specific Brazilian context. It is an academic contribution to a country where, to date, has just begun to informally discuss it by journalistic articles, NGOs events, and independent projects. Therefore, this research aims to provide initial insights and comparable data for future research. Furthermore, it is a small contribution to the possible uses of informal education sources to reconnect people and nature. Finally, the topic of sustainability has itself its own social relevance.

“Selection” is not addressed in this work. It is not the objective of this research to convince the audience to choose or to buy any particular content. It is assumed that children would have access to the proposed content as a part of a larger medium (e.g. a website for a magazine about general topics for children).

This research is divided into nine chapters. This chapter introduces the starting point and offers an overall view of this work. The following chapter presents the theories and concepts on which this research is based. Thereafter, the research questions are explained, followed by the next chapter where the methodology is explained in detail. Then, the results of each step of this work are reported. The subsequent chapter discusses the main results and answers the

research questions. The following chapters address implications, limitations, and future research. Finally, conclusions are presented.

2 Theoretical Framework and State of Research

Before presenting the core issues of the theories, it is enlightening to clarify that for the purpose of this study “nature” and “natural environment” are used as synonymous. They refer to natural wildness in different stages, while “environment” encompasses natural and built/man-made environments. As Ernst (2012) explained, natural settings are not a solid static condition, but “a range of conditions from relatively natural to wild; used to describe a space that is unmaintained or undeveloped, as opposed to spaces such as a playground, basketball court, mowed grass, landscaped backyard, etc.” (p. 13). Some examples of these natural spaces could be “a forest, an overgrown field, or the wild edges around a yard, playground, or neighborhood” (Ernst, 2012, p. 8).

The journalistic pieces used in this study are about the environment, although the focus of the articles is on the natural environment. The decision to construct the content in this manner lies on the perspective that it does not seem reasonable to write about nature without showing its links with the human sphere of action, providing a holistic understanding. This leads us to the approach: sustainability. Sustainable development has several definitions, but what they have in common is that they are based on the interdependent nature of three pillars: economy, environment and society. It is committed to equity and fairness and embraces a long-term view, emphasizing the precautionary principle (Drexhage & Murphy, 2010).

2.1 Media Literacy

A precondition for children to deal with media content is media literacy, which has many different definitions and slightly different terminologies that change according to location, time and research perspectives (e.g. some focus on skills and competencies, while others on social inclusion). Besides, this concept was recently redefined because of the digital media impact, which made it even wider, beyond the idea to critically consume media products. Due to the increase of digital media and the challenge to regulate it, there was a shift from public regulation to self-regulation, which means also a shift from protectionism to empowerment (Buckingham, 2009).

“The conceptual understanding of media literacy has evolved from a rather narrow perspective of training individual skills for media protection, towards a broader agenda of public media competences within democratic societies” (Erstad & Amdam, 2013, p. 84).

For Erstad and Amdam (2013), the apparent opposition between media protection and individual skills on the one side, and social inclusion, public participation, and creative communities on the other is rather a continuum of media literacy that can be grouped. In their concept, this continuum starts with the Effects Studies, focused on how media affect young people and how to prevent harmful effects, and it goes on until the New Literacy Studies, which emphasizes the social practices of literacy and the impact of different media on these practices.

In this proposal, Erstad and Amdam (2013) situated Cultural Studies as an influential perspective of media literacy since the latter part of the 1980s, especially in the United Kingdom and in the Nordic countries. Building on the work of Buckingham (1998, 2003), these scholars conceptualized the focus of this tradition that has been historically investigating “how children and youth can and do interpret or understand, share and use media messages in creative ways as part of their identity construction and social development” (Erstad & Amdam, 2013, p. 88). Cultural Studies approaches children’s uses and interpretations of media as processes inherently social. The emphasis is not only on their age, but on the diversity of the childhoods, since being a child is not a set concept, but meaningfully constructed (Buckingham, 2012).

In regard to competences to deal with the media, some conclusions can be drawn from previous studies. In his literature review about media literacy, Buckingham (2005) concluded that children are usually confident internet users and have the skills and competences to locate and access what they are looking for. Studies have shown, however, that their confidence exceeds their expertise. Besides, they have the capacity to comprehend media language, at least of print media and television. Linguistic evidence suggests that this ability can be transferred from one medium to another. Finally, children use their knowledge, understanding, and skills when exposed to media. Thus, they develop media literacy even without formal instruction. In general, children are a more sophisticated and critical audience than it is usually assumed (Buckingham, 1998).

Concerning these points, this research consists of investigating the exposure of children to journalistic content, which is per se something restricted to adults’ world concerning

representation, production, offering and research. When studying the contact of children with more formal information sources, it is possible to observe not only the contact with the topic of environment, but also with journalism itself. Although classified by UN as informal education, as source of information, journalism is still a relevant relatively formal one. Besides, it addressed new media, an increasingly researched topic within the Cultural Studies' work, although most of its work is about television (Buckingham, 2012).

2.1.1 Children and Screens

As the years go by, children spend more time in front of TVs, computers, and other electronic devices. In ten countries including Brazil, they spend 50% more time in front of screens in comparison to the hours they are outdoors (OMO, 2016). In general, the time Brazilians—including children—watch TV has been increasing year after year and exceeded six hours a day in 2016 (Kantar Ibope Media, 2017). In 2004, the exposure to TV of young people from four to 17 years old was in average four hours and 43 minutes and reached five hours and 35 minutes in 2014 (Instituto Alana, 2015). Similarly, the number of internet users in that country has been growing, and the proportion of children and teenagers online is above the national average. Seventy-nine percent of children and adolescents in Brazil between nine and 17 years old are internet users. Of those, 81% access the internet every day or almost every day (Brazilian Internet Steering Committee, 2016). The time they are online has been also increasing and the older they get, the more they are online. In weekdays, 33% of the nine to 17-year-olds are online for over two hours, while at the weekends this percentage reaches 42% (Brazilian Internet Steering Committee, 2015).

A British child spends 17 hours watching television per week and more than 20 hours online. Between 11 and 15 years old, they spend half of their waking day (seven and a half hours) in front of a screen: an increase of 40% in ten years (Moss, 2012). In Germany, children and teenagers spend most of their free time in front of computers and television and almost two thirds of them have either their own notebook or computer (Techniker Krankenkasse, 2014). Besides, around 12 years old, 85% regularly use a smartphone (Bitcom, 2014).

A theoretical reflection related to this trend and to media literacy is the idea of Digital Natives. Prensky (2001) coined this concept grounded on the notion that students of today are native speakers of the digital language. They grew up surrounded by technological devices such as video games and computers, consequently, they “speak digital” as their first language.

Prensky (2001) claimed that this generation thinks and process information differently from the older generations, they are faster, multitask, spend more time playing video games than reading physical books, prefer random access than linear information, and to work with fun (e.g. learn from video games).

Children and young people not only consume information online, but they produce and share them. The results of a study conducted by the Pew Internet & American Life project indicated that 57% of online youth aged 12-17 in America create content for the internet such as blogs, personal web page, photos, and videos and 33% share them (Lenhardt & Madden, 2005).

For Jenkins (2006), they are members of the so-called “participatory culture”, defined as “a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one’s creation” (p.3). Not every member must contribute, but they must believe that they are free to do so and that when they do it, their contribution will be adequately valued. In this peer-to-peer communication, the participatory culture members believe their contributions matter and feel some degree of social connection between them. The more experienced informally pass their knowledge along to others, which creates potentially benefits such as peer-to-peer learning, empowerment of citizenship, and diversity of culture expression. In a broad sense, participatory culture is a response to the new media technology (Jenkins, 2006).

From a different perspective, Pergams and Zaradic (2007) called it videophilia “the new human tendency to focus on sedentary activities involving electronic media” (p. 141), which would have direct and indirect implications for the future of conservation and for childhood development. In their work, the researchers mentioned that “some of the negative effects are linked to the sedentary nature of videophilia and reduced time available for outdoor physical activities and nature experiences” (p. 141). Pergams and Zaradic (2007) claimed that the lack of direct interaction with nature prevents the children to benefit from it (e.g. to improve their emotional well-being) and that high levels of electronic media consumption are correlated to isolation and depression.

The trend of the children to be increasingly connected to the internet supports the decision to use online content in this research. Of course, this is not the only possibility. Television is a very popular medium among Brazilian children as it was presented and could be another option, to mention just one example. However, the practicality of producing online content

and the physical mobility that digital devices permit make the journalistic online content the best option.

It might look like an apparent contradiction to use online media to, among other goals, stimulate children to go outdoors, since they “compete” for their time. However, to reach the children, it is necessary that the content is offered where this audience is. Besides, the tendency of journalism to go digital is evident. Furthermore, digital devices do not necessarily exclude children from nature, since several are mobile. Therefore, it is possible to combine them in one activity in the natural environment as some educational projects have been doing (Oliveira, 2015). One journalistic article used in this work proposes the same, as it will be further described in Methodology.

2.2 Cultural Studies

In order to analyze the responses to media, it is necessary to comprehend media reception, which is understood here as a combination of conventionality and creativity (Gomes, 2002). This concept is based upon the contributions of the British Cultural Studies, which in the second half of the 20th century put the Media Effects theories into perspective. The Cultural Studies scholars broke with the behaviorist aspect characteristic of the Sociology of Communication, which comprehends the influence of the media as a stimulus and response mechanism (Gomes, 2002). They also refused the concept that the audience is passive and homogeneous, as well as the notion that media texts have a clear meaning (Gomes, 2002, p.167). This field of study structurally emerged in the Centre for Contemporary Cultural Studies, at Birmingham University, England, funded by Richard Hoggart in the 1960s. The main research thread was the relations between contemporary culture and society. It focused on cultural forms, institutions, and cultural practices, and on the relations between culture and social changes. Close to social practices and historical processes, the Cultural Studies devoted to the products of popular culture and of mass media (Escosteguy, 1998).

From a subsequent generation of scholars, in the 1970s, Hall (2006) conceptualized communication as a process produced and sustained by the articulation of distinct moments, namely: production, circulation, distribution/consumption, and reproduction, whose object of practice are meanings and messages. These moments are connected, but each has its own specificity and is not the determinant of the next. Production is predominant for being the departure point. It constructs the message and the process is not without its discursive aspects:

it is framed by meaning and ideas that come from ideology, knowledge, techniques, and other production structure elements, but it is not a closed system. Production draws material from the audience, other sources and other discursive formations “within a wider socio-cultural and political structure of which they are a different part” (p. 129). Alluding to Marx, Hall (1980) claimed that audience is source and receiver of a message; circulation and reception are moments of the production process, reincorporated through feedbacks into the production itself. Reception is, therefore, a moment of production in a larger sense. Production and reception are not identical, but related, “they are differentiated moments within the totality formed by social relations of the communicative process as a whole” (p. 130). The messages are produced, encoded in form of a meaningful discourse, but

Before this message can have an 'effect' (however defined), satisfy a 'need' or be put to a 'use', it must be appropriated as a meaningful discourse and be meaningfully decoded. It is this set of decoded meanings which ‘have an effect’, influence, entertain, instruct or persuade, with very complex perceptual, cognitive, emotional, ideological or behavioural consequences (Hall, 1980, p. 130)

Hall (1980) highlighted that any sign is potentially transformed into more than one connotation, for this reason, a message is *meaningfully* decoded. According to his proposal, the meaning of a message is not fixed, but contingent, contextual, and multi-referential; there is no determinant global logic to read a message (Grohmann, 2009). The encoder frames meaning in the message and the audience decodes it framed on its own understandings, personal backgrounds, political, social, and economic situations. In Cultural Studies, it is important to break with the emphasis on individual different interpretations – although this private readings exist – and pay attention to how “these readings are patterned into cultural structures and clusters” (Morley, 1974, p. 1). For Morley (1974), members of different groups share different cultural codes, decoding messages differently not only at the level of idiosyncrasy personal differences but in a way systematically related to their socio-economic position.

Consequently, the encoded and the decoded messages are not necessarily correspondents. The meaning of a message is a product of an articulation located between coder and decoder, in the majority of cases with some degree of reciprocity. The messages are not totally open to any interpretation because coding produces the limits and parameters in which decoding will operate, imposing a preferred message meaning (Gomes, 2002, p. 170). Therefore, the

audience is active, but not totally free, since the decoding process is limited to the code. Gomes (2002) defined, decoding, then, as an inevitable combination of conventionality and creativity (p. 170).

Building on the notion that audiences receive and interpret information differently, Hall (1980) proposed three possible ways of decoding positions: dominant-hegemonic, negotiated, and oppositional. The dominant position follows the preferred reading. It is the example of transparent communication as close as it can be for practical purposes. When the viewer takes the connoted meaning of a message full and straight and decodes it “in terms of the reference code in which it has been encoded, we might say that the viewer *is operating inside the dominant code*” (Hall, 1980, p. 136).

The negotiated position combines adaptive and oppositional elements. It operates through particular or situated logics, “it operates with exceptions to the rule” (Hall, 1980, p. 137). Gomes (2002) explained that the audience recognizes what is hegemonically defined and accepts it globally at an abstract level. Within the scope of the daily practices, however, the decoder adopts its own rules. The audience gives a privileged position to the dominant definitions of events, but reserves the right to make a more negotiated application of such definitions to local conditions (Gomes, 2002, p.170). Finally, the oppositional code is the globally contrary decoding, although both literal and connotative inflections are understood. “He/she detotalizes the message in the preferred code in order to retotalize the message within some alternative framework of reference” (Hall, 1980, p. 138).

For Ang (2006), the question for cultural studies is not where the power lies in the communication process, but how the relations of power are organized within media practices of use and consumption. There is no opposition between the media and the audience or distribution of power, but rather “cultural studies is interested in understanding media consumption as a site of cultural struggle, in which a variety of forms of power are exercised, with different sorts of effects” (Ang, 2006, p. 181).

One of the most important representatives of the Latin American Cultural Studies, Martín-Barbero (1997), believed that the emphasis of the communication research debate should move from the media to the mediations. The scholar also claimed that the audience was not a mere decoder, but a producer of meaning, and the analysis should be where the meanings are produced (Grohmann, 2009). Mediations, conceptualized by Martín-Barbero, were an attempt to escape the dualistic perspective about communication’s production and consumption. They

represent spaces that produce and reproduce social meanings and that enable the understanding of the interactions between production and reception. One example of mediation is the structural mediation related to identity elements such as educational level and religion (Escosteguy & Jacks, 2007).

Building on the mediation perspective, Orozco (2005) structured reception on three premises: reception is interaction, this interaction is necessarily mediated in multiple ways; and reception is not limited to the moment the content is consumed. For children, Orozco (2005) claimed that important mediations spaces would be school and family. Children bring to schools and areas where they play what they watched on TV the day before, consequently, during the interaction with other children, new meanings and appropriations are produced. The children not only comment about what they saw on television, they recreate characters while playing, according to their condition (e.g. social class). A good empirical example was portrayed by Michelan and Correia (2014), who described a girl who played with her Barbie in a made-up story in which the fashionable doll takes a bus, and a boy who played soccer just like he watched on TV, ignoring, however, all the names of the famous players. For these scholars, these are examples that resulted in negotiated positions: contrary to all glamour that Barbie was created to represent, she needed public transport. Similarly, contrary to all the millions invested to make soccer players famous and alive in the memory of the public, the boy did not mention any of them.

Finally, for Orozco (2005), to consider the audience as a social subject means, primarily, to understand it as an entity in a position, in a situation, and therefore, individually and collectively conditioned. A social subject constitutes himself/herself in many ways, differentiates himself/herself as a result of particular interaction and, above all, of the different mediations that operate in the reception process. The children, as audience, are still family children, students of a school, members of a group of friends and neighbors of a certain culture (Orozco, 2005, p. 34).

In this study, Cultural Studies is adopted, assuming, therefore, that reception is active and complex. Hence, although content about environment can be constructed to educate, inform, and increase interest in the topic, it does not mean that it will be understood, interpreted, accepted and provides stimuli in the same direction.

2.3 Informal Education Framework

To investigate the informal education contributions, the American National Science Foundation's framework, which evaluates impacts through informal education of science projects, was adopted and adapted for this research. It followed from the fact that to the best of my knowledge, most frameworks for informal education are still focused on informal science education. Since this research is not about popularization of science, it had to be adapted. Besides, because no informal education framework is widely used (Friedman, 2008), this one was chosen for its completeness and practical use.

This framework proposes some categories that represent valid and common outcomes “theoretically grounded in the informal science education professional literature specifically, and educational research” (Friedman, 2008, p. 22), which are: *knowledge, awareness and understanding; skills; behavior; attitude; engagement or interest; and other*. The framework does not specify which of them should be measured in which circumstances, but it recommends that the measurement should be conducted tied to the project goals.

Some categories of the original framework, consequently, were not included because they do not fit the aims of this work. *Skills* was excluded because the journalistic contents do not have the intention to teach or to test any skill of the sample, therefore, it is not relevant in the context of this research. It goes without saying that if the journalistic contents could inspire the participants to learn a new skill in the future this would be a welcome implication, although unplanned. *Behavior* was not selected because it should be properly measured for a long-term research, which is not the case here, but also because concerning children, family and other adults (e.g. teachers) have a great natural influence on what they are allowed or not to do. For this reason, even if the children wanted to change their behavior or to try something new, and have the opportunity to do so, they would still be limited by the permission of adults. Thus, it is a complex scenario involving different social actors. As afore-mentioned, the reduced interaction of children with the natural environment has several causes. Here an initial step for this situation to change is investigated: the desire of the children to spend time in natural environments. Further steps regarding actions that arise from this are not addressed in this work.

This leads us to the use of the *other* category, which serves project specifics. It is for measurements that do not fit any given category, but represents a possible impact, considering

the design of the study. Here it explores the desire of the children to have direct experiences with the natural environment. Although building on the work of others, I used the freedom of this framework to add something new related to the starting point of the research, which is the physical distance between children and nature. In addition to that, considering previous studies and that the aim of this research is to explore the possible contributions of journalism about the environment for children, drawn from their decoding, the remaining three categories were selected. In sum, *knowledge*, *attitude*, *interest*, and *other* categories were included.

The categories of this framework were originally constructed, admittedly, by generic descriptions. For this reason, the concepts of the chosen categories are complemented with material from further literature.

For purposes of operationalization and clarity, the original *knowledge*, *awareness and understanding* category is represented solely by *knowledge*. Knowledge is defined by Friedman (2008) as what someone consciously knows, and because of the scientific background of the framework, it concerns “a particular scientific topic, concept, phenomena, theory, or careers central to the project” (p. 21). In this research, however, knowledge about nature-related topics was considered, to be aligned with its goals.

Since news are information sources, the exposure to them might add to the knowledge base of the audience. To improve knowledge is positive for the relationship with the environment because the more people know about something, the more information they have to found their decisions on, at least theoretically, since “the antecedents of action are much more complex than knowledge alone” (Chawla & Cushing, 2007, p. 437).

Besides, knowledge is relevant because it is one sphere of environment awareness (Tucker & Izadpanahi, 2017) and it was found to positively influence the development of affective attitudes towards nature (Cheng & Monroe, 2012). Furthermore, a common barrier to engagement with sustainable issues like climate change is still lack of knowledge and the impression that the problem is far away (Lorenzoni, Nicholson-Cole, & Whitmarsh, 2007). Finally, Hillcoat, Forge, Fien, and Baker (1995) found that people feel disempowered to protect the environment because they lack knowledge about how to do it.

The next category, *attitude*, has numerous definitions. Eagly and Chaiken (1998) defined it as “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (p. 269). Fazio and Zanna (1981) considered it to be “simply the

categorization of an object along an evaluative dimension [...] an attitude is the evaluative feeling that is evoked by a given object” (p. 162). In their extended literature review about the topic, Argyriou and Melewar (2011) presented different concepts and views about the formation of attitude and concluded that regardless of the theory, “attitudes continue to reflect people’s evaluative stance apropos object, which is guided by both thought and affective processes” (p. 446). According to this definition, the formation of attitudes is based on cognitive and emotional/affectation dimensions. In the present study, attitudes are as well considered in cognitive and affective components. Likes, dislikes, and beliefs are evaluative judgments that mediate, together with other factors, the relationship with the environment. However, this is not the only form to conceptualize attitude.

Eagly and Chaiken (1998), for instance, defined attitude as an internal state observable by evaluative responses on affective (feelings or emotions), cognitive (beliefs), or behavioral basis (actions and intention to act). Fazio and Zanna (1981) explained that the notion that behavior follows from attitudes derives from the early definitions of the term, whose consistency was challenged as of the 1960s. After empirical tests, there was evidence that there is no one-to-one correspondence between attitudes and behavior, but that under certain conditions such as normative constrains, attitudes can sometimes be convenient predictors of behavior (e.g. preelection attitude predicts voting behavior accurately), but it is not always the case. In their own words: “Some kinds of attitudes for some kind of people in some situations are predictive of some kinds of later behavior” (Fazio & Zanna, 1981, p. 197).

In regard to environmental research, some studies suggested that “affective factors, such as emotional affinity, empathy, and sympathy, are essential elements in predicting pro-environmental behaviors” (Cheng & Monroe, 2012, p. 33). Others showed that people with more positive attitudes towards nature did not necessarily engage in more environmentally friendly actions than neutral people (Broom, 2017). Tucker and Izadpanahi (2017) claimed that “although there is no consensus on whether pro-environmental attitudes lead to pro-environmental behaviors, there is evidence of compatibility of environmental behavior with environmental attitudes” (p. 209).

Without deepening this discussion, since it is not the purpose of this study, and apart from the controversial empirical results, it is necessary to refer to the chosen framework, where *behavior* and *attitudes* are different categories, and to research practice. Research practice treats the behavioral components of attitudes, such as environmental awareness, separately

from the mental level (Arlt, Hoppe, & Wolling, 2014). Thus, behavior is not considered a dimension of attitude here.

The last chosen category is *interest*, which has different existing concepts and is explained by Cattell (2006) as “as a result of the functioning of any instinct, sentiment, or complex [...] the expression ‘interests’ might be used as a generic term to cover all these dispositions” (p. 165) or, in other words, it refers to what concerns someone. For Renninger and Hidi (2011), interest is “a psychological state and a predisposition to reengage particular disciplinary content over time that develops through the interaction of the person and his or her environment” (p. 170). Besides, it is a cognitive and affective motivational variable that guides attention, facilitates learning in different areas for all age learners, and develops through experience.

After revisiting recent research about interest, Renninger and Hidi (2011) concluded that there are diverse theoretically conceptualizations of interest, but no consistent theory, since the study of interest started to be systematically undertaken only in the last 30 years. Nevertheless, it is possible to describe interest as a motivational variable with five characteristics upon many researchers agree: it is object/context specific, thus, it refers to the outcome of a person’s attention to/engagement with a particular content; it involves a person’s potential interest and the interactions with the environment that sustain it; a person is not always aware of her/his own interests; it has affective and cognitive components, and it has a physiological/neurological basis (Renninger & Hidi, 2011). Besides, it is positively related to learning and attention, it varies from person to person, and it is elicited by factors such as previous knowledge, readers’ goals, and text structure (Schraw, Flowerday, & Lehman, 2001).

Hidi and Renninger (2006) affirmed that “the potential for interest is in the person but the content and the environment define the direction of interest and contribute for its development” (p. 112). Thus, the person together with external stimuli support or not interest development. Cattell (2006) summarized this relationship when highlighted that it is not always possible that an individual dedicates to his interests for different reasons (e.g. someone is interested in gardening, but has no space to have one). Consequently, the ideal measurement of interest lies in the transactions between the environment and the individual. For the scholar, a very valuable index of energy investments is memory. Also, a person devotes time proportionally to interest in an ideal situation, i.e. unconstrained by a timetable.

Empirical studies showed that memory and attention tests correlate with estimates of interest, therefore, it can be adequately measured in such units (Cattell, 2006).

Based on empirical results, Hidi and Renninger (2006) developed a model for development of interest in which four phases can be distinguished: situational, maintained situational, emerging individual, and well-developed individual interest. The model is sequential and each phase represents different levels of interest that become more stable as the phases evolve. In other words, situational interest, the first phase, provides the basis for individual interest, the last phase, if the interest trigger is sustained with time. Situational interest refers to the attention and the affective reaction triggered by environmental stimuli (e.g. a magazine's article in a waiting room), which may or not last over time. Individual interest refers to enduring predisposition to reengage with particular contents or objects over time and to the psychological state when this predisposition has been activated (Hidi & Renninger, 2006).

To last, interest must be supported by the person or by others, however, "without support from others, any phase of interest development can become dormant, regress to a previous phase, or disappear altogether" (Hidi & Renninger, 2006, p. 112). One form to sustain it is by providing related-content, since texts are sources of situational interest and high-interest texts are associated with recall and comprehension (Ainley, Hidi, & Berndorff, 2002). To offer it means to provide an opportunity to reengage and to trigger or support initial interest.

Based on the above, interest might be conceptualized as a motivational variable and texts as external stimuli to sustain it. To increase interest in nature means, theoretically, to increase the chances that someone reengages with nature both as a topic and directly.

2.4 State of Research

Before presenting the details of the current research, this section documents what previous studies with similar categories to the present study have already found. It is important to observe that "children" is a term that refers to different stages of childhood. The studies, thus, focus on different phases, usually on young people under 18 years old.

In the early studies about young people and nature, in the 1970s and 1980s, Blum (1987) found that ninth- and tenth-grade students from England, Australia, United States, and Israel consistently scored around 50% in knowledge tests regarding nature. Along the same period, other studies obtained similar results from German school students (Szagun, Mesenholl, &

Jelen, 1994). Blum (1987) also pointed out that the participant's main source of information for that matter was the media and that boys achieved better knowledge results than girls, although the knowledge levels were in general poor. In contrast to their mediocre learning about environmental problems, their consternation, responsibility, and readiness for action were in general high (Szagun, Mesenholl, & Jelen, 1994). Until the beginning of the 1990s, studies about environmental awareness of children and adolescents were focused on knowledge (Szagun & Mesenholl, 1993), but later they have broadened their scope.

Attitudes have been usually addressed. Profice, Santos, and Anjos, (2016) investigated perceptions and attitudes in regard to nature in a Brazilian indigenous school with children between eight to ten years from Tupinambá community. The participants did not “present a dichotomous worldview that separates people from other living beings, characteristic of Western urban societies” (p. 6). The scholars concluded that the school, which shares fluid boundaries with nature, promoted environmental awareness and the students' belonging to the natural world. Two features that should be taken into consideration are that the daily lives of these children involve natural environment (e.g. it is where they play) and that their names in Tupi language refer to plants, animals, and natural phenomena. Therefore, they have a stronger connection with nature than urban children that is not only practical but also symbolic.

Differently from the indigenous children, five-and-six-year-old British conceptualized nature separated from the business life, mostly as “living things” and associated with peace and relaxation. Because of this notion, some children (mostly boy) argued that they would be bored in nature. However, there was a strong empathy for animals and trees and moral aspects mediated their relationship with the natural environment. Consequently, they “demonstrated high levels of feeling and general concern towards nature and the environment” (Bonnett & Williams, 1998, p. 170). These participants understood the environmental problems and their solutions from the individual perspective, not involving governments, corporations, or collective action. Although they were aware of the conflicts between human needs and nature, they lacked clarity about what might be involved in the solutions.

Contrarily to the younger children, Australian older students aged 15-to 17-years of a pilot study blamed big business, government, and individuals for environmental problems, arguing that they are greedy, complacent, and unmotivated, respectively (Hillcoat et al., 1995). They assumed a posture “they versus us”. Still, they thought of environmental problems as a result

of individual lifestyles rather than caused by structural problems. They felt powerless and frustrated, although they hoped to have more power to change this situation when they grow up. The students fairly understood what an environment is and recognized its elements. Nevertheless, many still spoke of a dichotomy between people and environment. Their main sources of knowledge were school, media, and their own experiences. Although they usually mistrust the media, they recognized its importance to awareness. Many thought that Australia did not have any serious environmental problem. In general, they were able to recognize the connection between local and global problems.

To verify to which extent the findings of this pilot study was corroborated, Connell et al., (1999) later investigated the perceptions and concerns of Australian young people towards environment in Melbourne and Brisbane. Students were interviewed in groups, 12 months apart, with basically the same questions of the pilot version. People in the individual level were again seen as main source of the problems, which was faced with frustration, sadness, and pessimism. For them, the major improvements should be done by changing people's attitudes and lifestyle. However, the participants still felt powerless because they believed that institutions would not listen to their petitions: profitability would be stronger than their voices. Moreover, the small actions they were able to do would not be enough. Again, they hoped that maybe when they became adults they could do more. This study confirmed that their experiences were seen as the main source of information about the environment. Media and school were often mentioned although media was criticized because of media bias. School was supported by some students for providing basic knowledge, a starting point for further investigation. Other criticized it for not providing enough knowledge and practical experiences: "We're *aware*, but we don't *know* anything" (Connell et al., 1999, p.102).

Casaló and Escario (2016) provided evidence, with representative samples, that the general concern about the environment of children aged 15 years from 16 countries was high, but their parents reported higher levels of concern. Additionally, they found that parents' environmental concerns influenced the concerns of their children. It held for both boys and girls, but it was stronger on girls. On the other direction of intergenerational transfer, Vaughan, Gack, Solorazano, and Ray (2003) suggested that an environmental education program designed for third and fourth graders spread knowledge from the students to their families and their community. They found that not only the learning of the children about the topics increased at the end of the program, but also of their parents and, to a smaller degree, of the community.

Wells and Lekies (2006) explored linkages between childhood in contact with natural environment and adult environmentalism with 2000 Americans ranged in age from 18 to 90. Their findings indicated that both contact with “wild nature” (e.g. camping, playing in natural areas) and for “domesticated nature” (e.g. planting seeds) had significant direct effects on adult environmental attitudes. Environmental attitudes influenced positively environmental behavior. “Adult environmental attitudes partially mediates the relationship between childhood participation with nature and adult environmental behaviors” (p. 13). Additionally, interaction with “wild nature” was positively associated with environmental behaviors, while “domesticated nature” experiences were marginally related to such behaviors. Particularly powerful towards shaping both environmental attitudes and behaviors was contact with “wild nature” before 11 years old.

Beyond the individual level, Boeve-de Pauw and Van Petegem (2010) used Program for International Student Assessment (PISA) 2006 data to place 15-year-old students within the context of the country they live in. The scholars investigated environmental attitudes and found that it varied significantly among countries. The results suggested that individual, school, and country levels play roles in fully understanding youth environmental attitudes, although individual level accounted for the majority of the variance. Besides, young people living in countries with polluted environments showed more pro-environmental attitudes and that natural richness had a positive influence on environmental attitudes as well. The level of development was not relevant, but the scholars recommended that this finding should be treated with care, due to data limitations. Girls held more positive environmental attitudes than boys.

Kaymaz, et al. (2017) investigated factors influencing Turkish six-to-12-years-old children’s and their parents’ green space use. They found that although parents were aware of the health benefits of spending time outdoors, safety issues and the conditions of the play areas influenced negatively time outdoors. Besides, lack of spare time was the main reason why the parents, and consequently children, did not visit green areas frequently. Most parents preferred to have their children playing in green areas in the vicinity of their homes, so that they could be checked more easily. Additionally, the mobility of the children was reduced and only 8% of the children went to parks on their own. The children, on the other hand, would like to spend more time outside playing and to be physically active. No difference between girls and boys was found, except that the boys would like to engage in more vigorous activities. Not only parents and the design of public spaces, but also the design of schools

shapes children's attitudes and behaviors towards environment, according to the results of Tucker and Izadpanahi (2017). In their comparative study, Australian children aged ten to 12 years attending schools designed for sustainability reported significantly more pro-environmental attitudes and behaviors than the ones in conventional schools. No significant differences were found for males and females.

3 Research Questions

In the light of the above, the following research question was elaborated:

RQ1: How do children decode journalistic content about environment and does it shorten the distance between them and the natural environment?

This question addresses two aspects of the investigation. First, it refers to how the concerned group of children decodes the given journalistic texts. According to the Cultural Studies, the decoding is related to the participant's cultural background, which guides the reading and the reader's position regarding the text. Therefore, to comprehend reception it is fundamental to understand the cultural context of the audience.

In this study, the messages (journalistic content) were coded to approach children to nature, which means they were written with the intention of raising interest, knowledge, and desire to go to green spaces as well as stimulating positive attitudes towards nature, as it will be explained in the next chapter. Having the three possible readings proposed by Hall (1980) as a reference, this would happen in case of preferred reading. Negotiated reading would bring partial positive responses, in which there is a global agreement, but with local exceptions (e.g. a child agrees it is important to avoid discarding garbage in the streets, but not in his/her neighborhood because not many trash cans are available). In case of oppositional reading, the receptor would comprehend the discourse connotatively and literally, but decode it in a globally contrary way, giving no positive or contrary responses to the content (e.g. a child says he/she will keep on discarding garbage on the streets because to keep it clean is an obligation of adults).

The second part of RQ1 refers to the results of the journalistic content's decoding. Does it contribute to shorten the distance between children and nature? To specify what "distance"

means here, sub-questions were created based on the previously mentioned informal education categories:

RQ1.1: How do children decode journalistic content about environment and how does it influence knowledge about natural environment?

RQ1.2: How do children decode journalistic content about environment and how does it influence the attitude of children towards natural environment?

RQ1.3: How do children decode journalistic content about environment and how does it influence the interest of children towards natural environment?

RQ1.4: How do children decode journalistic content about environment and how does it influence children's desire to have direct experiences with the natural environment?

While the three first sub-questions investigate aspects other than physical distance and whose relevance was previously clarified, the last one is more related to the starting point of this study, the nature-deficit disorder. Relying on the evidences that children are becoming physically distant from nature and on its consequences, this last sub-question investigates if the contact with journalistic content has the potential to shorten this distance, at least in the sphere of the children's desire to get closer to natural spaces. This sub-question, like the others, does not address behavior, but how would a child embrace or refuse this possibility.

4 Methodology

To answer these questions, this research adopted a qualitative method, since this is an exploratory study. Besides, it was found to better represent the richness and complexity that underlie people's attitude and behavior than quantitative (Hillcoat et al., 1995). Additionally, it is an opportunity "to maximize the variety of ways in which children could express themselves" (Bonnett & Williams, 1998, p. 162) and be frank, using their own words and framework. Finally, from the methodological point of view, qualitative work had a strong influence on the Cultural Studies constitution and is emphasized in this field (Escosteguy, 1998).

Data was collected at a school mainly through focus groups, with additional information provided by interest tests and individual interviews. Focus groups were chosen because they

permit to access a broad range of views on a topic in a short time (Mack, Woodsong, MacQueen, Guest, & Namey, 2005). Besides, it adds, in this research, the possibility to observe and follow reception mediated by peers after the exposure to the media, which is an aspect of reception addressed by the Cultural Studies. “In cultural studies, then, it is the meanings of differences that matter – something that can only be grasped, interpretively, by looking at their contexts, social and cultural bases, and impacts” (Ang, 2006, p. 186).

Thirty four children (17 girls, 17 boys) between eight and nine years old which compose the sample were divided in four groups for the procedures. All details will be presented in the following sections.

4.1 Ethnographic Aspects

The field part of this work pursued high affinity with media ethnography. In traditional ethnography, anthropologists follow the process of transformation in a given community and investigate how its rituals change with time. Media ethnography focus on the media: how the existent media and different media technology allows the community to develop, how they influence the local culture and how the people use them to understand their reality and other realities (Sifuentes, 2014). Corsaro (2005) added that one of the main goals of ethnography is that the researcher is accepted as a member of the studied group and have a perspective from inside.

Rothenbuhler and Coman (2005) claimed that media anthropology is not a mere reproduction of concepts and techniques of anthropology to media sphere. The identity of anthropology in other disciplines is developed within an own conceptual sphere and debates. Applying ethnographic methods to modern societies provoked a dispute about methodological purity even before ethnographic ideas were spread to other areas. “Where is the dividing line between doing ethnography in the classic sense and doing research that is ethnographic in some aspects?” (Rothenbuhler & Coman, 2005, p.2). There is no consensus among scholars. For La Pastina (2005), ethnography represented an opposition to positivistic data gathering and analysis. For this reason, it has acquired great currency in media studies, which resulted in a meaning misuse. Therefore, it needs to be repositioned as a field-work, with “a long-term, in-depth, site-specific, multi-method approach” (p. 147). In this sense, ethnographers should immerse themselves in a culture to have deep understanding of dynamics and practices of the group and retell them, with focus on media and audience. Even if there are few models for

longitudinal studies in this area (Sifuentes, 2014), cross-sectional research classified as media ethnography or audience ethnography are often criticized.

One example is *The Nationwide Audience*, a famous study about a news magazine program broadcasted on BBC, which used focus groups with different groups based on occupational differences, regional situation, ethnic origin, age, and sex. (Morley & Brunson, 1999).

Others scholars defend that the excess of description can lead to lack of focus on the media (Grohmann, 2009). With a more pragmatic vision and refusing “territorial debates between disciplines”, Rothenbuhler and Coman, (2005) argued that “even short periods spent in field, allied with previous knowledge that the researcher brings to the field, can produce partial, yet focused, knowledge of aspects of group life” (p. 3).

In this research, I spent the afternoon of few days with the children, which clearly does not characterize as immersive and long-term experience. On the other hand, we share some common background, namely the fact that I was raised and born in the city of Belo Horizonte, where the study took place, where they also live; I spent my childhood in the neighborhood of the school; we have similar Christian education, and we speak the same language as mother tongue. Therefore, I am not a member of the children’s group, but in a broader sense we are part of same communities. Because of my work experience as a teacher and a journalist dedicated to children, I am familiar with children’s code. Besides, I am not presented to them as a teacher, which helps to take from me the position of authority even if I am an adult (Corsaro, 2005). Furthermore, during my stay in the city, I had the chance to observe and interact with many school employees and with the participants during break time, in the streets (by chance), which brought me new insights and opportunities to collect data. In sum, I had contact with the community not only along the official data collection time.

Finally, the participants are approached as social subjects. To comprehend their multiple contexts, some efforts were made: exchange of information with the school staff in every step of the research, the first part of the focus groups and the demographic data about the participants, together with my personal knowledge of the city where the fieldwork took place. These are efforts to explore different context that influence the reception process site-specifically. The data collection was conducted following their routine and in a routine environment for the participants, their school, in the company of their classmates, their friends. In addition to it, the children are considered in their social, educational, pedagogic, geographic and religious contexts. This makes it different from regular focus groups that takes

place in an unknown environment for the participants with unknown others, without deepening the story of the participants and their contexts. The analysis of the answers was made considering all these aspects and in the light of the Cultural Studies reception approach, which considers reception does not end when the message is received and decoded.

In order to avoid controversy and for not fulfilling all the requirements of classic media ethnography, this research is not labeled as media ethnography. To have a long term experience is highly time consuming and costly, which does not match a master thesis proposal. Therefore, this work pursues affinity with the ethnographic method and has ethnographic aspects.

4.2 Context

The study took place at Centro Educacional Pio XII, a school with approximately 500 students located in Belo Horizonte, the capital of Minas Gerais state, in Brazil. The state is located in the richest region of the country, the Southeast, responsible for around 55% of the Brazilian Gross Domestic Product (IBGE, 2015) and where 46% of the country's population lives (Gottschalg & Barros, 2015). Belo Horizonte is the sixth biggest city in Brazil, it is mostly urban and has 2,5 million inhabitants (IBGE, n.d.).

The school is private, Catholic, located in a neighborhood in the West area of the town, which is considered a noble area, with traditional families, and available services that are attractive to the middle and upper classes (Prefeitura de Belo Horizonte, n.d.). The school is based in this urban area, serving middle and upper middle classes. In addition to that, it has 10% of grant-holding students from lower classes. The learning outcomes of the children in the first five years of elementary school (Ensino Fundamental 1, in the Brazilian educational system), to which the children of the sample belong, are high at this institution, except for especial cases of students who have medical diagnosis or learning disabilities. These cases represent 10% of the elementary school (R. Espírito Santo, personal communication, November 28, 2016).

At the school, nature is taught as life that should be preserved and taken care of, and it is worked on classes as in-class content, following textbooks and work projects. Twice a year, the students have an excursion to places with predominant nature. There are no kitchen-gardens or animals at the school (R. Espírito Santo, personal communication, March 3, 2017).

4.3 Sample

The participants were recruited by purposive sampling through a partnership with the Centro Educacional Pio XII. All 40 students from both 4th grade classes (4thA and 4thB, with 20 students each) were personally invited to participate, by the responsible educational coordinator and me. Despite the concern that too many students could compose each group, it was a school decision to invite both classes in order to avoid discomfort with parents whose children's class would not be involved. Participation was voluntary and worked as an extra activity that would be conducted outside the classroom simultaneously to regular classes. Signed written permissions were obtained from parents or guardians from all students as a requirement to participate (see Appendix F). No reward was offered, following a school request.

Of the 40 invited students, 35 (17 girls, 18 boys) Brazilian children, literate in Portuguese as their first language, between eight and ten years-old attending the 4th grade participated. The only ten-year-old participant, a boy, was not considered in the sample because he could not follow the activities. The school informed he was "special," without giving further details about his diagnosis. Before the activities began, when asked to fill out the answer sheet with his personal information, this boy told his pencil did not want to write his name that day. I asked him to try another pencil, but he told me his whole pencil case did not want to write that day. Without being aware of his cognitive limitations, I did not insist and asked the group who would like to work together with him. He sat with a classmate, a boy, sharing the computer. Therefore, this "special" boy did not have his own answer sheet for the interest tests, looked distracted during the readings (not looking at the screen), and did not speak during the focus groups. Thus, although this student was present the whole time, his results are not included in the final analysis. In total, the results of 34 children (17 girls, 17 boys) between eight and nine years old are reported.

As the main public of the school is middle and upper middle classes, it is assumed that the participants mainly belong to these social classes. Due to school's information restrictions, it was not possible to confirm if there were grant-holding students from lower social classes in the sample, how many and who they were.

4.4 Procedures and Materials

The field work was conducted in the beginning of the school year, in March, after Carnival, when the routine was already established and the children were more adapted (e.g. to new teachers, to new classmates). Some days before the data collection, the students were formally introduced to the proposal and to me, which contributed for them to be more comfortable during the data collection. In this occasion, they received the permission documents to be signed by their parents or guardians and had their questions about the activities answered.

The sample was divided into four groups, two per classroom. The number of groups followed a school decision to prevent the students to lose class content, since the data collection was conducted during school hours. Thus, part of a classroom had regular classes, while the other students of the same class participated in the research activities. Then, the groups changed places. The first group had nine boys but, as the “special” boy did not fill out the answer sheet and remained in silence throughout the activities, for the final sample only eight boys were considered. The second group had seven girls, and the last two were mixed: the third had ten participants (five girls, five boys) and the fourth had nine (five girls, four boys). Such compositions were based on the assumption that gender might influence the results. Some studies have documented differences between males and females, whereas females are more caring about the environment (Arnocky & Stroink, 2011; Broom, 2017; Casaló, & Escario, 2016; Cheng & Monroe, 2012) and have more positive environmental attitudes (Boeve-de Pauw & Van Petegem, 2010), males know more about it (Blum, 1987; Bhavya & Purnima, 2015). Yet the role of gender remains unclear. Although Blum (1987) found that boys knew more than girls, his results do not indicate any difference between males and females concerning environmental beliefs. Eagles and Demare (1999) identified that girls had higher moralistic attitudes, but no different ecological attitudes than the boys. In resume, “scholars generally agree that females are more concerned about the environment than males. (...) There are inconsistencies in the literature though, as some researchers have found no differences between the sexes” (Boeve-de Pauw & Van Petegem, 2010, p. 134).

Another considered aspect was if being among same sex peers would influence their answers. Table 1 describes the contexts of each group to shed light on the circumstances in which the activities took place, since they varied from one group to another.

Group	Age	Type	Participants	Description
1	8 to 9	Boys	8 + the ten-year-old "special" boy who is not part of the sample	This group was very agitated and made funny comments about each other and about the discussed topics. Two boys were not so seriously involved: one by making jokes and not behaving properly (e.g. standing up when he should be seated) and the other by not cooperating (e.g. I play of <i>something</i>). The others reprimanded them. Break time harmed the focus of the boys and resulted in an interruption.
2	8 to 9	Girls	7	This group entered the room organized and silent. During the discussions, the girls laughed demonstrating shyness or amusement when someone said something funny (e.g. "the house of my great grandmother is practically the Amazon rainforest because there are so many plants"). There was no interruption.
3	8 to 9	Mixed	10 (5 boys, 5 girls)	This group was well-behaved. It was interrupted by a birthday and a girl came back late, losing the first minutes of a discussion. A new rule for the book interest test was set: it was not allowed to choose more than six titles, since some participants of previous groups selected all or almost all books.
4	8 to 9	Mixed	9 (4 boys, 5 girls)	This group was well-behaved, quieter than the others and did not suffer any interruption. The new direction for the book interest tests was also set for this group.

Table 1: Groups' Characteristics

To avoid that the school environment influenced the participants to give only socially accepted answers or to merely reproduce the discourse of the school, an explanation of the activity was given in the beginning of each session, in which the procedures were clarified and the boundaries between the school and the activity were emphasized (e.g. the activity would not be graded, it is not a test). It was told also that there were no right or wrong answers and that important was to get to know them and their opinions about some topics that would be discussed (see Appendix A).

Since the activities would take place in the informatics room, with computers available for every child, but no other equipment. Therefore, all materials were online, available on the computers to be individually accessed. In every session, no school employee was present, only the children and me. After the explanation of the procedures, the students chose the computer that they would use during the whole activities. The equipment exhibited the initial screen of a script created on Typeform, an online platform originally designed to generate questionnaires. This document guided the flow of the activities, by presenting the materials necessary for each phase, which were either linked or uploaded. The journalistic texts were published on a Wordpress.com.br website because of Typeform's limitations to present them in a more structured way, which could have been a problem for the children's adequate comprehension. Instead, the Typeform interface carried the links to the texts published on Wordpress.com.br. These platforms were chosen for being user-friendly and free of charges. For details, please refer to Appendix B. Each group had access to the same material. Each group sessions lasted approximately 70 minutes and were recorded with one audio recorder and one cellphone, while notes were also taken.

4.4.1 Interest tests

As the first and last activities of each session, interest was measured. Because there are different concepts of interest and no theory (Renninger & Hidi, 2011), as already explained in Informal Education, there are different forms of assessment. Here it was addressed it in two ways: by recall (memory) and selection (preference). Therefore, fictitious book titles were created and images were selected and presented to the participants in two different tests.

The materials were created (or selected) based on practical criteria, specifically on the commercial media vehicles sections and journalistic content offered online to children in Brazil (e.g. *Recreio*, *Atrevidinha*, *Meu planetinha* e *Ciência hoje das crianças*, etc.). After

shortly examining this current content offered by these Brazilian journalistic vehicles to children from eight to ten years old, school, celebrities, sports, nature, science, beauty for girls, and humor were found to be the most frequent topics. “Beauty for girls” – as a category – was excluded from these interest tests. On the one hand, it was a practical decision to avoid an excessive number of images and titles in the tests, on the other hand, it is too gender specific. The remaining six topics were considered.

Each theme was introduced twice in these tests as an attempt to be more comprehensive about their connotations and to suit boys and girls interests (e.g. “school” was represented by friendship with classmates and by good grades aspects; “nature” was represented by plants and by animals, etc.). Consequently, each interest test had 12 choices in total, two choices for each of the six topics. Nevertheless, it is not possible to represent any of the topics in all their aspects, since there are different types of celebrities such as singers and actors/actresses, as well as there are a variety of sports, for instance. This limitation was minimized by introducing the topics twice, by representing what would be closer to the children’s universe in each topic and by presenting the topics in a broad way when possible (e.g. to represent sports with a picture of different sport balls).

In every group, both image and book interest tests were applied twice, but using different materials, i.e. the images and book titles used in the first and second tests were different, but always representing variations of the same themes and following the standards of the first tests. Consequently, 24 fictitious book titles were created in total: 12 for the first test and the other 12 for the second. Similarly, 24 images representing the topics were selected from free images databanks, specifically from Freepik and Unplash. Likewise the titles, half the images (12) were used in the first test and the second half was used in the second test, after the focus groups. To avoid visual evidence, all titles had similar length (in Portuguese) and all images were color photos, with similar color standards, edited to have the same size, prioritizing the presence of either sexes or neither. In addition to that, the pictures were presented in randomized positions to avoid memory effects (Cattell, 2006), giving them equal chances of end positions.

An individual answer sheet was distributed to each participant. They had the identification of the group, name, age, sex, number of the participant, and spaces where the students should write their answers concerning the interest tests (see Appendix D). The paper and pencil were adopted because of the online platform limitations to show the final results per user and to

avoid issues concerning the familiarity of the children with the used platform, which in fact they had. Therefore, it was a secure measure that regardless of the instrument, the answers would be properly registered. Moreover, it was assumed that it would be faster for the children to write than to type in traditional desktops.

The images interest test was the first, followed by the book interest test both in the first time and in the repetition after the focus groups. Figure 1 clarifies the order of the activities. First, the children had one minute to observe twelve pictures. The pictures were all at the same screen, but in order to see all of them, students should scroll down. The pictures were automatically shown in different positions to every participant, so that the randomization avoided that the position of the picture contributed or reduced the chances of one image being remembered by the group. When the time was over, the children were asked to quickly click on the image they liked the most. When they clicked, Typeform showed the next screen and the students should not look at the images anymore. Then, they were asked to write down, individually, in their answer sheet, a brief description of the pictures they remembered with around three or four words, to save time.

Next, it was the second interest test, with book titles. Twelve ordained book titles were shown at the screen, always in the same order. The children they were asked to select which they would like to read. More than one choice was possible. Every title had a correspondent letter, which should be written in the answer sheet, instead of the whole title, to save time.

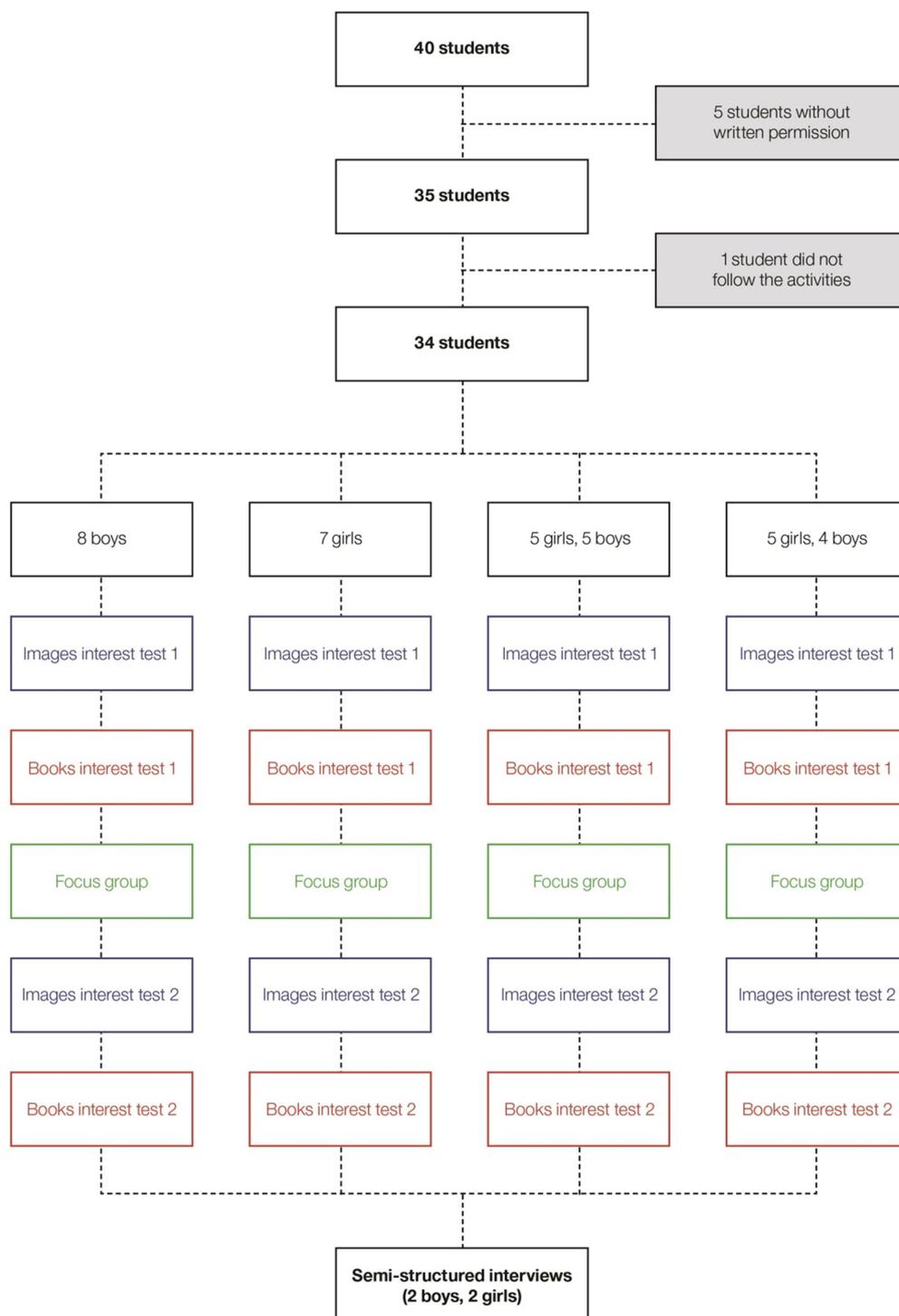


Figure 1: Overview of the research activities and the sample

4.4.2 Focus groups

After the first round of images and book interest tests, the focus groups began. It consisted of readings of pieces that will be further detailed and discussions. The guideline was divided into warm up, which was conducted before the readings, and one block of questions for each

journalistic piece asked, naturally, after the readings. Along its structure, the guideline had main questions and further questions, which were asked when the answers to the main questions did not bring up relevant points for this research (see Appendix A). Therefore, not all “further questions” were asked in every group and they suffered changes from group to group when an aspect was already clear. Observation was part of the whole dynamics. The four groups were conducted following the same procedures and using the same resources, with small changes/adaptations in the guideline. The answers of previous groups were used as an input to elaborate new questions and to skip some that were already clear (e.g. the question of perception of free time did not provide any consistent answer and was, therefore, excluded).

The warm up comprised broad questions with the intention to make the children feel more comfortable to openly talk and to reveal notions of initial attitudes (cognitive and emotions), knowledge, contact with green spaces and desire to be in the nature. These answers would provide information about their cultural context and, consequently, help to clarify what led to the decoding of the journalistic texts. This section was created based on previous research (Bonett & Williams, 1998; Hillcoat et al., 1995; Leach et al., 1995). Before reading each text, the children were asked what they already knew about the topic, so that the expressed previous knowledge could be compared to the responses after the readings. After the warm up, the children of each group read the first journalistic piece individually on the computer that was further discussed in the focus groups in a circle in the middle of the room. After the first discussion, the same was done with the second journalistic piece. There was no specific time for the reading, since every child has its own time to read and it varies. They could read in their rhythm and should come back to the circle as soon as they finished. However, the participants should not spend more than ten minutes because of time constraints. The given minutes were established based on the preliminary tests with other children, online. This time average helped also to identify who indeed read attentively. In other words, it was nearly impossible for a participant to read any piece of the given texts, for instance, in less than four minutes. If this happened, it should be either someone who was not reading carefully the text or even pretending to read it.

Two online journalistic pieces were created, in Portuguese, with around 400 words: one about noise pollution and the other about biodiversity, both with emphasis on nature. The texts were created based on secondary sources, which means no specialists were interviewed to produce them, but all factual information were retrieved from scientific and journalistic reliable

sources. I have experience writing professionally journalistic texts about sustainability and other topics for children. Quality was also ensured by a peer review of a former journalist colleague. This approach is grounded on practical reasons: I could not justify the demand of time of a professional for an interview that would not be published anywhere. The texts did not inform the author and were not signed.

The decision to offer two pieces of journalistic content instead of one was an attempt to make the children speak more and to avoid answers specifically connected to one topic. The themes were chosen considering what could be relevant to them and, to some extent, familiar, given their educational background. “Familiarity” here means enough previous knowledge to understand the new information provided by the texts, without merely repeating common sense and/or old information. Familiarity relies on the good journalism practices and on Schraw, Flowerday and Lehman (2001)’s claims that organization and completeness of information are strongly related to interest and learning. In other words, when texts are less user-friendly or when the readers are less knowledgeable about the content, interest and learning tend to diminish.

Topics to which the children could have already been highly sensitized (e.g. the distribution of plastic bags, which are often object of discussion in Belo Horizonte because of the local polemic of allowing/forbidding their distribution in commercial establishments) were avoided to prevent strong pre-established opinions. The digital format was chosen because of the public, who is potentially familiar with the digital language and tends to increasingly spend time on digital media (Prensky, 2001), as explained in the Children and Screens section.

“Noise pollution” was chosen as a topic because it is a common problem in urban areas, however, not frequently explored. Therefore, it was expected to be fruitful to explore knowledge. The journalistic text introduced the concept of noise pollution and added the information that it is an environmental crime in Brazil, whose effects go beyond human irritation, harming animals and, consequently, having also impacts on plants. To provide the text with examples, a 30 second *Woody Woodpecker* video that illustrates how noises in the street irritate him, not allowing him to sleep, was shown. “Biodiversity” as topic, in its turn, was chosen because Brazil has one of the richest biodiversity of the world, mostly because of the Amazon rainforest, so it has potential to raise discussions about the value of nature and affection. Besides, the text presents a species found only in the Brazilian coast, which is endangered, capable of solving a health problem. For Padua (2002, p. 55), by reflecting on potential localities, one begins to value what exists in the region, increasing self-esteem and

pride, fundamental to motivate the engagement in actions of changes. At the end of this piece, the one minute WWF-Brasil animation *Money* was embedded. The video has no dialogue or text, except for the lettering “At some point it will go back to you. Conserve your planet. There is still time”, in Portuguese, on the last screens. The images which illustrated both texts were downloaded from Freepik and were chosen for representing the theme: one as graphic representation of noise and the other the diversity of tree leaves to represent the diversity of nature. Figure 2 shows the original design of the pieces. To read their full translated versions, please see Appendix C.

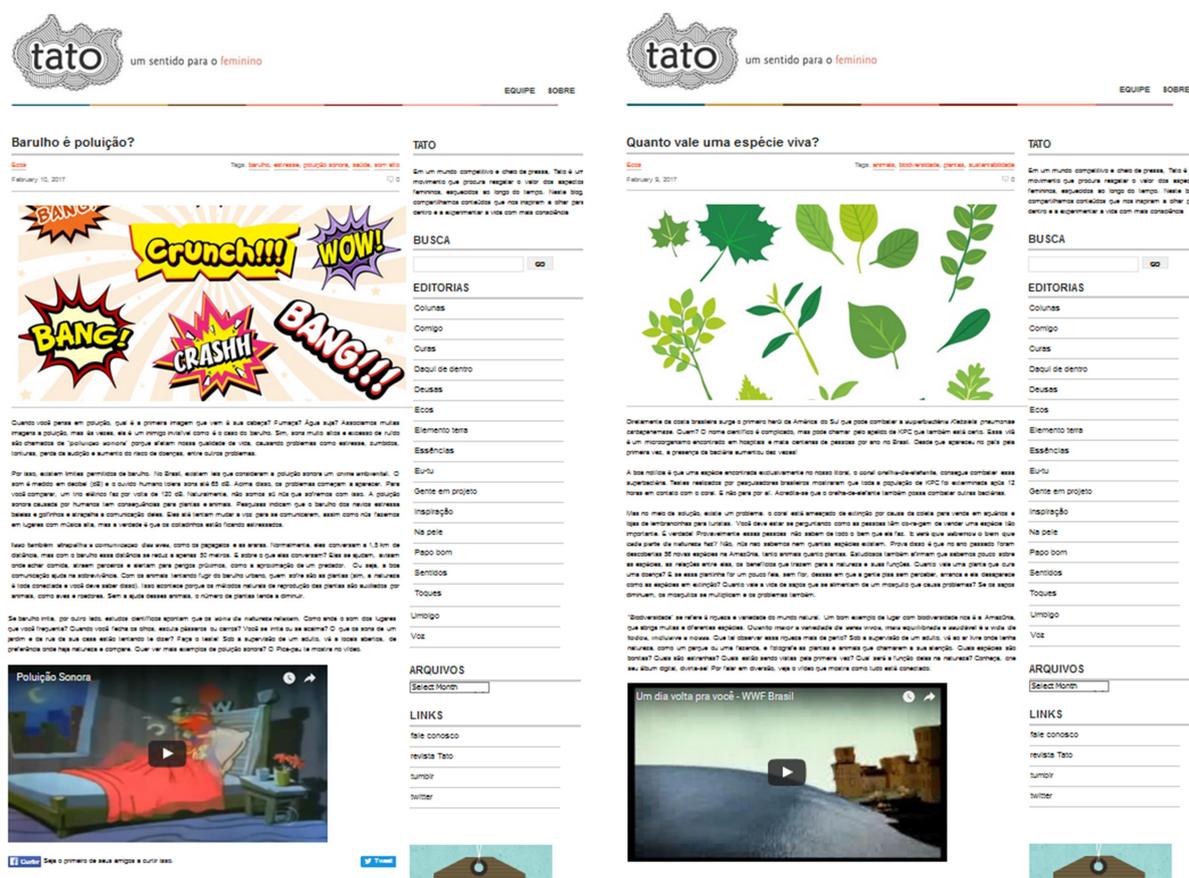


Figure 2: Overview of both published journalistic pieces, side by side

The pieces had different emphases: the one about noise pollution focuses on knowledge and the one about biodiversity on attitudes. However, both have the idea of encouraging behavioral examples, suggesting to the children to go outdoors to make an activity connected to the topic at the end of each text. Specifically, the article about biodiversity was constructed with the intention to sensitize children to the value of the nature in every element, the relationship between species to promote balance (interdependency), to raise their perception of importance about the topic of extinction, to bring the topic closer to their reality, and to improve their attitude when it comes to other related topics, such as public health (e.g. the less

frogs, the more mosquitos to transmit Zika virus). The piece about noise pollution was written with the intention to explain the concept and to provide new information for those who had already a previous idea about it.

As this an exploratory study is about possible contributions of journalistic pieces to bring children closer to nature, and not about a specific aspect of it, each piece put together elements that compose a regular online journalistic article for children such as images, videos, and a text format close to a conversation. Links leading to other pages, however, were not used. This decision was taken to avoid that children read the text partially and go navigate in other internet spaces following the links, i.e. this is an attempt to increase validity when making the readers stick to the given content, so that it is clear what is being measured. Besides, it is not common that the online media outlets dedicated to children in Brazil (e.g. *Recreio* and *Atrevidinha* websites) offer links along the text. For this reason, it was assumed that the readers would not miss the links.

4.4.3 Interviews

After the activities with all four groups were completed, some children who participated in the focus groups were invited for individual semi-structured interviews. The students' selection would have Hall's (1980) encoding/decoding proposal as a reference i.e. two children of each decoding type (preferred, negotiated and oppositional) would be invited. The aim of this step was primarily to expand the knowledge about their daily life context and personal background to find out what could have led students from similar cultural contexts to decode the journalistic contents differently. The questions enabled a more in-depth analysis of the interviewees' private life, particularly in the sphere of family routine, habits, and preferences. This step was also an opportunity to clarify the interaction of the children with the content of the interest tests, helping to make sense of the chosen books and remembered images, in an attempt to better comprehend the limitations and the results of each test. Finally, it sought to understand middle class Brazilian children's life experience, usually unexplored. In this endeavor, the guideline (see Appendix A) and the answer sheet of the selected interviewees were used.

At the end of the focus groups, however, the reading patterns of the children converged to preferred position and for this reason additional criteria were used to choose the interviewees. In total, four children were invited: two boys and two girls. One boy and one girl were selected because they demonstrated to be enthusiastic and to have above average knowledge

and attitudes towards nature during focus groups. The other boy was chosen for dedicating lot of his time to screens and not showing a great interest for nature, as he said. Finally, the second girl was invited to make this sample more gender-balanced and to provide more information about the interest tests. As for the other focus groups participants, she held a positive attitude towards nature, had average knowledge and liked to use several digital devices. Thus, in the context of this interviews sample, she can be considered neutral, since she was not above the average concerning her relationship with nature, but also did not manifest any negative feelings/opinions about it during the collective interviews. Her interview was the only one that occurred outside the school environment, since it was not planned in advance, but a result of a coincidental meeting in the neighborhood. Her parents were verbally asked for permission and allowed the interview, which was conducted the day after, in an area of her building. Regarding context, it is noteworthy that the two boys were interviewed simultaneously because the school sent them to the informatics room together. All interviews took around 25 minutes. Table 2 gives an overview of the interviewees.

Interviewee	Sex	Age	Where	Description
A	Girl	9	At the school	Alone; pro-environment.
B	Boy	9	At the school	With participant C; pro-environment.
C	Boy	9	At the school	With participant B; not so much into nature.
D	Girl	9	At her building	Alone, neutral/average.

Table 2: Interview Sample

4.5 Analysis

All focus groups and interviews were transcribed verbatim according to the Gesprächsanalytisches Transkriptionssystem (GAT) 2 transcription system codes, but not translated (see Appendix G). The GAT 2 minimal transcript conventions were adopted, since they are sufficient to indicate the context of the conversations, without unnecessary details for

the purpose of this research (e.g. the duration of a speaker's pause). To contextualize the material facilitates the interpretation and, because the participants are children, it was often the case that they made comments laughing or causing a tumult in the group. These reactions should be registered, so that a comment that was made as a joke, for instance, remained documented as a joke. One symbol (< >) was included in the system to represent the children's gesture, used only when a child showed something with their hands, because GAT 2 does not have a symbol for that. To see the full list of codes, please refer to Appendix G.

The transcriptions of the focus groups were coded according to Mayring's (2000) qualitative content analysis, in which the central instruments of analysis are categories. A codebook was created in English (see Appendix E) with categories constructed based on the research questions, on the transcripts, and on the theoretical background. The main categories of the codebook were the ones presented in Informal Education Framework section and incorporated in the research questions, namely: *knowledge*, *attitudes*, and *desire to interact with nature*. *Attitude* was divided into two subcategories that derived from its definition adopted in this research: *affective dimension* and *cognitive dimension*.

In addition to that, *decoding* was included as a main category because it represents a concept of the Cultural Studies that guides reception. According to its definition, it had three subcategories that represented the decoding possibilities: *preferred*, *negotiated* and *oppositional*.

Other categories were inductively developed based on the participants' answers. It was the case of *routine* which is about the children's day-by-day, and *responsibility*, which refers to the children's view about environmental problems regarding causes and solutions. These categories were created because they enrich the understanding of the children's cultural context and perception about the environment. After the coding of one group, the categories were reviewed. "Following this criterion the material is worked through and categories are tentative and step by step deduced. Within a feedback loop those categories are revised, eventually reduced to main categories and checked in respect to their reliability" (Mayring, 2000, para. 12).

Knowledge, then, was divided into the subcategories *previous* and *acquired knowledge*, to facilitate the comparison and, consequently, to answer RQ1.1. *Desire to interact with nature* became the main category *desire* with the subcategories *interaction with nature* and *free time*,

that refers to what the participants wish to do in their leisure time. After the transcriptions of a second group were coded, the codebook did not suffer any more changes.

The sentences of the transcript were the coding unit. Boys' and girls' comments were coded in the same codebook, but in different colors to separate their answers and enable a future analysis from the gender perspective. The same is true for each group, to permit the comparison of the interaction among different compositions (only boys, only girls and mixed).

As Friedman (2008) explained, there are often relationships between categories like it might happen with attitudes and knowledge. In this research, this overlapping occurred as well, especially regarding *knowledge* and *attitudes* and *knowledge* and *responsibility*. Because the sample is composed by children, the information was usually expressed mixing formal knowledge, imagination, beliefs, and with words that did not evidence nuances. Therefore, some sentences were coded in more than one category when they were comprised of elements that related to more than one category (e.g. an opinion about children's responsibility for environmental problems grounded on formal knowledge). To make the categories as independent as possible, some criteria were established accordingly to the aims of this research and to the specificity of the sample. Knowledge was understood as what children claim to know about the topics, in their way to construct it, be it more or less accurate. In other words, different degrees of knowledge (e.g. nature is fauna and flora x nature is to decorate the city) were coded as knowledge, even if one expresses information closer to formal knowledge and the other poor information. The comments connected to religion, even if learned at school, were coded as *attitudes*.

Although *interest* is also addressed by this research, it was not included in the codebook because it was measured by the quantitative part within this qualitative work. A quantitative comparison between the answers of the sample before and after the focus groups was performed, having *nature* as a reference. Specifically, in the book interest tests, the number of selected the books titles about nature were compared. In the memory tests, the number of descriptions of the remembered images about nature was compared. Likewise the focus groups, the results of boys and girls were considered in separate groups to enable comparison.

The interviews were summarized, since they were short stories of the interviewees' private life, focused on their routine. The final part of the interviews briefly explored the reasons behind the children's interest tests answers. They were directly asked about their predilection

for some books and apparent incoherencies in their individual results (e.g. all the books about science in the first test and none in the second).

4.6 Pre-test

Before the data collection actually began, the Typeform script was administered individually, via Skype and Facebook call to seven Brazilian children (three girls, four boys). They had between eight and ten years old, were from Belo Horizonte (four) and Rio de Janeiro (three), and studied at private schools, with the exception of one girl. Snowball sampling was used to reach these students with a Facebook post on a profile page. The format of the pre-test is justified by the fact that the research is for a university in a small city in Germany, therefore, it would be nearly impossible to reach nine-year-old Brazilian students to test the material personally in groups.

To document the interviews, six of them were at least partially audio recorded and notes were taken. The cameras were on in the beginning of the interviews on both sides, to establish confidence and enable observation, but they had to be turned off to improve the quality of the call. Also because of bad internet connection and sound quality, the conversations had to be conducted with headsets instead of speakers, which improved the communication, but made full audio recording not possible. Two interviews were completely recorded and conducted with both cameras on. The results of one girl were discarded because of strong technical problems and perceived influence of an adult during the activities. All parents were asked to tell their children that the pre-test was just a conversation with a researcher interested in getting to know children better and they were free to end their participation any time.

The dynamics of individual interviews and of a group discussion among peers are clearly different, however, this step was still important to provide feedbacks about the time needed to read the texts, vocabulary comprehension, difficulty of the children to manage Typeform, and the general depth of the answers to the guideline (e.g. a single word as an answer). After this initial phase, the necessary adaptations were made: “YouTubers” was included as a type of celebrities in the book interest tests and a picture of the image interest that looked too dark in comparison to the others was substituted.

In addition to that, the texts were shortened to reduce the reading time, which turned out to be too long, especially for biodiversity piece. Besides, some words were changed to simplify the vocabulary (e.g. “souvenir store” was substituted by “tourists’ gift store”). The questions of

the guideline were reviewed in order to avoid redundancy and a comparative question about local and global environmental problems was excluded because it was too advanced for them. Importantly, this step also provided initial feedbacks (e.g. which environmental problems nine and ten-year-old know) that worked as clues of what to expect in the future from the real sample. They are described in the next section.

4.6.1 Preliminary Insights

Even before the pre-test began, it anticipated information about the emotional state of the children concerning the research. Two mothers informed that they had to calm their children down because they were too anxious about the activities, which reinforced the need to have a special tact to deal with the participants.

In the warm up, when asked what they would like to do the most in their free time, the answers varied: to spend time playing doll, Lego, to go to a park (e.g. water park), to spend time with a part of the family who lives in another town. What all the answers had in common is the fact that none includes online or electronic possibilities. On the other hand, regarding the ways in which the participants indeed spend their free time, video game, cellphone and computer were often mentioned. A ten year-old boy said he likes to play outdoors only when there is a group to play with, at least two other friends. Since this is rarely the case, he does not often play outdoors. They reported to frequently have homework and other classes such as soccer, English, swimming, and dances lessons.

These participants were aware of several environmental problems, mostly learned at school, such as deforestation, extinction, forest fire, garbage, occupation in preservation areas, and air and water pollutions. They all agree that these are serious problems and some could not make a clear distinction of which would be the most serious. Only two chose. A nine-year-old girl said it is “pollution”, probably meaning global warming, because the world is getting warmer, it does not rain often and things are becoming dry. A ten-year-old boy said it was forest fire because it produces pollution, damage the oxygen, and makes a hole in the Ozone Layer. It was also not clear, who causes environmental problems. It is clear that “humans” are the responsible, but they do not know who exactly. No governments or companies were mentioned.

Despite their awareness about environmental problems, when asked if they know any of them close to their reality, the answers were negative: “not that I know of” or “just a little” (e.g. industries). The notion of distance to the problems revealed to be not only physical, but

sometimes in time. A boy said that he feels upset about the environmental problems because in the future there will be a lot of problems. He said he does not see consequences or problems at the moment. On the other hand, the children believed they could do something about it. They mentioned examples of avoiding behaviors they know are prejudicial (e.g. wrong garbage disposal), but could also think of solutions like recycling and telling other people to not do something wrong. Besides, they had their own stories: “Once, me and my neighbor helped a bird who has fallen from his nest in our building. I think his mother did not see it” (nine, boy). The same boy, however, believed that his actions are limited: “To throw garbage in the water. I don’t do that, but I don’t know very well how to clean it and how to make the people stop doing this. Because there are a lot of people. [...] I tell them not to do it, but I only say it when I see it”.

The concept of nature revealed to include plants, animals, water, stones, and oxygen. If humans are or not part of the nature is not a consensus. For most of the children, they are, but some participants brought the idea that “some yes and others not. Some likes to treat it properly and others pollute it” (ten, boy). The eight-year-old girl expressed the same notion: the humans who belong to nature are only the ones who do not destroy it. The feelings towards environmental problems varied only from “very upset” to “really sad”. The eight-year-old girl was ashamed: “I feel bad because I belong to this species which pollutes and kills”, even if she did not classify herself as a polluter. Indeed, all of them said they do not pollute.

When asked if they would like to take part in the activities suggested at the end of each journalistic article, which proposed that they go out and interact with nature, all the children were open to try them. A ten-year-old boy answered: “Sure! Now? I will talk to my mother” and a nine-year-old girl already imagined a place to do it: in the garden of her building. Only a nine-year-old-boy from Rio de Janeiro said he would not do the one activity, to photograph the nature, because he did not want to scare animals or plants, so that they would not feel threatened. This is probably because in Rio de Janeiro, particularly in tourist areas, it is common to find signs asking to not feed and interact with the animals.

5 Results

This chapter is dedicated to the results of each phase of this work. First, the outcomes of both interest tests are presented, followed by the data collected in the focus and, finally, the summary of the interviews.

5.1 Interest tests

In this section, the findings of the interest tests are synthesized with the support of the numbers of the selected books and the described images. They do not, however, have significance to the results, but are used to organize them.

5.2.1 Image interest test

The outcomes of the image interest tests, which measured interest by memory, showed that the girls remembered more images than the boys in both tests. Consequently, they have a slightly bigger influence on the final result, which considers the whole sample. In the first interest test, the boys remembered 60 images and the girls 68. In the repetition, the boys could describe 67 images and the girls 69. In total, the sample was able to remember 128 images in the first test and 136 in the second. Figures 3 and 4 show both results of the image tests by sex.

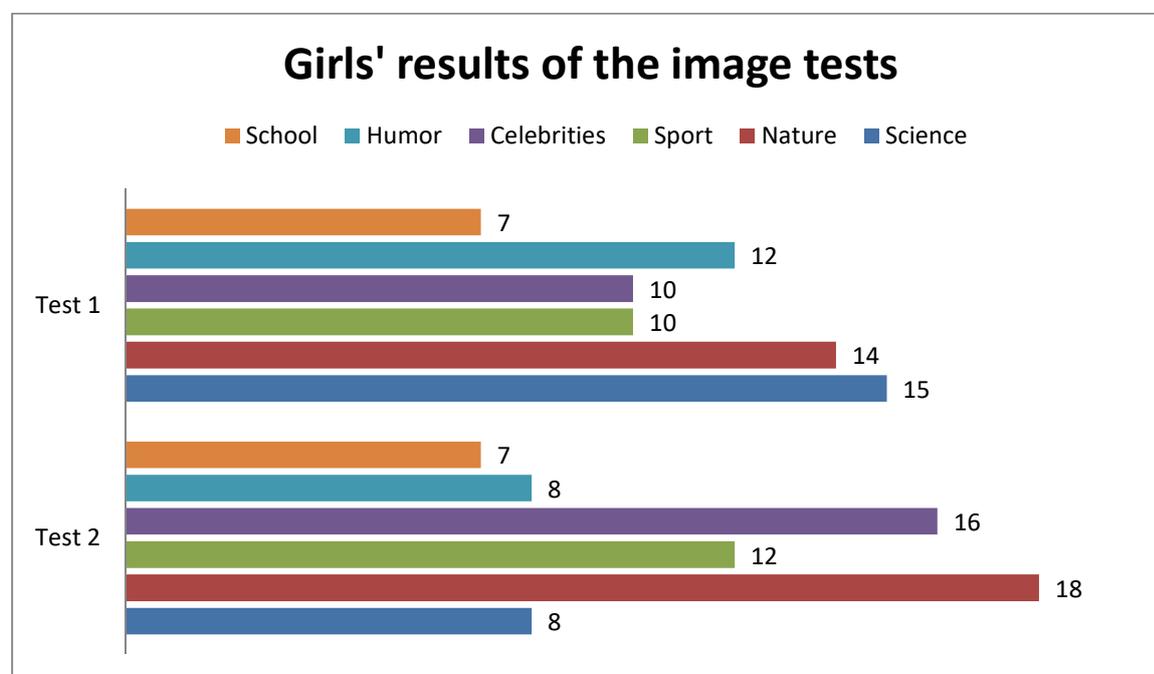


Figure 3: Comparison of girls' results of both image interest tests by number of descriptions

Considering only the girls, *science* was the most remembered topic in the first test, with 15 descriptions, followed closely by *nature* with 14 and then by *humor* with 12. *School* was the least remembered topic with seven descriptions. For the boys (see figure 4), *science* was also the most remembered topic together with *sports*, both with 15 descriptions, followed by *humor* with ten and by *nature* with nine. For them, *celebrities* was remembered five times and occupied the last position. Thus, in the first test, although in different positions, *nature*, *humor*, and *science* were the most remembered topics for both boys and girls. For the boys, however, *sports* that did not appear so well ranked by girls, shared the first place with *science*. It is noteworthy that for girls and boys, *nature* was among the three most remembered topics from the beginning, as the first image test indicated.

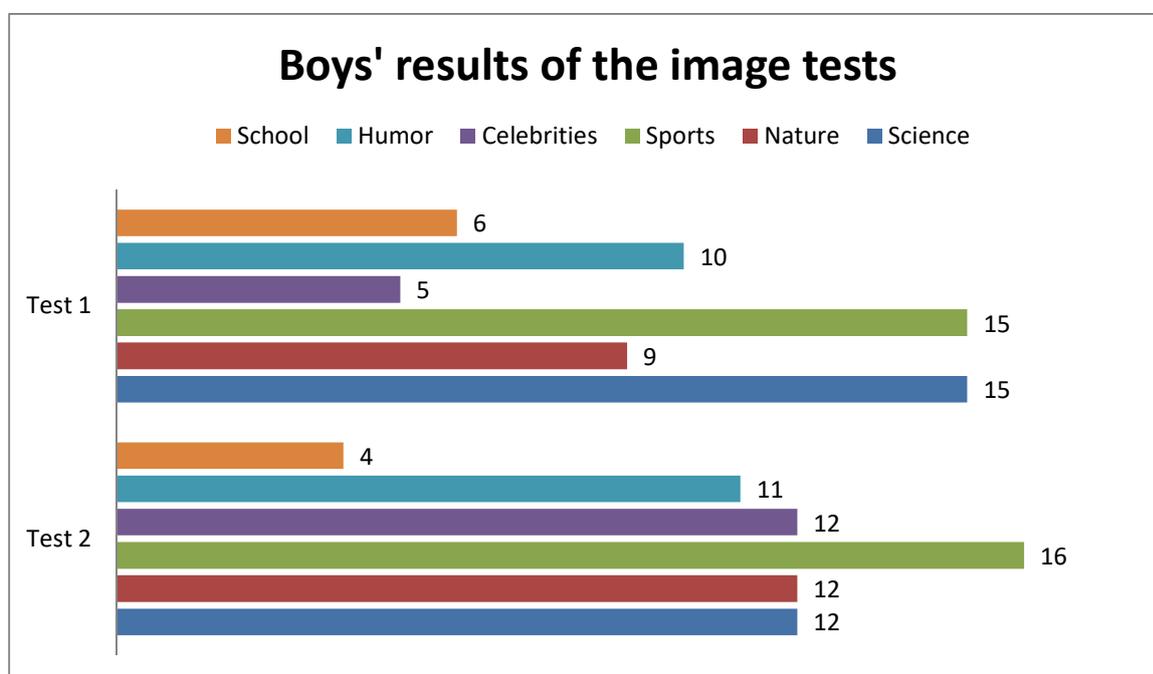


Figure 4: Comparison of boys' results of both image interest tests by number of descriptions

In the second test, the girls placed *nature* in first position, with 18 descriptions, while the boys kept *sports* as the most remembered topic with 16, and then *nature*, together with *science* and with *celebrities*, all with 12 descriptions. In summary, *nature* got a better position among the topics in both groups in the second test. Among the girls, it rose from second to first place and among the boys from third to second place.

Considering the whole sample, *science* was the most remembered topic by the group in the first test, with 30 descriptions, followed by *sports* with 25 and then by *nature* with 23. *School* was the least remembered topic with 13 described images. The second test revealed a different ranking: *nature* reached first place, with 30 descriptions, followed by *sports* and *celebrities*,

both with 28, and then *science* with 20. *School* remained the least remembered topic with 11 descriptions. The biggest number of descriptions suggests that *science* was the most interesting topic in the first test and *nature*, which previously was in the third position, became the most interesting topic after the readings and discussions. Figure 5 represents the interest level of the sample including all the topics before and after the focus groups:

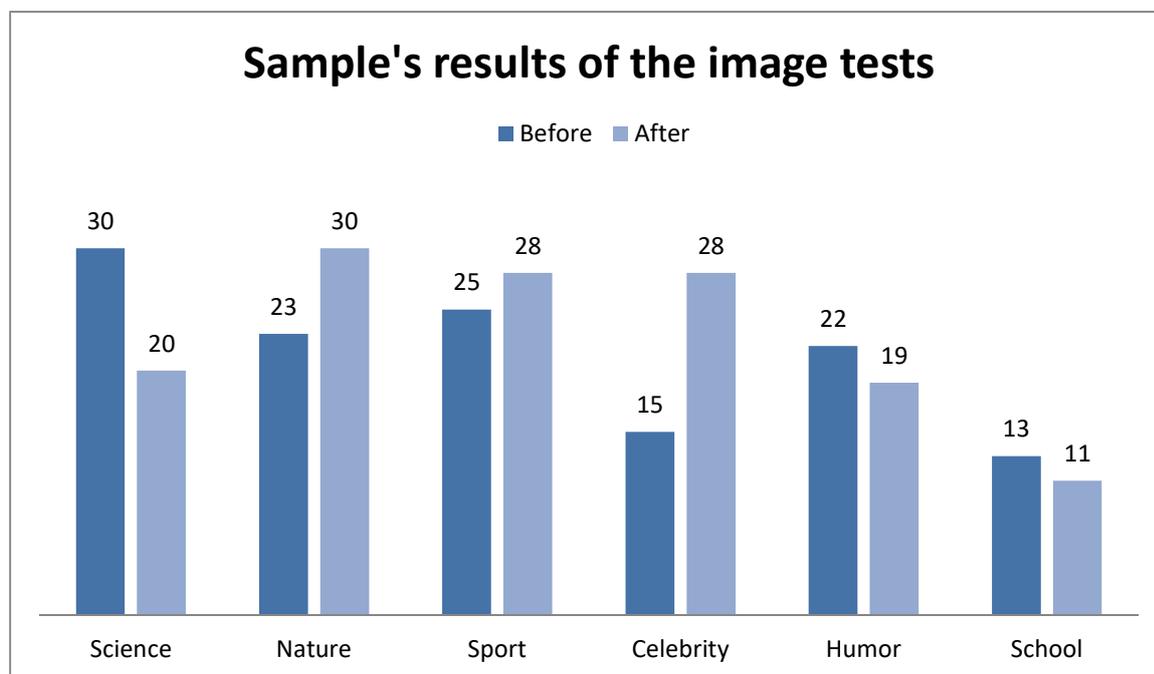


Figure 5: Evolution per topic in the image test of the sample by number of descriptions

5.2.2 Book interest tests

In the interest test with book titles, boys chose more options than girls in both tests. In the first, they selected 102 books that they would like to read, while the girls chose 81. In the repetition, the boys picked 104 titles and the girls 87. Consequently, the results of the boys have more influence on the final result considering the whole sample. Figures 6 and 7 compare the complete results of both tests by sex.

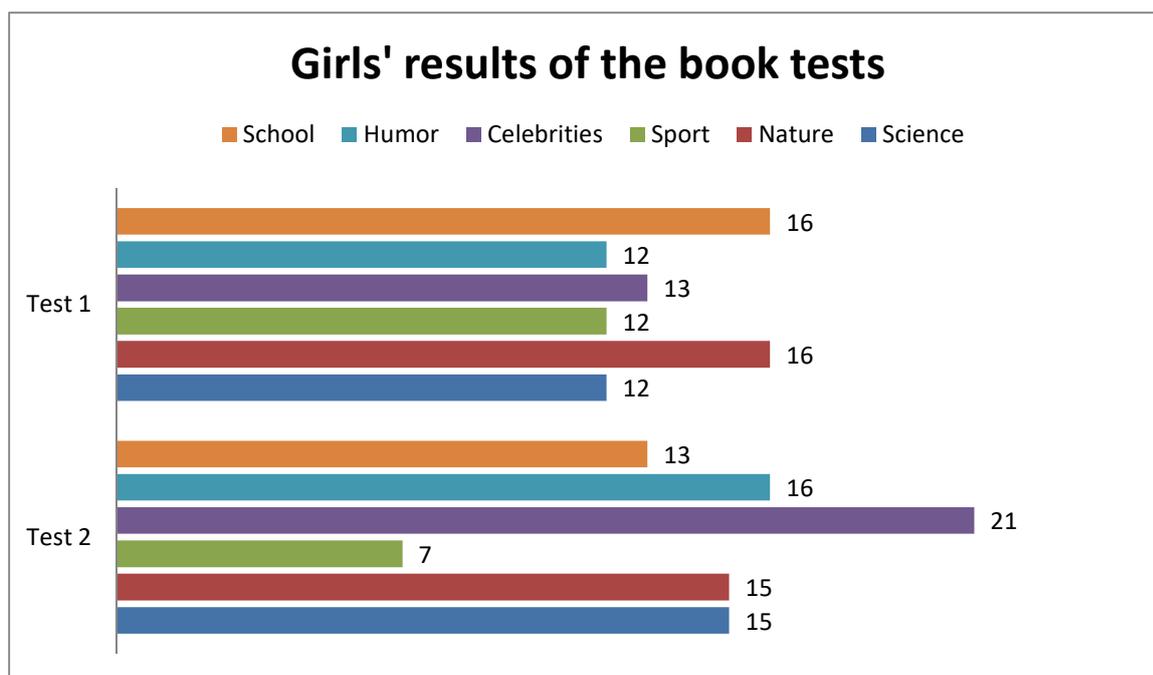


Figure 6: Girl's results of the book interest tests by number of selections

The results of the first book interest test pointed out that *nature* and *school* were the most chosen books by the girls, with 16 selections each, followed by *celebrities* with 13. All the others were selected 12 times (see figure 6). The boys selected mostly *sports*, 25, then *school*, 22 times, and then *humor* and *nature*, 16 times each. Likewise the image test, *nature* started in a better position for the girls in comparison to the boys, although still in first three positions for both.

Figure 6 suggests a somewhat similar distribution between the topics in the first test, with the most chosen topics four books ahead of the least chosen. No topic was clearly rejected. The second test had a similar tendency except for *sports*, which is clearly behind the other topics, and *celebrities*, that was in evidence as the most chosen. The first test of the boys indicated clearer preferences, while the second showed a more balanced distribution than the first.

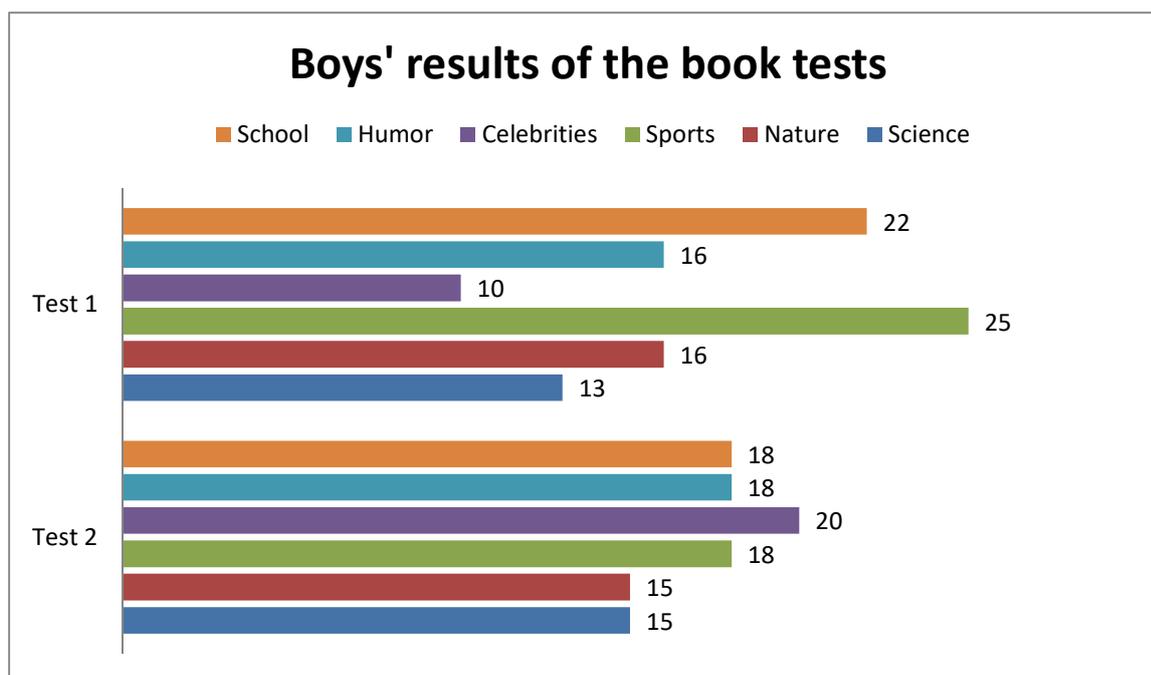


Figure 7: Boys' results of the book interest tests by number of selections

In the second test, *celebrities* led the girls' ranking with 21 choices, with *humor* in second place with 16, followed closely by *nature* and *science* with 15 each. The boys also placed *celebrities* in first place, with 20 selected books, followed by *sports*, *humor* and *school* all with 18. *Nature* and *science* shared third place with 15 titles each.

In sum, for the girls, *nature* was first place and became third, although only one book away from second place, while for the boys, it was the third most chosen topic twice. An attentive look at the numbers shows that *nature* was chosen 16 times in the first test and 15 times in the second for both boys and girls.

Considering the entire sample, the most selected topics in the first test were *school*, chosen 38 times, followed closely by *sports* selected 37 times and then *nature* with 32. In the second test, *celebrities* was the most chosen topic with 41 selections, then *humor* with 34. *School* was in third place with 31 choices, followed by *nature* and *science* with 30 selections each.

Overall, *nature* started among the three most chosen topics and ended among the four most chosen, only one book away from repeating the initial third place. It was the most stable of the topics with a variation of only two choices: one resulted from the boys and the other from the girls. Figure 8 illustrates the complete results of both book interest tests of the whole sample.

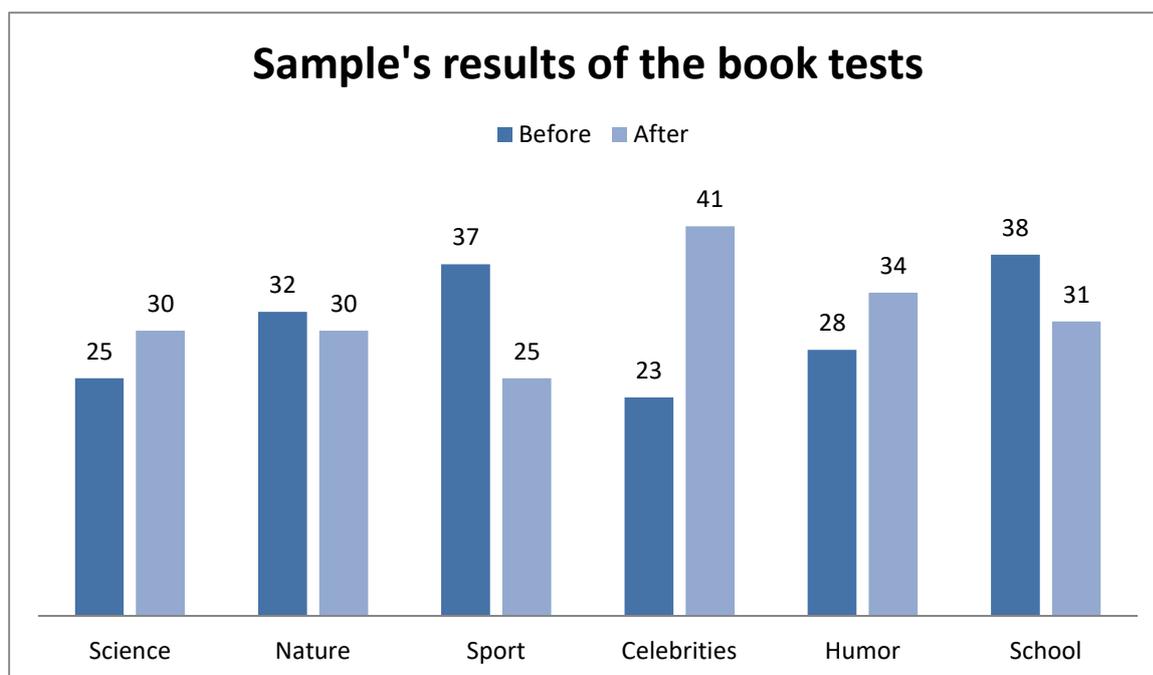


Figure 8: Evolution per topic in the sample by number of selections

5.2.3 A closer look at the results of the interest tests

To make the results of the interest tests clearer, it is essential to connect the pieces of information they delivered beyond the numbers.

Concerning the image tests, a boy said he remembered the images that he spent more time looking at. The images that attracted his attention were the ones he preferred. Similarly, a girl told that she could remember the images that she liked. Another girl said she remembered the jaguar, one picture that represented nature, because she likes animals very much “the one of the jaguar was because I like animals very much like jaguar, lions and also nature I like it very much so I remembered more the green, the jaguar” (girl A, lines 185-186).

The associations between the images and the pictures should be considered. A girl, who documented a consistent interest for school in the other tests and not for science, described in her answer sheet a picture of two children making a chemistry experiment. When asked about the picture of two children, she immediately said: “in a laboratory”, revealing that she remembered the picture. When asked where they would be, she answered: “at the school. At school, there is a laboratory” (girl D, line 182). Others described the same picture with “children with dirty face”, “children with black face”, “children with bristly hair”. Therefore, a picture that was meant to represent science, even if stereotyped, did not always have the

elements of science described (e.g. laboratory, experiment). Consequently, it could have been associated (also) with *school* and *humor*.

Regarding the books' tests, one reason why *nature* dropped in the ranking from one test to another was the rise of *celebrities*, which suffered the greatest variation: it rose from last place in the first test to first place in the second test. There is a tangible explanation for it, which refers to a predicted limitation of this test.

Celebrities was represented in the books' tests by different kinds of famous people in an attempt to widely represent it: TV celebrities and music artists in the first test and YouTubers and pop artists in the second. The high number of selected books about celebrities in the second test was due to the YouTubers, an option frequently chosen in the second test that was absent in the first.

The higher number of selections, then, does not reflect an increase in interest in *celebrities*, but rather that their interest in YouTube and YouTubers could only be evident in the second test, since they were not mentioned in the first. This result suits the sample profile since at least four of them have their own YouTube channels and it is part of their routine to watch videos on this platform. Naturally, before getting to know the participants in the focus groups, it was not possible to predict such strong preference.

While this *celebrity's* result suggests that the test was measuring interest, others indicated that it measured also other variables. A girl justified her chosen book about school in saying she does not usually have good school performance and thought that by reading this book she could get better grades. Similarly, a boy who picked the same book justified it in saying he is not so good at school. Neither of them selected the other similar book about better grades because they did not see it.

Moreover, this girl did not choose any book about friendship at the school because everybody is her friend. "At school everyone has to be everyone's friends" (girl D, lines 203-204). She chose a book about how to take care of pets because sometimes her dog bites her and she does not know what is wrong. The book about humor that she selected was because she considers herself too serious; people can hardly make her laugh. Then, she supposed that a funny book could be good for her. Nevertheless, she did not pick up any book about jokes since she has some at home and they cannot make her laugh. "Jokes are not funny for me anymore" (girl D, line 265). Finally, a boy said he chose a humor book because his family is too serious and

stressed at the moment and he would like to have this book to cheer them up. The same boy, who said science is his favorite subject, did not pick any book about it in the first test. “It’s because I did not find anything interesting in the first list, not at my level because I am very dedicated to science so I already know a lot” (boy B, lines 315-316).

All this information clarifies some points. First, that beyond interest, one variable that was measured is “need” or “utility”. In other words, some titles were chosen because they seemed helpful to solve a problem (e.g. to improve grades, to cheer the family up) and others were not chosen because the children did not perceive that content as helpful (e.g. they already have many friends, jokes are useless to make laugh). This might be the explanation for why school was highly selected in this test.

When choosing the books, children were taking into consideration their life context as a whole, with all problems, deficits, books they already have at home and things they already know/have. Another point is that despite this limitation of validity, the test was measuring interest, as the comment of the boy who likes science illustrated and other evidence confirmed such as the book about YouTube that was highly chosen and the fact that the boy who is not much into nature did not select anything nature-related. The third point is that the apparent incoherence of some results i.e. sometimes the participants did not choose similar books or did not show consistent interest for one topic, was simply because a child did not see one of them. Therefore, it is possible that the children were anxious or tired after all the activities. Another possibility is that 12 titles were too much for them. Time to adequately execute the tests was probably not a problem since the group did not move to the next activity if someone was not done with it.

Besides, another aspect that should be considered, although it was not so strongly manifested is the kind of narrative of the book. A girl said she chose only one book about sports because although she likes sports, she liked only the book *What sports suits you?* because it is a question, while the other books were about champions, athletes and she “barely knows the names”, so she is not interested. Although she had difficulty to express what she meant, it is understood that she does not like to read about history of sports, but would like to have more practical information.

Finally, the choice of the books was sometimes guided by very subjective criteria, i.e. a book title was created to represent one interest category, but it was associated also with something else. A girl who selected only one book about humor, called *Jokes from different countries*,

explained that the reason why she chose it was because the book is about different countries and she is curious about it. Nevertheless, she likes jokes as well.

5.2 Focus Groups

Likewise some children of the pre-test, the children were already anxious about the research procedures when they were invited to participate. This was perceived not only by the agitation in the classes, but a nine-year-old girl verbally expressed to be nervous since then. Despite the attempts to calm them down, some groups reflected more or less this anxiety and curiosity at least in the first minutes of each section. In the first group, a boy immediately asked if they could use Google to help them to answer properly. After the explanation of the activities and because the questions of the warm up do not require right answers (e.g. what do you usually do when you are at not at school?) they seemed to be relaxed. The presence of the recorders was a reason for initial suspicion too, but soon they forgot about them. Additionally, it was explained that the recorders were there “just to help my memory”, since we would have long conversations. They should not worry about it because it was “our secret”. After this initial conversation, there were no evidences that the children were feeling uncomfortable or pressured by the any procedure or question.

In the following sections, the quotations of the participants are identified by sex, number of the group, and the correspondent lines in the transcription (Appendix G). The quotations were translated as close to the original as possible.

5.2.1 How do the participants use their time?

When the participants are not at school, they spend time on other classes, tasks and entertainment. The participants often mentioned homework and studying as activities to which they dedicated time at home. Beyond the regular classes, it is common that they have extra courses such as swimming, languages, volleyball, dances, and soccer lessons, be it at Pio XII as an optional offer or at other private institutions. Some children have also catechesis.

To watch television is a regular practice for them as well as to play with their pets, in case they have one—and several do. Boys and girls reported intense use of cellphone, tablets, and computers, with which they mostly play games and watch videos. The content of the videos varied: dolls, games, humor, horror, music, and rarely something educational like

documentaries. A boy justified: “In the internet there is only crap” (group 1, line 648) and other boys agreed.

YouTube was often mentioned and at least four students have their own YouTube channel. “Up-to-date children of my age spend the whole day on YouTube on the weekend, like me” (girl, group 2, lines 112-113). The other participants agreed, but a girl immediately made a face in disapproval: “I like it, but I am not doing this the whole time” (group 2, line 123). Like her, there were other exceptions for this intense use of technology and all of them were girls. These girls did not mention digital devices as part of their routine. Instead, they said they go to parks, play in the backyard, usually with their pets, watch TV, and play dolls and board games with their family. This does not mean that they do not use or have them at all, but it indicates that this is not what they do the most.

Although similar, the routine of boys and girls had differences. The girls mentioned Whatsapp, a software to exchange online messages, for talking to each other as an additional use of their cellphone. The boys cited video games as a habitual form of entertainment mostly ignored by the girls. “I only play video game when I want to do nothing, when I am completely free without anything to do” (girl, group 3, lines 14-15). Another contrast is that the girls mentioned playing dolls, while the boys reported to play soccer and one mentioned action-figure. In general, they prefer to play with brothers, sisters, cousin, neighbors, and classmates. The students who do not have company play alone.

During the week, they are usually at home and at the weekends they go out with their family. In these occasions, they go to their ranches or farms, amusement parks, squares, and center malls. One boy goes often to a sports club with his family. Some girls reported to go out with their mothers in the neighborhood (e.g. to go to the bakery) during the week every time they have the chance.

5.2.2 How would they like to spend their time?

The way children spend their time is not, however, necessarily how they would like to. The answers about their wishes are presented summarized by group.

The boys of group one chose diverse ways to spend time which they consider the best: to ride a horse, to go to grandfather’s farm, to swim, to travel abroad (one boy said to Disneyland and another to a place with unusual animals), to read books, to visit the brother in Australia, to go to the grandfather’s farm, to go to center malls, to visit the Authentic Games’ house, to spend

the whole day playing video game, and to play catch-and-release and soccer in someone's house. One of the boys who chose the center mall justified: "There is ice cream, movies and McDonald's..." (group 1, line 107) and then described what, for him, would be a perfect day:

I would spend the whole day on my couch playing Xbox and at night I would go to the center mall to be in the movies and then I would go back and go to the swimming pool and then I would go to the mall again... (lines 109-111)

He was the first student to talk in the first group. After that, they were oriented to be more specific and give reasons for their choices. Another boy who chose the center mall also mentioned ice cream and McDonald's. It is important to highlight that these answers about eating and going to center mall had a laughing tone and made the other participants laugh. This makes it is complex to distinguish to which extent this was just fun or a real desire, but it was probably both, since the center mall was mentioned in group two as well. A boy added: "The dream of a child is to be rich to buy any chocolate, any burger, to arrive at home and get a thousand computers" (group 1, lines 159-160), which caused buzz with others screaming that they would like to win the lottery. Once again, a funny atmosphere was in the air.

Group two, of girls, mentioned to play with their pets, to travel to the beach or to anywhere else just to not be bored at home, to spend time with their brothers (e.g. to watch TV, to play ball), to play volleyball, to go to center malls and to ranches. The girl who preferred the center mall justified that there she can shop, eat and take her dolls for a ride. Likewise the boys, she also had a laughing tone and made her classmates laugh. The mall was not her only choice. She mentioned it together with playing volleyball and with her brother. The participant who chose the ranch explained she likes very much "to play in the swimming pool, with the dogs. There is a lot of space in the ranch so there is a lot to do" (girl, group 2, lines 140-141).

The students of group three would like to drive karts and buggies, to go to a square or sport court to play ball, to play with mothers' clothes, to go to the zoo, and to ride a bike. A boy said he would like to travel abroad to get to know other cultures and people. When asked to think about something he could propose to his parents to do at the weekend, he answered: "To go to some square to play with the dog" (group 3, line 83). Another boy would like to repeat a good experience: "I would like to go back to an aquarium where, when I went, I was only seven years old and to have ice cream. Why there? Because there were so many marine animals" (group 3, lines 104-105).

The recreations chosen by group four prioritized spending time with their families in different activities. Together with their relatives, they would like to play, to go out, to visit other family members, to travel, and to go to amusement parks or to some other “different place”. “One of the things that I like the most is to go out with my cousin and every time I go out with her, I am very happy” (girl, group 4, lines 64-65). The children justified their choices: “because my parents would have fun” (girl, group 4, line 59), “because I would like my family to be together” (boy, group 4, line 60), “because my family does not do it so often” (boy, group 4, lines 75-76), “for us to be closer” (boy, group 4, lines 77-78).

Only one girl did not mention family. She would like to travel because she does not do it often, preferably to the beach, where she was only twice. She argued it was to not be indoors.

Although participants of other groups mentioned activities with family members, group four valued time with family more than the others. It could be that their peer interaction led them to adopt the same posture. The explanation of a boy, however, offered an overview of his situation that could apply to others: “my brother studies in the morning [this boy studies in the afternoon], my mother works the whole day, my father also works” (group 4, lines 60-62).

The interviews confirmed that the children, at least from their perspective, do not spend enough time with their families, which could explain such priority. In addition to that, “family” is a strong value of the school.

5.2.3 Their concept of nature

Catholic religion was part of the cultural context of the participants and influenced their answers. The meaning of nature was one example in which this relation was clear. To explain what nature means, a boy said: “It’s something that God created” (group 1, line 167). In another group, a boy defined nature as “as wonderful construction of God” (group 3, line 137) and several others, boys and girls, defined it with variations of this idea. Even if God was not mentioned, the moral of the participants was guided by the Catholic notions (although these notions are not exclusively Catholic). To a girl, nature meant “love” (group 4, line 83). A boy claimed that the plants deserve love and peace like humans and another girl that nature is “so perfect that it is most of things” (group 2, line 284).

More concrete definitions were also expressed in the direction of elements that compound nature. Animals and plants were mainly mentioned, but water, air, plantations, stones, waterfalls, and sand were too. Either way, the attitude towards nature was positive and no

negative comments about nature were made. “For me, nature is one of the best things because you have fresh air, ahn...a huge green and a richness that we don’t see in the city because there are too many buildings, smoke, these things” (girl, group 2, lines 241-243).

Most of the children thought that humans are part of nature for different reasons: “Meat is natural and we are full of meat” (boy, group 4, line 117), “because we are relatives of the monkeys” (boy, group 1, line 188), “because we were also created by God and we are a little bit of fauna (boy, group 1, lines 201-202)”, “because we are animals too” (girl, group 4, line 108). However, similarly to the pre-test, a boy believed that some people do not belong to nature. The explanation was the same: humans who destroy nature do not belong. A girl suggested that there are degrees of belonging. For her, even if the Brazilian indigenous natives live in the nature, the animals “belong more” because they live closer to it.

The boy who believed no human is part of nature thought of people as part of the city and was questioned: “And where do you think the city came from?”, asked him another boy (group 1, line 209). Insisting on his argument, he claimed that if humans were part of nature, they would have destroyed all the forests. “If it was for the men, this city would not exist like Belo Horizonte [Beautiful Horizon, in English] with this ‘Belo’, it would be Horrible Horizon” (group 1, lines 210-211). In his opinion, strong animals such as bulls and bears protect the nature from humans. Otherwise, all the woods of the world would have been gone. The others did not agree with him, laughed, and some could not really follow his logic, asking “what?”, “ahn?”.

Some ideas about the functions of nature were deeply rooted in the participants: it cleans the air, it is the house of the animals, it produces food and oxygen, and it provides resources to construct the city (e.g. wood). Therefore, humans and other beings depend on it. A boy resumed the function of nature: “For us to live because nature provides everything that we can imagine. For example: water is part of nature, solar heat is part of nature” (group 1, lines 220-221). The notion that nature is beautiful was common among the students and a boy mentioned “to ornament the city” (group 1, line 218), as a function of nature. Less often, other functions were named: to relax and spend time with each other, to generate energy with water and consequently to provide Wi-Fi.

Before reading the texts, some children had an initial idea and others had no clue about the key concepts of the journalistic pieces. About noise pollution, they said: “I know what sound is. Pollution too” (boy, group 3, line 305), “the pollution of things? Of electronics?” (girl,

group 2, line 441), “a rare pollution?” (girl, group 2, line 443), “I think it’s very loud sounds and that pollute the air” (boy, group 3, line 309). About biodiversity, they defined: “Actually, ‘bio’ means life and ‘diversity’ means different, but I think I don’t know” (girl, group 2, line 533), “it’s the world set of living beings...animals, plants, these things” (boy, group 1, line 662).

The participants believed they learn about nature mostly at school, some mentioned specifically the Religious Studies class, but other sources were cited: the internet (websites and YouTube), magazines, cartoons, and documentaries. Some said they learn at home, from their parents and more rarely from siblings.

5.2.4 Environmental problems

The students were aware of environmental problems and could name several: deforestation, forest fire, endangered species, water and air pollutions, disposal of oil in the sink, visual pollution, and garbage. All of them were considered serious and there was no consensus about which would be the most serious. Only the group of the girls agreed upon one problem: global warming. The other groups elected smoke, water pollution, deforestation, forest fire, capture of animals, and clogged drains with no unanimous opinion.

The students were able to identify environmental problems close to them. They mentioned water shortage, garbage in the streets, floods, lack of recycling, smoke of cars, buses and trucks, bad use of transportation (e.g. one person alone in a car), real state market expansion (although not in these words), garbage trucks (because it releases the “air from the garbage”), and Pampulha Lagoon, a lagoon in the city that is polluted for years.

Environmental problems made the children feel sad in different levels, from “horrible” (girl, group 2, line 360) and “very sensitive” (boy, group 1, line 293) to “a little sad because we know that our planet is being polluted which is where we live” (girl, group 2, line 361). The feelings were sometimes mixed, accompanied by anger and shame. “Some people don’t understand that. Some people have mental problems” (group 3, line 181), answered a girl to a boy who had just said that without the trees people could not breathe. A girl compared the destruction of nature to killing “a person who is innocent that did not do anything” (group 2, line 629).

They did not only worry about the unfairness nature faces, but also about the consequences of these problems that they would suffer. They talked about it with a fatalist tone: “The world

will die” (boy, group 1, line 284). They also demonstrated to be disappointed with human behavior.

It's just that I think one thing that is really bad is that people, even if they know about these problems, most of them do not cooperate: they throw trash in the sea, through the air and in the street and factories...some factories have those smokestacks that take smoke into the air and this ends up *destroying everything that is good* (girl, group 2, lines 354-357)

5.2.5 Responsibility

Who is responsible for the environmental problems? For all the children, it is humans, in the individual level. No government, company or any other institution was blamed. A girl explained environmental imbalanceit from a historical perspective: “This has begun practically when the Portuguese arrived, right?” (group 2, line 375) and got full support of the group. “The Portuguese who lived there in the land of Portugal have come to live here. Then, they took nature out and built houses, buildings...” (group 2, line 385), she added. The others agreed and replied that these Europeans invaded the Brazilian forests to steal wealth such as gold. Besides, before their arrival, the country was inhabited only by natives and there was still forest left, but the Portuguese destroyed it.

A boy blamed the parents for the environmental problems, since he does not consider himself as a polluter. The rest of the group disagreed and made fun of him: “Just to know: do feces pollute?” (boy, group 1, line 338), “he never farts!” (boy, group 1, line 339). The boy, then, defended himself, arguing that he is not a polluter because he does not use plastic bags. The others were not convinced though.

Most of the sample was aware that they also cause environmental problems unintentionally or not. A conversation in the group of the boys illustrates some of these behaviors. “Sometimes we don’t even realize that we pollute because like we get something that is plastic and dispose it in the glass trash can” (group 1, lines 310-311). Another boy admitted that many times he is chewing gum in the car and because there is no trash can, he throws it through the window. A third one confessed he does the same, while other student told he chews the gum until the finds a proper place to discard it. “Almost everybody in Brazil does that [wrong disposal] because many times I see garbage spread, people throwing beer cans away, Guaraná...”

(group 1, lines 316-317) said a boy, who was refuted: “This is not only in Brazil” (boy, group 1, line 318).

Like the boy who blamed the parents, few other children declared they do not pollute, but they gave vague answers to justify it. “I don’t pollute because I don’t think it is right to destroy nature” (girl, group 3, line 266), “I don’t know....because I think it is bad” (girl, group 3, line 264), “there are some children who pollute like...well, I don’t pollute. I don’t pollute, I have to be honest because I know there is a cause, that it harms the city, the street, but there are people that do that” (girl, group 4, lines 167-169). A boy believed his family does not pollute because according to him, they make compost for a tree close to his house where there are “at least three monkeys” (group 3, line 281).

Some children could associate pollution to specific habits. “Well, I don’t know if I pollute so much because if I do pollute, I don’t know because even using electronics, my intention is not to pollute” (group 3, lines 275-276), explained a boy who does not like to breathe the air released by his video game. A girl said she pollutes when she is stressed because in these occasions she likes to draw and uses a lot of paper. “The owner of the store had to tell the men to cut the trees to make new paper” (group 3, lines 272-273). Even understanding that they cause impacts, they attributed some problems exclusively to the adults like to spread cigarette butts and other trash in the streets, to be a bad example and to not teach the children to behave properly.

The participants did not feel only part of the problem, but also of the solution and suggested different ways in which they and others could cooperate: “If we don’t spread garbage in the middle of the street it is already a big improvement” (girl, group 3, line 292), “to plant” (girl, group 4, line 421), “to not cut trees, to not kill animals” (boy group 3, line 288), “quit smoking” (boy, group 1, line 366), “we could put the trash in the right bin to recycle, or we could start recycling things ourselves, try to reduce consumption” (boy, group 1, lines 371-372), “not polluting other environments and also talking to the adults, warning that if they do so, they can cause various things like flooding (girl, group 4, lines 199-201).

Still regarding the solutions, the president, the mayor and God were mentioned. A girl said that God could solve everything because he has the power “to do a thousand wonders” (group 2, line 416). Her argument was partially accepted by a classmate who believed that “it is not only God” because “we also have a president” (group 2, line 417). And added: “We can help.

It's not only the president, this kind of stuff. If we did it, we have to straighten it out" (group 2, lines 421-422). She received the support of the group and another girl said: "My grandmother said it like this: 'what you did wrong now you will reap'" (group 2, line 429). In the group where the mayor was mentioned, there was the same notion that his actions do not work if the population does not cooperate.

5.2.6 Interaction with the texts

After reading the journalistic articles, the children had the chance to explain what they understood. They reported to have learned new facts and were able to explain the texts, the main ideas, to give examples of the learned concepts, and to connect the new information with previous knowledge. "To me, noise pollution is when someone (...) makes a lot of noise that harms animals, plants and even ourselves" (girl, group 2, lines 473-474), "to me it is like the noises, buzzes, shrill sounds, and car breaks" (boy, group 3, line 350), "it disorders the communication of the animals" (boy, group 3, line 352, "[it causes] hearing loss" (girl, group 3, line 356).

"Do you know that the blue whale is endangered, right? It is because in the past its oil was very expensive" (group 4, lines 345-346), asked a boy who associated the economic reasons for extinction of the specie in the article with the situation of blue whale. In general, the children could name other conflicts between money and nature such as trees to produce wood and animals whose skin is used to produce coats. "And also many people (...) sell birds in captivity to sell and make money and sometimes just because it is singing they think it is happy", exemplified a girl (group 4, lines 361-362).

All participants watched the videos embedded in the journalistic pieces. Due to the different reading speeds, some children had to wait for the others to finish the texts. While waiting, therefore, they played the videos more than once, specially the one linked in the biodiversity text, the animation produced by WWF-Brasil. It happened in every group. Often, they watched it together: boys with other boys and girls with other girls. Group two, only with girls, enjoyed the video, but expressed pity specially when there was any animal at the screen. While watching, they were holding each other, pretending to cry and saying "poor little animals", "how tragic", "the little plant is dying" as an expression of compassion, but also as a joke. In the discussion followed by the video, the "poor animals and plants" were a topic, mainly led by one girl, always with a funny voice and pretending to cry. She was encouraged by the others, who found it funny, but the idea of the video was a true concern. "I think that

there are many plants dying [in real life, not only in the video] because all the animals are already endangered, you know?” (girl, group 2, lines 695-696). In group three, one boy called me privately before going to break time to say he found the video sad. In the pre-test, this video already caused an emotional reaction when a boy was seen through the camera putting his hands on his mouth and saying “wow!”, while watching it.

The final impact of the exposure to the journalistic pieces divided opinions: some said they were sad and others that they were more motivated to engage in protection of nature. Nothing was said specifically about the images that illustrated the articles. Nevertheless, during the observation of the readings, some were seen spending time looking at them.

At the end of each text, the activities that proposed direct contact with nature inspired different reactions. Some like nature the most: “I prefer nature because I get looser, but sometimes I spend more time on the tablet” (boy, group 3, line 452), “I feel truly a child in nature” (group 3, line 455), justified a girl who previously said that she feels more comfortable in green areas. Others were neutral: “For me, both the urban zone and the natural zone are good for me” (boy, group 3, line 445). A third boy said he likes technology more.

Despite the differences, the participants were all open to try both activities, with one exception and one initial resistance. One boy would not like to take pictures of nature elements because he does not like to photograph at all and he would also not use the memory of his tablet “for nothing” (group 1, line 911). It caused agitation and the group criticized him for that: “Dude, look what he said, dude!” (boy, group 1, line 951), “wow, ok, for nothing. You can even make a discovery [of new species]!” (boy, group 1, line 947), “Wow, dude, this is not for nothing” (boy, group 1, line 946). When asked if there would be something that he would like to do in nature instead, he answered he would like to go to a waterfall, which he usually does at the weekends.

The other boy, a participant of the same group, initially said that he would not do this activity because of technology limitations. “With my camera never and with my phone neither because if I get my phone its memory will be over very fast” (group 1, lines 960-961). He uses his camera exclusively for his YouTube channel. Neither changed their mind when asked if they would be interested in making a digital album of something else instead of nature. The YouTuber boy, nevertheless, said that under the condition that he had an iPhone, and he would have an iPhone4 in one month, he would do it.

It is important to point out that these two boys were the two students of the first group who were demonstrating negligent attitude and not so serious about the activities. One was making an effort to be the center of attention the whole time, to be funny, not following the rules properly and the other followed him.

Nevertheless, the appropriated technology seemed to be a relevant feature for the YouTuber. His declaration could also be another attempt to call attention and to demonstrate economic power, i.e. to have the chance to tell the others that he will have a new expensive phone soon, since he was the boy who said that the dream of every child is to be rich. The other boy seemed pretty honest in saying he just does not like to take pictures.

5.2.7 Decoding the journalistic pieces

As explained in the last section, the children could comprehend the texts and learn from them. Besides, they did not doubt the information or disagree with the journalistic pieces. They believed the information was true, even when provoked (e.g. don't you think there a lie in this text?), which contributed to the preferred reading. Additional aspects explained that.

First, the texts were pro-environment, an approach to nature convergent to how they are taught at school, including the concept of the Catholicism that considers nature as a perfect creation of God, therefore, sacred. Additionally, and partially because of the first reason, children's attitudes were positive from the beginning. Therefore, the texts and the children had convergent views about the topics, thus, there was no reason to doubt them. Moreover, no one criticized journalism or media as institutions.

Besides, the texts seemed trustworthy for them. "I agree because it is pretty obvious what they said" (girl, group 2, line 502), "it's really true what they were saying" (girl, group 2, line 516). Why did they believe so? Because of their own daily life experiences or because the information were aligned with the discourse of someone they trust. For a boy, it is true that noise pollution can cause hearing loss because "when a car pass near mine and the music is loud, my mother says: 'Those are going to be deaf' because they are inside the car, driving, with a loud music. They must be deaf indeed" (group 1, lines 515-517). For another, this is true "because the ears hurt as hell" (boy, group 1, line 512). For a girl, noise pollution can really cause irritation because "party has a lot of noise because people talk all together and then it annoys me a little" (group 3, line 376).

Two boys told personal stories about someone who called the cops because of loud music. This is in line with the journalistic piece that informed that noise pollution is a crime in Brazil. Almost all children had experienced situations related to the topics.

The notion that every species plays an important role in the nature and that the disappearance of any can seriously unbalance the natural environment is true for a girl because she learnt it before: “I agree. We even studied that in the first, in the second grade” (group 2, line 640). A boy had a different argument: “My father likes plants a lot and he always says that we cannot let it go” (group 1, line 833). “It’s like my mom always says...she says: ‘everything has a balance and if one is more and the other is less, it does not work’” (girl, group 4, lines 335-336).

5.3 Interviews

This section reports, by participant, the results of the interviews, which explores the interviewees’ private life, beyond the cultural contexts addressed within the focus groups. Likewise the group interviews, the quotations are identified by the lines that locate them in the transcription (Appendix G).

Girl A, who has an above average pro-environmental position, has been studying at Pio XII for years, has volleyball classes there, and lives in a penthouse apartment in the neighborhood with her mother, father, brother, and sister. The rooftop has several plants, which she helped her mother to take care from a young age. She enjoys it and was proud to have planted one before with the help of her family. She has a dog that she loves, plays dolls with her sister, along with playing ball and riding bike with her brother. She watches only YouTube channels stared by children and likes mostly videos about dolls. She also plays different games on the computer. She believes she does not use the computer nor plays with dolls every day, but in general she reported to play more physically actively than with electronic devices.

When asked about her concept of fun, she answered: “Ah, for me it is to go out, to play, lots of dolls, ah, go running, to swim” (line 70). And where does she like to go? “I very much like to go to squares. The Assembleia square, I adore! The malls are also very good. A lot of shopping” (lines 72-73). For her, the best thing about her favorite square are the other children she can play with (some even study at the same school) and all the toys available there. At the square, her favorite spot allows her to be physically more active. “There is a climbing wall, there is the carousel that you spin. There is the mountain that you can walk up with roller

blades. I've seen several people slipping. This park is really cool. I like it" (lines 82-84). Although she spends more time in the apartment playing with the dog, her favorite place to play is the rooftop of her apartment because there are many toys, space, and a swimming pool. She spends most of her time at home during weekdays and goes out frequently during weekends. In her perception, some of the places where she goes have "some nature", but not much. As examples of places with nature in abundance, she mentioned locations she visited during school excursions, mostly squares.

Her mother works at home and helps her with homework and research. For this occasion, they talk about the environment and nature and her mother teaches her about it. Besides that, they do not talk about it. She believes that most of her knowledge about the environment was learned at school and that often the institution demands research about nature at home. She explained that she likes studying very much and her favorite subject is the Brazilian biomes.

Boy B, who also demonstrated an above average pro-environmental attitude, was born in Rio de Janeiro and has recently moved to Belo Horizonte. Thus, this is his first year at Pio XII. He does not have any pet, lives in a building with a recreation area, where he plays soccer with neighbors and friends from school. He also spends time watching TV, playing games a little on his cellphone, and playing videogames on weekends. He believes he dedicates more time playing physically active and that fun is to spend time with family and friends. His favorite place is the sports court of his building: "Sometimes some teenagers get together there and we just join them and start to play too. These days are very nice" (lines 199-200). He lives with his mother, father and brother. His mother works at home, but he said she is always too busy so he spends more time with his brother.

In Rio, his house was surrounded by bushes "and then sometimes I would go to my yard and some monkeys would come and I would pick some bananas, cut them and give it to them" (lines 102-103). He already held three of them when he was with his father, who likes animals. He also described how once he saved a little bird with a broken wing that fell of the nest and how his parents were proud of him because of that. He added: "and then I saved him and usually the family of my brother's friend do that (...) they save...they shelter cats and dogs from the streets" (lines 178-181). The fathers of these families work together, which indicated that the contact between the families is closer than just a friendship between two boys. In Rio, he studied a lot about nature and on these occasions he talked about it at home. His parents were impressed about how much he knew, since he admittedly is not a boy who

pays too much attention to classes or likes to study. However, his favorite subject is Sciences, which is the subject that discusses nature-related contents. He told that his parents always taught him to respect nature and that before, he was not careful with garbage, forgot to collect things that he dropped on the streets, but that nowadays he puts in the trash what other people dispose in the streets, when he sees it. Additionally, he bought a book in a school fair about 50 mortal animals “because I like animals very much, sciences, things related to the environment. When I was four, I wanted very much to be a scientist or a biologist or an astronaut” (lines 247-248).

Boy C, who is not so much into nature, lives with his mother and father in a penthouse apartment, where there are several plants, but no pets. His mother works mostly at home, with the exception of Saturday when she has to leave the apartment to work. He has no one to play with because there is no other child in his building and her sister does not live with him. Furthermore, he does not live in the neighborhood of the school. Thus, he spends most of his time watching Netflix, playing games on his tablet and playing ball on the rooftop of his apartment. When asked if fun for him is to watch Netflix and play on electronic devices or if there is something else that he enjoys doing, he answered: “Ah I don’t know because in my building there is no other boy” (line 90) and added: “If there was someone else, yes. I would play a lot of soccer” (line 95). In reaction, boy B, showed some solidarity: “Wow, this is hard. It must be complicated to be alone, right?” (line 92). Boy C goes out with his family every Sunday, to restaurants, and to visit the surroundings of the biggest football stadium of the state, which is his favorite place. “Because there is a lot of space, it is very big, so I ride my bike, my motor scooter” (lines 195-196). On Saturdays, he accompanies his mother to work and stays there using her computer. Later, his parents allow him to spend the whole afternoon watching Netflix alone until night. During the week and on Saturdays, his parents have no time to go out because both work, so he is only outdoors during vacation and on Sundays.

He explained that he does not like much to go to places where you can find abundant nature because every time he goes his father forgets to bring his toys, such as his bike, so he would rather stay at home. “It is not that I don’t like it. It is just that I have nothing to do” (line 348). At this point, boy B interrupted him: “I have a lot of stuff to do in the nature. I have many opportunities: climb trees to get fruits...” (lines 349-350). And what would boy C like to do in the nature that he cannot? “Ah, I don’t know” (line 356). He said his father likes to spend time in the nature every Sunday, however, for his father nature is something to be contemplated. “It’s because for me there is nothing to do because most of the times I go to

some place with lots of trees, of plants...my father just wants to appreciate it, he does not want to do anything else” (lines 372-374). Nature is not a topic at his home, even when he has research to do, although he gets help from his mother with homework when he asks for it.

Girl D, which has an average relationship with nature and electronic devices in comparison to the other interviewees, lives with her grandparents, parents, brother, and an auntie in an apartment. Her parents work outside the home and the only person who is usually at home is the grandmother. She has volleyball, French, and English classes. She usually spends time playing with her dog, talking to her friends on the cellphone and using her iPad to play games and to watch videos about games, or of her friends who are youtubers. For her, fun is when she is playing with her dog and her younger cousin. She spends most of her time at home, but she also gets in contact with nature when she goes to her grandparents’ ranch, every 15 days, where there are “plants, plants, plants, and a swimming pool” (line 75). She likes it and since there is no internet there, she swims and plays with the dog of her auntie. She likes dogs very much and “cat, fish, tiger...all animals” (line 83). Nevertheless, she is upset about the absence of internet because she cannot talk to her friends. When it rains, she believes there is nothing to do there. Her uncle also has a ranch where she goes seldom.

Her favorite place to be is in her bed because there is an internet connection there and she can play with her tablet. “I don’t know what I would do outside my house because sometimes there is no internet connection” (line 115). She mentioned two squares where she used to go, but she stopped going there because their friends do not go anymore, thus, it is no fun anymore. “There are only younger people (...) younger like three years old, so it is not much fun to play with them” (lines 139-141). Sometimes, she asks her family to take her to the Assembleia square and invite friends, but usually only a friend who lives nearby would come. She does not like so much to play in the nature “because the grass itches me and there is a lot of animals, disgusting animals” (lines 220-221). She claimed that lizards “go to the grass. They are on the walls and they see us and they run directly to us. They hide in the grass...” (lines 225-226).

She rarely talks about nature at home. Only with her younger cousin she talks about what she is learning at school. Her mother helps her with homework, but even then they rarely talk about nature. She learns about nature in the magazines at the school’s library, mostly *Recreio*, where she goes when she is bored, and by using the internet because her last year teacher recommended YouTube channels and websites about nature that she liked. Moreover, she

mentioned some adults who are sources of information: her grandfather who lives in the ranch explained about the importance of nature to her; neighbors that taught her about some plants when they planted new species in the building.

6 Discussion

The purpose of this study was to investigate which contributions, if any, journalism can make regarding the proximity between children and nature both as a topic and a place to spend time. Its findings indicate that journalistic articles about environment have the potential to benefit both aspects. A consistent answer in regard to interest towards nature, however, requires a quantitative study with improvements in the method as it will be proposed. These above-mentioned results provide an overview about the current relationship between a particular group of Brazilian children and nature, on the light of what is already known from other studies. The findings evoke new questions and suggest avenues for future research.

In this chapter, the main results are discussed, the perspective of gender is addressed and then the research questions are answered. Thereafter, implications and limitations of this work are presented and future research is suggested.

6.1 The Offline Life of Children

The findings of this work indicate similarities between the routine of the participants and children from other parts of the world. Besides, homework, organized sports and other classes in leisure time are often part of the everyday life of the sample as they are in other countries (Hofferth, 2009; Hofferth, & Sandberg, 2001; Louv, 2010; Skar et al., 2016). This is not per se bad, on the contrary, especially because in some Brazilian cities most of the children are sedentary and do not have physical education at school (Rivera, Silva, Silva, Oliveira, & Carvalho, 2010). The problem is that organized sports, sometimes, can substitute free play (Skar et al., 2016) and reduce children's free time to spend in natural areas. Since free play was not specifically investigated here, it is not possible to conclude if this is the case of the sample.

The participants did not have the same perception about their own free time to play: some complained about too much to do, while others said they have a lot of free time. With the available information, hence, it is clear that the daily lives of these students follow the same

trend pointed by other scholars in which free time is partially occupied by a schedule. Consequently, they tend to have less time to spend in nature and for free play. If this constitutes a real threat in Brazilian context should be addressed in future research. In addition to that, the use electronic devices, that also competes for children's time to go outdoors, (Pergams & Zaradic, 2007; Skar et al., 2016) is incorporated in the lives of these Brazilian children as well. Similarly, this habit represents a potential problem.

It was common that the participants have pets, with which they gladly spend time playing indoors and outdoors. One of the interviewees, girl D, believed her dog is her most frequent company, even if she lives with six people. Russell (2016) claimed that such animals "are often considered to be artifacts existing within the home, and thus part of 'culture' – and by extension, not 'nature.'" (p. 3). However, the findings of the scholar suggested that children make several ecological connections when reflecting about their relationship with their pets. It is a meaningful experience for the children with an element of nature. Besides, the death of the pets is an opportunity for children's ecological learning, since it is a vital part of the life cycle. Additionally, Prokop and Tunnicliffe (2007) found that having pets was associated with more positive attitudes of Slovakian children towards different animals and with better knowledge about them. The question of the particular contribution of the pets to the Brazilian children in their relationship with nature was not here addressed. However, evidence point in the same direction of the afore-mentioned research. The owners of pets demonstrated strong affection for them. Besides, girl D explained she chose a book about animals in the book interest test to learn how to better deal with her dog. She and girl A, who also has a dog, reported liking animals very much. A boy of the focus group who also has a dog said he loves animals and would like to travel to get to know unusual ones. Therefore, it would be interesting to know more about how owning a pet influences not only the knowledge and attitudes of children but also if it contributes to raise interest in animals and, at least in regard to dogs, if it influences time outdoors.

To which extent are the participants sedentary and to which extent do they like to be physically active? According to the results, children of the sample dedicate time to several electronic devices not because they have to, but because they like to. Four participants even produce content on their own YouTube channel. These characteristics relate to the chapter Children and Screens and suggest that the sample is close to the digital natives' concept and inserted in the participatory culture. Consequently, one could wonder that during the school break time, they would quietly type on their phones. Nevertheless, when they had the chance,

they were physically active, loud, run, and played with balls. This is coherent to their preference for having someone to play with, which was manifested in the focus groups, interviews and even in the pre-test. It suggests that, in groups, they would rather engage with free play than to screens. Even when it was raining, they managed to use the limited covered area to run, to play, to have snacks, and talk. In sum, although they have the habit to be in front of the screens, they also have fun playing actively and in the company of each other. A question to be answered in the future, therefore, would be how the habit to be in front of screens affects children's desire to play actively. For the girls, who frequently mentioned Whatsapp as a use for their smartphones to communicate with friends, it was also unclear to which extent this online interaction is responsible for the time they spend with their phones. If the girls met their friends more often, would this impact their smartphone use?

Still about their offline habits, the fact that an interviewed boy who loves animals bought himself a book about them suggests that when interested and with the opportunity to do it, children proactively consume content. The contact with this content keeps them involved with the topic and is a learning opportunity not only for him. This boy said that everybody at the school knows this book because he shows it to many people, which is a peer-to-peer learning situation, although offline. If the participatory culture is a reality in Brazil, these situations might happen in the online space too, where a child can share an online article about nature or produce a video about it. If a book can mobilize a child as source of information, a journalistic content might have a similar function. For this reason, it is important to make quality materials available for the children who want to expand or deepen their knowledge. A previous study conducted in 11 countries including Brazil indicated that many would like to. Results showed that 93% of the children aged eight to 12 years old would like to learn more about the environment and how to protect it. Besides, 71% of them start the conversations about nature with their family at home (Carpegiani, 2010).

The latter finding is in line with a result of data collected in the interviews. It suggests that nature is a topic at home when the children introduce it to their families. It happens usually when they have to research about it and need help, when they learn something new or experience something special like the boy who was proud to have saved a bird. In general, parents do not take the initiative.

The children reported to learn from their parents, but since the information flow begins with the children due to something new, it is possible that parents learn from the children too, as the results from Vaughan et al. (2003) indicated. On the other hand, the interviews also

suggest that children do not depend exclusively on their parents on that matter. They reported to learn about nature and preservation from other adults. They mentioned grandfather, neighbor and the family of friends from whom they learned either theoretically or by example.

Although able to make better connections between environmental problems and solutions than younger children (Bonnett & Williams, 1998) and in general more confident and conscious of their responsibility in the environmental problems than adolescents (Connell et al., 1999, Hillcoat et al., 1995), the sample lacked the ability to recognize gradations.

Some children did not consider themselves as polluters when they adopted one pro-environmental habit such as to not use plastic bags or to produce compost with their family. They manifested a polarized view about being or not a polluter, destroying or not the nature with nothing between these extremities. This might be problematic because one environmental friendly action (e.g. to not use plastic bags) seems to situate them, in their understanding, on “the good side” of this polarization. Therefore, this would be enough to guarantee that they are doing enough and result in negative practical effects.

This polarized view was manifested also when the children talked about the consequences of environmental problems in general, usually with tragic perspectives. “Then we talk, I tell her [cousin] if she uses water, it will be all over” (girl D, lines 151-152). It makes them a sensitive audience to expose to environmental issues.

Although the sample had similar patterns, some students were more pro-environmental than others. The interviewed boy and the girl who demonstrated an above average pro-environmental attitude revealed to have nature-related subjects as their favorites at school. In addition to that, she likes to spend time physically active with her siblings, to take care of plants, in outdoor natural areas and with dogs. The boy is from Rio de Janeiro, a seaside city where he had direct contact with nature, would like to have a career connected to nature, and had a positive influence from his father, who likes animals.

On the other hand, the boy who is not so much into nature does not have pets or other children to play with. He admitted that if there was someone to play with he would like to be more physically active. Since there is not and due to how his routine is organized, he entertains himself with Netflix and computer at home and at his mother’s work, where he goes every Saturday. This does not mean he does not like to spend time in front of screens, but when asked what fun is for him, he said it is to ride a bike. The neutral girl was not able to think about what to do without internet, although she still has relative contact with natural

environments due to her grandmother's ranch. Both the boy and girl did not complain about their routine, the girl clearly said she likes to be online on her phone to talk to her friends and to play with her tablet. Differently from girl A and boy B, neither boy C nor girl D had fun stories about nature to tell, on the opposite: his father does not take his toys when they go to natural areas and the girl is afraid of "disgusting animals that run after her" in the grass. Together these different interest levels in learning about nature (therefore, apparent different knowledge levels), different habits regarding time spent on screens and different personal experiences in direct contact with nature explain the different responses towards it. Despite the different levels of excitement, the four students still manifest general similar patterns concerning attitude, concepts and openness to nature.

6.2 Gender

As explained in Procedures and Materials, the groups of participants had different compositions (only boys, only girls, and mixed) in order to analyze if this division would influence the results. It was assumed that contrasts between boys and girls could emerge, based on previous research as well as on different interactions among peers that could result in different answers. Bonnet and Williams (1998), for instance, reported in their research about nature that during a focus group, a boy called a girl "Mother Nature" and "Mrs. Nature" because of her protective attitudes towards animals. The girl reacted to this provocation changing the patterns of her answers to dissociate from this label.

As summarized in Table 1, the behavior of the participants and contexts of each group varied. In this section the differences between groups from the gender perspective are further explored.

Group one, only composed by boys, was the hardest to work with. They were more agitated and less focused on the discussions than all the other groups (e.g. when a boy mentioned to spend a lot of his time playing a game, the others immediately started to shout their opinions about it at the same time). They often made jokes, asked a lot of questions, spoke loud and run around the informatics room instead of walking. Two boys were especially not focused. Although they actively participated, one was very agitated and repeatedly tried to be funny and the other was not cooperative. The latter seemed to be in a bad mood, which was manifested in his comments. About how to solve environmental problems he answered: "just solving..." (line 365). The rest of the group reprimanded their behaviors not so gently or yelling many times: e.g. "guys, this is a research! You cannot play, dude!" (line 494), "the

question was not about that” (line 627). When these two students initially said they would not like to go out to photograph nature, the group again openly criticized them as already described in Results.

The interaction between the participants in this group, therefore, was more aggressive than in any other. However, this did not appear to intimidate any of them into expressing their opinions. They did not take any idea back or changed their minds because of criticism. Moreover, as explained before, some students had to wait for the others to finish their readings because of the different reading speeds. This group was the only whose some participants wanted to do something else (e.g. watch a YouTube video about games) while waiting.

Group two, composed of girls, was obedient, organized to move around the room, and cooperative i.e. they helped each other to answer the questions. This cooperation, however, at least in one occasion led an answer away from the formal knowledge. “Biodiversity for me really is the diversity of nature. Nature has animals, plants, flowers, but also...” (lines 555-556), defined a girl who was interrupted by another participant: “It is a life very different from ours” (line 557). This comment encouraged the girl to finish her definition with “a life very different from ours because ours is full of cars, technology. The life of nature is more...” (lines 558-559), “calm” (line 560), added again the other girl.

The girls did not strongly disagree or mocked each other. When a girl said that God could solve environmental problems, another girl differed: “It’s not only God” (line 417). This is different from the way boys disagreed because it takes into consideration what the interlocutor says and it is not offensive.

Besides, my integration with the girls was easier, in the sense of being a member of the group as ethnographic research recommends. They invited me to join them when they saw me in the school during break time, kissed me goodbye after the data collection, and asked me about my personal life. The boys, although in general friendly, did not make any movement in the direction of being closer to me. On the other hand, they seemed to be so comfortable in my presence that they even said bad words during the focus groups, which I do not believe they would do in front of people they consider as authorities (e.g. teacher, parents).

The groups three and four, mixed, were calm and had almost no interaction between the participants. Boys were not as agitated as the ones from the first group. Apparently, the presence of the girls inhibited them. Even when a participant referred to another student’s

idea, they did it indirectly: “Yes, it is the same as he said” (girl, group 3, line 140). At this level, interaction was not sex-related: boys agreed with girls and vice-versa. When watching the videos of the journalistic pieces while waiting for the others, however, it was: boys watched with boys and girls watched with girls.

In general, the girls of the sample seemed slightly more emotional than the boys in regard to environmental topics, which could indicate a stronger pro-environmental attitude. Indeed, emotional empathy mediates gender differences in concern to environment and it is more frequently reported by women than by men. Males and females are socialized differently: women are raised to empathize with others, to be more caring, responsible, and compassionate (Arnocky & Stroink, 2011).

In addition to that, the interest tests suggested that girls were from the beginning more interested in nature than boys. In the image interest test, they placed *nature* in second place and the boys ranked it third. In the book interest test, *nature* was first place for the girls and again third for the boys.

Both attitudes and interest tendencies, however, should be treated with caution. Since this is a qualitative work, it is not possible to state if these results are significant. For the same reason, it is possible that other differences between boys and girls in regard to the investigated categories (e.g. knowledge) exist and are, nevertheless, small. Consequently, better identifiable by future quantitative research

Besides that only small gender-related manifestations were identified. The comment of a girl who said her brother does not play dolls “of course” (group 2, line 87) and the division by same-sex peers to watch the videos. The latter is associated with previous studies that indicated that children segregate by sex when they can choose partners to play, attribute more positive characteristics to their own sex, and like their own sex more than the other (Martin & Ruble, 2004).

One possible explanation for the somewhat similar standards between boys and girls is that despite Latinos and Latinas experiences different socializations while growing up, theoretic and empirical research indicated that the intensification of gender-related socializations occur in adolescence (Raffaelli & Ontai, 2004). The sample of this research, therefore, might be young to have fully assimilated and clearly manifested their gender identity. For this reason, the gender differences were limited to the above-mentioned.

6.3 The Contributions of Journalism

On the light of the results and discussion, the research questions are briefly answered in this section.

RQ1.1: How do children decode journalistic content about environment and how does it influence knowledge about natural environment?

The participants decoded the texts in the preferred reading as explained in Results. They have similar age, religious values and socioeconomic level. They live in the same city and study at the same school. School is an important factor, according to Morley (1974), who claimed that “educational system is a key determinant of the levels and kinds of cultural codes and competencies acquired by the audience” (p. 1).

According to the Culture Studies, the cultural background influences the reception of the audience, thus, since this group share cultural contexts, it plays a role in their vision of the world, knowledge and other factors that guide their interpretation and understanding. These factors are not determinants of the reception, but their fundamental influence should not be ignored.

In every group the participants believed school is the main source of information for them, which is in line with other studies with children of similar age (Szagun & Mesenholl 1991, as cited in Szagun, Mesenholl & Jelen 1994). The level of knowledge about the topics of the texts varied, but it was usually very basic before the readings. After the exposure, however, the students could explain and exemplify the main concepts of each text and mentioned information that they learned from them. Importantly, they trusted what was written.

The results indicate that even if journalism is not their main source of learning about the environment, it can support and reinforce knowledge.

RQ1.2: How do children decode journalistic content about environment and how does it influence the attitude of children towards natural environment?

In the beginning of the focus groups, when no text was yet read, the participants already demonstrated a positive attitude towards nature. This general positive attitude is in line with studies that investigated attitude in younger children (Bonnett & Williams, 1998) and contrasts with the cynicism found in studies which addressed older samples like adolescents (Connell, et al., 1999). This positive attitude is also in line with evidence that children who

lived in country with richer biodiversity were more positive (Boeve-de Pauw & Van Petegem, 2010), which is the case of Brazil.

At the end of the activities, their attitudes remained positive. It suggests that journalistic content did not change the already positive attitudes of these children. Eagles and Demare (1999) found no differences in attitudes of the children after camping. Since these entered the camp program already with moderate levels of attitude, little changed was expected. They argued that children with low levels of environmental attitude and previous environment experiences have more gains. However, the results of these scholars indicated that media have a strong influence on children's attitudes: it reinforces and deepens it.

The participants of the present research had difficulty to express their feelings and beliefs, to say if something changed in their perceptions, ideas or feelings about nature after the readings and discussions. However, after the exposure to the texts, they demonstrated emotional reactions (e.g. sadness about getting to know new problems or seeing them in the videos, excitement about protecting the environment). It suggests that they were, at least to some degree, touched by the content.

Thus, it can be argued that even if the journalistic pieces did not make their attitudes necessarily more positive, it added specific aspects to it, it reinforced it, at least in the emotional dimension.

RQ1.3: How do children decode journalistic content about environment and how does it influence the interest of children towards natural environment?

The first image interest test indicated that *nature* was the third most remembered topic by the sample and became the most remembered in the second test. It rose in number of descriptions (from 23 to 30) and reached a better position the ranking (from third to first) for the whole sample. It also increased for girls and for boys as separated groups. Thus, this is evidence, within all the limitations of this test as a quantitative part of a qualitative work, of the potential of the texts to make nature more interesting for the children.

In the book interest tests, considering the whole sample, *nature* was the third place and became the fourth, only one book away from being the third again. It fell from 32 to 30 choices. *Nature* was chosen the same number of times by boys and by girls in the first test, as well as in the second: it fell from 16 to 15 selections in both groups.

Since the numbers of the books interest tests did not change much as well as the ranking position in the comparison of both tests, it can be said that *nature* remained basically stable and that the interest for nature did not change after the readings and discussions. Importantly, the interest for nature was already high from the beginning. In addition to that, one inference that can be made by the distribution of the books' selection is that although the participants have preferences, they were open to all the topics with no clear rejections. The exceptions were *celebrities* in the first test of boys and *sports* in the second test of girls.

These apparent incoherent results between image and book interest tests can be better understood considering the information gathered in the interviews as already explained, which shed light on the strengths and the limitations of each test. With the available information, it is not possible to give a definitive answer regarding interest. It would be necessary to repeat the tests as it will be further proposed. Considering the results of this research, as far as at least one of the tests revealed the potential of the journalistic pieces to increase interest, there is a reason to believe that it can.

Another evidence of raising interest is that after the readings, the children demonstrated interest in knowing more about the discussed topics. They wanted to see (online) the coral marine cited in one of the articles and raised further questions about the content e.g. "if I am using headphones it does not cause noise pollution, right?" (girl, group 3, lines 358-359).

RQ1.4: How do children decode journalistic content about environment and how does it influence children's desire to have direct experiences with the natural environment?

Although to be in front of screens or at home was part of their routine, neither was an option when the participants named what they would like to do the most in their free time. They also did not directly mentioned nature as their favorite place to be, although some chose activities connected to elements of nature (e.g. to ride a horse, to visit an aquarium).

What is clear is that they would not like to be at home, even if they leave home to go to another place indoors: some would choose to go to center malls. This result converges with the finding of Kaymaz et al. (2017) that shopping centers are the favorite places of upper-middle social class Turkish children.

Although the Brazilian children did not spontaneously think of nature in abundance (e.g. waterfall), when they were proposed to go to natural spaces, they were open to do it. The degree of excitement varied. The boy who said he does not enjoy much going to nature had

not the same degree of excitement of the Girl Scout who loved the idea, for instance. However, he was still open to try it. The only boy who really did not want to participate in one of the suggested activities, to photograph nature, argued he does not like to take pictures. The problem, therefore, was not resistance to natural environments.

The activity involving a digital device in an attempt to make the experience more interesting for a digital native was, ironically, the one that had rejection problems. The fact that taking pictures of nature was not a unanimous way to spend time in green spaces indicates that these proposals must be carefully planned and connected to what the public likes. This is important because “to be effective, these experiences should be positive experiences: the more positive the experience was perceived to be by youth, the more youth stated they cared about nature (Broom, 2017, p. 39). Kaymaz, et al. (2017) found that for Turkish children aged six-12 years the ideal outdoor environment is “play environments”. This adds to the story of the boy who likes to go outdoors, but not to natural spaces. Although his father usually takes him out to nature on Sundays, the boy said to have frustrated experiences there because he does not play.

The openness of the children represents an opportunity to raise children’s direct contact with nature. In their literature review, Chawla and Cushing (2007) found that studies from all over the world indicated that childhood experiences in nature distinguished environmental active people from those less committed. Direct experiences in natural environments are a strong influence on environmental attitude and conservation activism (Pergams & Zaradic, 2007). Consequently, to propose to the children to go to green spaces to have fun, in their understanding of good time, could be an effective way to integrate them with nature. It would benefit the environmental movement as well as their health overall.

It is possible to conclude, then, that in the beginning of the focus groups, many children did not think of nature as a place where they would like to be. After the readings with the suggestions to go to green spaces, they were willing to do so. It indicates that spontaneously, they might not think of nature as a place to go and play. However, with incentive in this direction at least their desire and imagination are stimulated and journalistic content can be this incentive.

7 Implications

The fact that during the activities, children were sensitive about environmental problems, some were even sadder after the exposure to the journalistic pieces, is an alert that journalists should put a special thought on framing. The approach should value optimism. Otherwise, children might lose interest in consuming news about environment. Who would dedicate time to content that evokes unpleasant emotions?

Journalist should consider writing articles about nature that do not emphasize or, sometimes, do not even bring information about problems (e.g. content about the fastest species of the world). This could work as a strategy to present and value nature without exposing what makes them feel sad. This is especially important for children who do not have frequent contact with natural environments. To get in contact with environmental problems lacking direct experiences with natural environments might make children associate nature with fear, instead of with joy (Louv, 2010). Therefore, to experience nature in a positive way and to learn about it without being frightened could improve the overall experience of the children with it. Journalism can stimulate the first and act on the second. To make this suggestion more accurate, future research should listen to children about how the topic of environmental problem and framing influence their media consumption concerning nature.

Besides, since at least this sample did not seem to understand the nuances of the environmental problems, it could be helpful to focus on mitigation, ecological footprint, etc. To be aware of what exists between the extremities of their polarized vision could help them to be more realistic about their actions and how to deal with environmental problems as a topic, with less suffering.

The results of this research could serve formal education too, since most classroom learning still relies directly or indirectly on written texts (Schraw, Flowerday, & Lehman, 2001). In Brazil, textbooks support the pedagogic work of schools in-class all over the country, following the National Textbook Program (Programa Nacional do Livro Didático). In such books it is common to find reproduction of news with learning proposes (Bueno, 2002; Sousa, 2006). Therefore, the exposure to news is part of the school routine and as public policies regulate what is used in formal education, it would be welcome to take into account the benefits to include environmental topics among such articles. One step further, schools and public authorities responsible for coordinating them should consider prioritizing the contact with nature in the activities outside schools.

Another partnership between school and media would be the recommendation by teachers of good media content. The example of girl D suggests that they look for the content when it is recommended and if they like it, they consume it. This would help access, work as a filter and an orientation in this great volume of information available in the internet. This convergence of formal and informal educations would be in line with the United Nations position of combining them as a positive collective effort initiative (Unep, 2005).

Finally, some findings have practical implications for families. During the negotiations for the pre-test, it was my general impression that parents and guardians were skeptical about the relationship between children and nature. They argued that what children really like to do is to spend a lot of time on different kind of digital devices. They would not be interested in nature.

Although it was not a main goal of this research to investigate the desires of children, the results indicate some tendencies in this direction. First, is that the assumptions of the adults about what children would like to do in their free time were not accurate. Children usually did not manifest desire to stay at home neither to engage in lonely activities, on the opposite. The results of a previous study showed the same tendency. It indicated that 58% of the parents believed that if their children had one more hour per day, they would like to spend indoors. However, 46% of the children said they would like to spend outdoors (Carpegiani, 2010). This is evidence of the importance to conduct research about children with children in order to reduce the gap between the expectations of adults and the universe of children. To conclude and in regard to the expressed preferences of children, they were easy to comply with (e.g. to play with the pet in a square), except for travelling.

8 Limitations and Future Research

This study has several limitations that should be considered. First, and despite the efforts, it is not possible to *assure* that children were able to free themselves from the atmosphere of the school. It is recognized that school environment might influence students' answers (Leach et al., 1995). Their responses, therefore, could have been oriented by the school's environment rather than genuine words. It is naturally expected that the children might have some degree of affinity with the school values, since it is an environment that is part of their daily lives. As Morley (1974) said, the schools are powerful ideological apparatus, since they have their audience obligatorily every day for long hours. However, there is a subtle boundary between expressing something because it is legitimately internalized regardless of the place and feeling

pressured to adequate opinions to the values of a place. It was my general impression that the children were comfortable to openly talk and this might have to do with the fact that they were among peers and in a place they know, which was positive. On the other hand, although familiar, the school is not a neutral environment and it should be taken into account.

It is important to register also that the time dedicated to the data collection was limited by the school to preserve the organization of regular classes. For this reason, the activities were planned to respect time restrictions (60 minutes for each group) as well as to accomplish the goals of this research. Nevertheless, the possibility to have more time with the children would pave the way to explore even more the journalistic articles, their opinions, to hear their stories, and to better understand their cultural background. This was evident because during the focus groups, it was sometimes necessary to go for the next step/topic without listening to everything the students had to say. To minimize this problem, the strategy was to save time by preventing the children from telling long stories about the discussed topic and to prioritize other participants rather than the ones who had already spoken. Furthermore, although rarely, some children also wanted to tell stories unrelated to the discussed topics (e.g. the great pizza someone's mother prepared) and they were politely asked to not divert attention. Within such limitations, it was still possible to hear some personal relevant stories.

Both interest tests have their methodological limitations which were already mentioned in Results. To minimize them, the findings of this research suggest possible improvements for next steps. Regarding the book interest test, a possible solution to minimize the influence of the "utility variable" would be to ask the participants to select what they are interested to read in an ideal situation. It might be also useful to reinforce that participants should check the list more than once to be sure they read all the options. Moreover, at least regarding *celebrities*, it might be better to have the same types of famous people in the first and in the second test, even if the category is not so widely represented. It would avoid that unpredicted strong preferences influence the final result as it happened to YouTubers. Although this was the only problematic category, it could apply to the others.

Finally, it could be enlightening to identify what, at least consciously, influenced the selection of books. It was not the initial plan nor would it be possible to talk to all children to better understand their interest tests' results. However, limitations and further improvements could be clearer if future research investigate which variables were being measured together with interest.

Concerning the image interest test, the images should be produced specially for the activity. This would make the standards more consistent (e.g. color, presence of both or neither sexes in the images) and permits the creation of personalized products closer to the represented category. It would avoid that more than one topic could be associated with the same image.

In regard to format and because of the popularity of videos, it could be interesting to address the same topics with similar approach in an online journalistic video format. The question is if a different format would lead to different responses. In addition to that, if the content presented in video would be attractive to them. Since internet videos are pure entertainment for them, it is not clear if they would like to consume content about nature using the same platform. In spite of the positive attitudes and the connection to videos, they did not report in general to watch videos about nature or environment.

It is reasonable to think that this specific group belongs to a high social class, in the most developed region of Brazil. It does not mean that Brazilian children from lower classes would necessarily have the same access, contact or resourcefulness to deal with it. It would be also fruitful to explore the older groups, since this group was so pro-environment, to understand when the perspectives about nature start to change and how they change.

9 Conclusion

Relying on evidence that children are increasingly spending more time indoors and distant from natural spaces, this research investigated if and how journalism could contribute to a solution. From the Cultural Studies perspective and within the context of current digital media practices, the reception of eight-to-nine-year-old Brazilian children to journalistic pieces about the environment was investigated in an exploratory study.

To answer the research question *RQ1 (How do children decode journalistic content about environment? And does it shorten the distance between them and the natural environment?)*, knowledge, attitude, interest, and desire to interact with nature were addressed.

The results of the focus groups indicate that journalism can add knowledge to the children as well as reinforce it: the children understood, trusted the texts and associated the information to their previous knowledge. Attitude towards nature was generally positive from the beginning, but the journalistic pieces and discussions provoked emotional reactions in the children: they

were sad, angry, motivated to help, excited to try something new, etc. Girls held more emotional responses than boys.

In spite of similar patterns, the degrees of pro-environment position varied among the children—the interviews helped to explain these nuances.

The boy and the girl, who were in life more often physically active, had more opportunities to get in contact with nature. They were more interested in learning about nature, knew more about it, and were more pro-environmental. Because of the method of this research, no causal relationship is defined. The boy who said he felt bored in nature and the girl who claimed to be afraid of animals in the grasses, both often connected to digital devices, were pro-environment but in a lower level. Therefore, the cultural context that allows us to understand them as a community (school, religion, age, social class, etc.) influenced them enough to have the similar positions towards nature, despite different behaviors in their personal lives.

To deliver a consistent answer about interest, there's the need for further investigation. An improved quantitative methodology could offer narrower findings to this matter. Nevertheless, the first insights of this research showed an increasing interest measured by the image test (memory). Yet, this tendency could not be confirmed by the books test (selection), which indicated stable interest.

Although these children follow the trend to spend time in front of screens and to have a busy routine, when suggested, they were willing to spend time in nature. This fact indicates an opportunity to shorten the distance between them and the environment. Furthermore, it shows the benefits of proposing and guiding the children in this direction. Spontaneously, they did not demonstrate to have similar ideas or wishes on their own, despite the dominant will to be outdoors.

To make the journalistic contributions more effective, it would be fruitful that journalists produce appropriate content, and that parents, teachers and other adults help the children to reach them and promote their contact with nature as a positive experience.

It would also be welcome that adults were more proactive about nature, providing good examples, talking, and teaching the children about it. In other words, school and family—important mediations spaces for children—should mediate the information acquired by the children positively.

As this research indicates potential benefits offered by journalism, it's necessary that future research continues to investigate media as a solution, rather than only an element that disputes children's time.

Since the children are a captive audience of digital media and, at least, this investigated group sees journalism as trustworthy, this research points to an opportunity to open their minds to new possibilities of interaction, fun, and understanding about nature. Of course, one could argue that commercial media is more interested in keeping the children in front of the screens for economic reasons, but options for educational content are also available. Besides, the flexibility of the digital media allows these children to engage in peer-to-peer learning in different ways, even producing their own content.

Drawing on these initial findings, it is possible to comprehend better what is relevant for the relationship between children and nature in a Brazilian specific context. Consequently, it serves as a comparative basis for new studies, be they to deepen specific aspects that are topic-related or to investigate how the results differ when the cultural background changes.

In sum, it indicates for parents, institutions, and other social actors involved with children's formal and informal education that these are open for integration with nature and that journalism can be an ally.

References

- Ainley, M., Hidi, S., & Berndorff, D. (2002). Interest, learning, and the psychological processes that mediate their relationship. *Journal of Educational Psychology, 94*(3), 545–561. doi: 10.1037//0022-0663.94.3.545
- Ang, I. (2006). On the politics of empirical audience research. In Durham, M. G. & Kellner, D. M. (Eds.), *Media and Cultural Studies: keywords* (pp. 1-755). Padstow, Cornwall: Blackwell Publishing.
- Argyriou, E. & Melewar, T.C. (2011). Consumer attitudes revisited: A review of attitude Theory in marketing research. *International Journal of Management Reviews, 13*, 431–451. doi: 10.1111/j.1468-2370.2011.00299.x
- Arlt, D., Hoppe, I., Wolling, J. (2014). Climate change and media usage: effects on problem awareness and behavioural intentions. *The International Communication Gazette, 73*(1-2), 45-63. doi:10.1177/1748048510386741
- Arnocky, S. & Stroink, M. (2011). Gender differences in environmentalism: The mediating role of emotional empathy. *Current Research in Social Psychology, 16*(9), 1-14. doi:10.1016/j.adolescence.2009.12.008
- Balmford, A., Clegg, L., Coulson, T. & Taylor, J. (2002). Why should conservationists heed Pokémon. *Science Magazine, 295*(5564). doi: 10.1126/science.295.5564.2367b
Retrieved December 2, 2016, from <http://www.bioteach.ubc.ca/TeachingResources/GeneralScience/PokemonWildlife.pdf>
- Bhavya, N. & Purnima, K. (2015). An exploratory study in educating high school children towards maintaining an eco-friendly environment. *Language in India, 15*(3). 42-60.
- Bitcom (2014). *Jung und vernetzt. Kinder und Jugendliche in der digitalen Gesellschaft*. Retrieved December 3, 2016, from <https://www.bitkom.org/Bitkom/Publikationen/Jung-und-vernetzt-Kinder-und-Jugendliche-in-der-digitalen-Gesellschaft.html>

- Blum, A. (1987). Students' knowledge and beliefs concerning environmental issues in four countries. *The Journal of Environmental Education*, 18(3), 7-13. doi: 10.1080/00958964.1987.9942734
- Boeve-de Pauw, J. & Van Petegem, P. (2010). A cross-national perspective on youth environmental attitudes. *Environmentalist*, 30(2), 133–144. doi:10.1007/s10669-009-9253-1
- Bonnett, M. & Williams, J. (1998). Environmental education and primary children's attitude towards nature and the environment. *Cambridge Journal of Education*, 28(2) 159-174. doi:10.1080/0305764980280202
- Brazilian Internet Steering Committee (2015). *TIC kids online Brasil: pesquisa sobre uso da internet por crianças e adolescentes no Brasil* [ICT Kids online Brazil 2014: Survey on internet use by children in Brazil]. Retrieved March 11, 2017, from http://cgi.br/media/docs/publicacoes/2/TIC_Kids_2014_livro_eletronico.pdf
- Brazilian Internet Steering Committee (2016). *TIC kids online Brasil 2015: pesquisa sobre uso da internet por crianças e adolescentes no Brasil* [ICT Kids online Brazil 2015: Survey on internet use by children in Brazil]. Retrieved March 9, 2017, from https://www.cgi.br/media/docs/publicacoes/2/TIC_Kids_2015_LIVRO_ELETRONICO.pdf
- Broom, C. (2017). Exploring the relations between childhood experiences in nature and young adults' environmental attitudes and behaviours. *Australian Journal of Environmental Education*, 33(1), 34-47. doi: 10.1017/ae.2017.1
- Buckingham, D. (1998). Media education in the UK: moving beyond protectionism. *Journal of Communication*, 48(1), 33-43. Retrieved January 4, 2017, from <http://www.chrisboulton.org/caucus/papers/Buckingham.pdf>
- Buckingham, D. (2005). The media literacy of children and young people. A review of the research literature on behalf of Ofcom. Retrieved January 12, 2017, from <http://eprints.ioe.ac.uk/145/1/Buckinghammedialiteracy.pdf>
- Buckingham, D. (2009). The future of media literacy in the digital age: some challenges for policy and practice. *Medienimpulse*, 2, 1-11. Retrieved January 19, 2017, from

https://www.researchgate.net/publication/265155209_THE_FUTURE_OF_MEDIA_LITERACY_IN_THE_DIGITAL_AGE_SOME_CHALLENGES_FOR_POLICY_AND_PRACTICE

- Buckingham, D. (2012). As crianças e a mídia: uma abordagem sob a ótica dos estudos culturais [Culture and media: a Cultural Studies approach]. *Matrizes*, 5(2), 93-121. Retrieved February 2, 2017, from http://www.redalyc.org/pdf/1430/Resumenes/Resumo_143023787005_5.pdf
- Bueno, L. (2002). *Gêneros da mídia impressa em livros didáticos para os 3º e 4º ciclos do ensino fundamental*. Dissertação (Master's thesis). Retrieved May 2, 2017, from <http://libdigi.unicamp.br/document/?code=vtls000288051>
- Burdette, H.L. & Whitaker, R.C. (2005). Resurrecting free play in young children - Looking beyond fitness and fatness to attention, affiliation, and affect. *Archives of Pediatrics & Adolescent Medicine*, 159, 46-50. doi:10.1001/archpedi.159.1.46
- Casaló, L.V. & Escario, J-J. (2016). Intergenerational association of environmental concern: Evidence of parents' and children's concern. *Journal of Environmental Psychology*, 48, 65-74. doi:10.1016/j.jenvp.2016.09.001
- Chawla, L. & Cushing, D. F. (2007). Education for strategic environmental behavior. *Environmental Education Research*, 13(4), 437-452. doi:10.1080/13504620701581539
- Cheng, J. C-H., & Monroe, M.C. (2012). Connection to nature: Children's affective attitude toward nature. *Environment and Behavior*, 44(1) 31 -49. doi:10.1177/0013916510385082
- Connell, S., Fien, J., Lee, J. Sykes, H., & Yencken, D. (1999). If it doesn't directly affect you, you don't think about it': a qualitative study of young people's environmental attitudes in two Australian cities, *Environmental Education Research*, 5(1), 95-113. doi:10.1080/1350462990050106
- Corsaro, W.A. (2005). Entrada no campo, aceitação e natureza da participação nos estudos etnográficos com crianças pequenas. *Educação & Sociedade*, 26(91). 443-464. doi:10.1590/S0101-73302005000200008

- Drexhage, J. & Murphy, D. (2010). *Sustainable Development: From Brundtland to Rio 2012*. Retrieved December 10, 2016, from http://www.surdurulebilirkalkinma.gov.tr/wp-content/uploads/2016/06/Background_on_Sustainable_Development.pdf
- Eagles, P.F.J. & Demare, R. (1999). Factors influencing children's environmental attitudes. *The Journal of Environmental Education*, 30(4) 33-37. doi: 10.1080/00958969909601882
- Ernst, J.A. (2012). Early Childhood Nature Play: A needs assessment of Minnesota licensed childcare providers. *Journal of Interpretation Research*, 7(1). 1-7.
- Erstad, O. & Amdam, S. (2013). From protection to public participation. A review of research literature on media literacy. *Javnost- The Public*, 20(2), 83-98.
- Escosteguy, A.C.D. (1998). Uma introdução aos Estudos Culturais. *Revista Famecos*, 5(9). 87-97. Retrieved December 5, 2016, from <http://revistaseletronicas.pucrs.br/ojs/index.php/revistafamecos/article/view/3014/2292>
- Escosteguy, A. & Jacks, N. (2007). Comunicação e recepção. Uma visão Latino-Americana. *Razón y Palabra*, 12(57). Retrieved December 8, 2016, from <http://www.redalyc.org/pdf/1995/199520710003.pdf>
- Fazio, R.H. & Zanna, M.P. (1981). Direct experience and attitude-behavior consistency. In Berkowitz, L. (Ed.), *Advances in Experimental Social Psychology*, Vol. 14 (pp. 161-202). doi: 10.1016/S0065-2601(08)60372-X
- Feng, X., & Astell-Burt, T. (2017). The relationship between neighbourhood green space and child mental wellbeing depends upon whom you ask: multilevel evidence from 3083 children aged 12–13 years. *International Journal of Environmental, Research and Public Health*, 14(3), 1-11. doi:10.3390/ijerph14030235
- Franco, C.P. (2013). Understanding digital natives' learning experiences. *Revista Brasileira de Linguística Aplicada*, 13(2), 643-658. doi:10.1590/S1984-63982013005000001

- Friedman, (2008). *Framework for evaluating impacts of informal science education projects – Report from a National Science Foundation workshop*. Retrieved November 30, 2016, from http://www.informalscience.org/sites/default/files/Eval_Framework
- Gomes, I.M.M. (2002). A noção de gênero televisivo como estratégia de interação: o diálogo entre os Cultural Studies e os Estudos da Linguagem. *Revista Fronteiras - estudos midiáticos*, 4(2), 165-185. Retrieved April 26, 2017, from <http://telejornalismo.org/wp-content/uploads/2010/05/Revista-Fronteiras.A-No%C3%A7%C3%A3o-de-G%C3%AAnero-Televisivo.pdf>
- Gottschalg, M.F.S., & Barros, L. T. (2015, June). Locação social como alternativa de política habitacional. *Revista Urbanização e Habitação*, 2, 14-21. Retrieved April, 7, 2017, from https://issuu.com/geel/docs/revista_uh_02_final
- Hall, S. ([1973] 1980). Encoding/Decoding. In In Hall, S., Hobson, D., Lowe, A. & Willis, P. (Eds.), *Culture, Media, Language: working papers in Cultural Studies*, 1972-79. London: Hutchinson, 128-138.
- Hidi, S. & Renninger, A. (2006). The four-phase model of interest development. *Educational Psychologist* 41(2), 111-127. DOI: 10.1207/s15326985ep4102_4
- Hillcoat, J., Forge, K., Fien, J., & Baker, E. (1995). “I think it is really great that someone is listening to us...” young people and the environment. *Environmental Education Research*, 1(2), 159-171. doi: 10.1080/1350462950010203
- Hofferth, S.L. (2009). Changes in American children’s time – 1997 to 2003. *Electronic International Journal of Time Use Research*, 6(1). 26-47. Retrieved 23 April, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2939468/>
- Hofferth, S.L. & Sandberg, J.F. (2001). Changes in American children’s time, 1981 to 1997. *Advances in Life Course Research*, 6, 193-229. doi:10.1016/S1040-2608(01)80011-3
- Instituto Alana (2015, June 19). Tempo de crianças e adolescentes assistindo TV aumenta em dez anos. *Criança e Consumo*. Retrieved April 5, 2017, from <http://criancaconsumo.org.br/noticias/tempo-diario-de-criancas-e-adolescentes-em-frente-a-tv-aumenta-em-10-anos/>

- Instituto Alana. (2016, July 7). *Richard Louv - Children and Nature [English] - 1º Seminário Criança e Natureza* [Video file]. Retrieved January 18, 2017, from <https://www.youtube.com/watch?v=1KITdWsuFYA>
- Instituto Brasileiro de Geografia e Estatística (n.d.). *População no último censo*. Retrieved April 6, 2017, from <http://cidades.ibge.gov.br/xtras/perfil.php?lang=&codmun=310620&search=minas-gerais|belo-horizonte>
- Instituto Brasileiro de Geografia e Estatística (2015). *Contas regionais do Brasil 2010-2013* [E-reader version]. Retrieved April 6, 2017, from <http://biblioteca.ibge.gov.br/visualizacao/livros/liv94952.pdf>
- Jenkins, H. (2006). *Confronting the challenges of participatory culture: media education for the 21st. century*. Retrieved January 25, 2017, from https://www.macfound.org/media/article_pdfs/JENKINS_WHITE_PAPER.PDF
- Kantar Ibope Media (2017, February 14). Brasileiros assistiram mais de 6 horas de TV por dia, em 2016, aponta Kantar Ibope Media. *Kantar Ibope Media*. Retrieved April 5, 2017, from <https://www.kantaribopemedia.com/brasileiros-assistiram-mais-de-6-horas-de-tv-por-dia-em-2016-aponta-kantar-ibope-media/>
- Kaymaz, I., Oguz, D., & Cengiz-Hergul, O.C. (2017). Factors influencing children's use of urban green spaces. *Indoor and Built Environment*, 1-13. doi: 10.1177/1420326X17705943
- La Pastina, A. (2005). Audience ethnographies: a media engagement approach. *Global Media Journal*, 4(6), 139-148. Retrieved March 3, 2017, from <http://www.globalmediajournal.com/open-access/audience-ethnographies-a-media-engagement-approach.php?aid=35086>
- Leach, J., Driver, R., Scott, P., & Wood-Robinson, C. (1995). Children's ideas about ecology 1: theoretical background, design and methodology. *International Journal of Science Education*, 17(6). 721-732. doi: 10.1080/0950069950170604

- Lenhardt, A. & Madden, M. (2005, November 2). Teen content creators and consumers. *Pew Research Center*. Retrieved December 12 from <http://www.pewinternet.org/2005/11/02/teen-content-creators-and-consumers/>
- Li, D. & Sullivan, W.C., (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape and Urban Planning*, 148, 149-158. doi:10.1016/j.landurbplan.2015.12.015
- Louv, R. (2010). *Last child in the woods: saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books of Chapel Hill.
- Mack, N., Woodsong, C., MacQueen, K.M., Guest, G., & Namey, E. (2005). *Qualitative Research Methods: A Data Collector's Field Guide*.
- Martin, C. L. & Ruble, D. (2004). Children's search for gender cues: Cognitive perspectives on gender development. *American Psychology Society*, 13(2). Retrieved June 1, 2017, from <http://journals.sagepub.com/doi/pdf/10.1111/j.0963-7214.2004.00276.x>
- Mayring, P. (2000). Qualitative Content Analysis. *Forum Qualitative Sozialforschung* [Forum: Qualitative Social Research], 1(2). Retrieved February 16, 2017, from <http://www.qualitative-research.net/index.php/fqs/article/view/1089/2385>
- Mendonça, R. (2016, 7 jan). De que natureza estamos falando? *Conexão Planeta*. Retrieved January 20, 2017 from <http://conexaoplaneta.com.br/blog/de-que-natureza-estamos-falando-2/>
- Michelan, C.S. & Correia, L.S.B. (2014). Children taking over their own space in the house: consumption and negotiation of meanings. *Strenæ*, 7. Retrieved from <https://strenae.revues.org/1221?lang=de>
- Monbiot, G. (2012, November 19). If children lose contact with nature they won't fight for it. *The Guardian*. Retrieved December 27, 2016, from <https://www.theguardian.com/commentisfree/2012/nov/19/children-lose-contact-with-nature>
- Morley, D. (1974). *Reconceptualising the media audience: towards an ethnography of audiences* (Discussion Paper). Retrieved February 26, 2017, from

<http://www.birmingham.ac.uk/Documents/college-artslaw/history/cccs/stencilled-occasional-papers/9and25to37/SOP09.pdf>

Morley, D. & Brunson, C. (1999) *The Nationwide audience*. London: Routledge.

Moss, S. (2012). Natural Childhood. *National Trust*. Retrieved November 27, 2016, from <https://www.nationaltrust.org.uk/documents/read-our-natural-childhood-report.pdf>

Nações Unidas no Brasil (n.d.). *A ONU e o meio ambiente*. Retrieved December 8, 2016, from <https://nacoesunidas.org/acao/meio-ambiente/>

Oliveira, M. (2015, September 17). Celular em sala de aula: um novo olhar para o meio ambiente. *Conexão Planeta*. Retrieved February 2, 2017, from <https://conexaoplaneta.com.br/blog/celular-em-sala-de-aula-um-novo-olhar-sob-o-meio-ambiente/>

OMO (2016). *O valor do brincar livre*. Retrieved February 17, 2017, from <https://www.omo.com.br/por-que-e-bom-se-sujar//>

Orofino, M.I. (2015). O ponto de vista da criança no debate sobre comunicação e consumo. *Revista Latinoamericana de Ciencias Sociales, Niñez y Juventud*, 13(1), 369-381. doi:10.11600/1692715x.13122090814

Orozco, G. (2005). O telespectador frente à televisão: uma exploração do processo de recepção televisiva. *Communicare*, 5(1), 27-42. Retrieved December 14, 2016, <https://casperlibero.edu.br/wp-content/uploads/2014/07/Communicare-vol.-5.1.pdf>

Padua, S. M. (2002). A importância da Educação Ambiental na proteção da biodiversidade do Brasil. *Revista Textos do Brasil*, 9, 50-55. Retrieved December 3, 2016, from <http://dc.itamaraty.gov.br/imagens-e-textos/revista-textos-do-brasil/portugues/revista9-mat7.pdf>

Palmer, J. A., Suggate, J., Robottom, I., & Hart, P. (1999). Significant life experiences and formative influences on the development of adults' environmental awareness in the UK, Australia and Canada. *Environmental Education Research* 5(2), 181-200. DOI: 10.1080/1350462990050205

- Pergams, O.R.W. & Zaradic, P.A. (2007). Videophilia: implications for childhood development and conservation. *The Journal of Developmental Processes*, 2(1), 130-147. Retrieved May 6, 2017, from https://www.researchgate.net/publication/237557695_Videophilia_Implications_for_Childhood_Development_and_Conservation
- Prefeitura de Belo Horizonte (n.d.). *História Gutierrez*. Retrieved March 30, 2017, from http://portalpbh.pbh.gov.br/pbh/ecp/comunidade.do?evento=portlet&pIdPlc=ecpTaxonomiaMenuPortal&app=historia&lang=pt_BR&pg=5780&tax=14373
- Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon*, 9(5), 1-6. Retrieved February 12, 2017, from <http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf>
- Proffice C., Santos G.M., & Anjos, N.A. (2016). Children and nature in Tukum village: indigenous education and biophilia. *Journal of Child and Adolescent Behavior*, 4(320), 1-6. doi:10.4172/2375-4494.1000320
- Prokop, P. & Tunnicliffe, S.D. (2007). Effects of having pets at home on children's attitudes toward popular and unpopular animals. *Anthrozoös*, 23(1), 21-34. Retrieved June 8, 2017, from https://www.researchgate.net/publication/233657546_Effects_of_Having_Pets_at_Home_on_Children%27s_Attitudes_toward_Popular_and_Unpopular_Animals
- Raffaelli, M. & Ontai, L.L. (2004). Gender socialization in Latino/a families: results from two retrospective studies. *Sex Roles*, 50(5-6). doi:10.1023/B:SERS.0000018886.58945.06
- Renninger, K.A. & Hidi, S. (2006). The four-phase model of interest development. *Educational Psychologist*, 41(2), 111-127. doi:10.1207/s15326985ep4102_4
- Renninger, K.A. & Hidi, S. (2011). Revisiting the Conceptualization, Measurement, and Generation of Interest. *Educational Psychologist*, 46(3), 168-184. doi:10.1080/00461520.2011.587723

- Rivera, I.R., Silva, M.A., Silva, R.D., Oliveira, B.A., & Carvalho, A.C. (2010). Physical inactivity, TV-watching hours and body composition in children and adolescents. *Arquivos Brasileiros de Cardiologia*, 95(2), 159-165. Retrieved June 4, 2017, from <https://www.ncbi.nlm.nih.gov/pubmed/20563518>
- Rothenbuhler, E. & Coman, M. (2005). The promise of Media Anthropology. In Rothenbuhler, E & Coman, M (Eds.), *Media Anthropology* (pp 1-350). doi:10.4135/9781452233819.n1#sthash.huZsGBn6.dpuf
- Russell, J. (2016). 'Everything has to die one day:' children's explorations of the meanings of death in human-animal-nature relationships. *Environmental Education Research*. doi: 10.1080/13504622.2016.1144175
- Selting, M., Auer, P., Barth-Weingarten, D., Bergmann, J., Bergmann, P., Birkner, K., Couper-Kuhlen, E., Deppermann, A., Gilles, P., Günthner, S., Hartung, M., Kern, F., Mertzluft, C., Meyer, C., Morek, M., Oberzaucher, F., Peters, J., Quasthoff, U., Schütte, W., Stukenbrock, A., & Uhmans, S. (2011). A system for transcribing talk-in-interaction: GAT 2. (Couper-Kuhlen, E. & Barth-Weingarten, D., Trans.). *Gesprächsforschung*, 12, 1-51. Retrieved March 30, 2017, from <http://www.gespraechsforschung-ozs.de/heft2011/px-gat2-englisch.pdf>
- Schraw, G., Flowerday, T. & Lehman, S. (2001). Increasing situational interest in the classroom. *Educational Psychology Review*, 13(3), 211-224.
- Sifuentes, L. (2014). Ethnography as an approach to investigate the media practices – from Macambira to Texas. *Matrizes*, 8, 121-137. doi:10.11606/issn.1982-8160.v8i1p121-137
- Skar, M., Wold, L.C., Gundersen, V., & O'Brien, L. (2016). Why do children not play in nearby nature? Results from a Norwegian survey. *Journal of Adventure Education and Outdoor Learning*, 16(3), 239–255 doi: 10.1080/14729679.2016.1140587
- Sousa, A.K.C. (2006). *O gênero notícia de jornal em livros didáticos de Língua Portuguesa* (Master's thesis). Retrieved May 5, 2017, from http://www.ppge.ufpr.br/teses/M06_walker.pdf

- Szagan, G., Mesenholl, E. & Jelen, M. (1994). *Umweltbewußtsein bei Jugendlichen. Emotionale, handlungsbezogene und ethische Aspekte*. Frankfurt am Main: Peter Lang.
- Techniker Krankenkasse (2014). *Jugend 3.0 – abgetauch nach Digitalien?* Retrieved December 3, 2016, from <https://www.tk.de/tk/broschueren-und-mehr/studien-und-auswertungen/medienkompetenz/657920>
- Tucker, R. & Izadpanahi, P. (2017). Live green, think green: Sustainable school architecture and children's environmental attitudes and behaviors. *Journal of Environmental Psychology*, 51, 209-216. doi:10.1016/j.jenvp.2017.04.003
- Unep (2005). *UNEP Strategy for Environmental Education and Training. A Strategy and Action Planning for the Decade 2005 – 2014*. Retrieved December 4, 2016, from http://www.unep.org/training/downloads/PDFs/strat_full.pdf
- United Nations (2015). *World urbanization prospects: the 2014 revision*. Retrieved March 14, 2017, <https://esa.un.org/unpd/wup/>
- Vaughan, C., Gack, J., Solorazano, H., & Ray, R. (2003). The effect of environmental education on schoolchildren, their parents, and community members: A study of intergenerational and intercommunity learning. *The Journal of Environmental Education*, 34(3), 12-21. Retrieved June 1, 2017, from <https://eric.ed.gov/?id=EJ677474>
- Wenetz, I. (2013). As crianças ausentes na rua e nas praças - Etnografia dos espaços vazios. *Civitas*, 13(2), 346-363. doi:10.15448/1984-7289.2013.2.15477
- Wells, N., & Lekies, K. (2006). Nature and the life course: pathways from childhood nature experiences to adult environmentalism. *Children, Youth and Environments*, 16, 1-24. Retrieved May 22, 2017, from <http://www.outdoorfoundation.org/pdf/NatureAndTheLifeCourse.pdf>

Appendix A – Instructions and Guideline

Hello, good afternoon! It is nice to see you again. Thank you for coming. As you know, my name is Manoella and today I am here for us to make an activity together. Before we begin, I want to explain some things. I am not a teacher, I am a journalist, and this activity won't be graded. It is not for the school, it is a research. Today we are going to read two journalistic texts and then we are going to talk about them. I would like to know your opinion about some things, what do you think, what do you do and what you would like to do. Ah, I am very curious! I would like to hear complete answers. For the activity to work properly, I need you to do me a favor: forget that we are at school because this activity does not have wrong or right answers. It's not a test. I am not testing your knowledge, I am interested in getting to know you. So you tell me what you think, your opinion, your beliefs about topics that are a surprise. You'll see them when we go to the computers. By the way, when you read the texts I will ask you to please read them from the beginning until the end, otherwise, our discussion will be boring. The images and the videos are up to you. You can pay attention and look at them if you want like you normally do when you are reading something. So, again: there are not right or wrong answers. If I ask you what is your favorite dessert is there a right answer? No! So this is the kind of questions I am going to make. The only important thing now is that you speak what you truly think, ok? It's not allowed to tell lies and everything that we talk about today will be only among us. I won't tell anyone about it, it's our secret. I am going to distribute a paper sheet for each of you and I ask you to fill out. We will write some answers in the appropriate space of the sheet when it is required. I will ask you also to be positioned in the same places during the whole activity, both on the chairs in the circle and on the computers. Other important rules are that we have to do everything together and that you can click only when and where I tell you to click. So, let's begin!

Warm up questions

Main question	Further questions in case these aspects are not mentioned
When you are not at school, what are you usually doing? And what kind of content do you see in the internet?	*Where? *With whom? *But do you think you spend more time inside or outside your house?
Where would you like to spend your free time? Why? What do you do there and what is there that makes this place special?	*Do you have free time? *Which activities do you have besides school and homework?
Let's talk a bit about nature. Tell me what "nature" means from your point of view.	*For you, are we, humans, part of nature? *What is nature for?
Which environmental problems do you know?	* What about environmental problems close to you, at your street, in your town, is there any that you know?
How serious do they look to you? Why?	* Is there any that is more serious?
How do you feel about environmental problems? Why?	
What (or who) do you think causes environmental problems?	*Do you also cause environmental problems?
Can you imagine who can solve or help to solve them?	* Do you think you can? *How?
Before we read the first text, tell me what do you know about "noise pollution". If you know nothing, it is not a problem.	* Could you imagine what it is? OR *Where did you learn this? * Where do you learn about environment in general?

	*Do you learn from any media about it?
--	--

Questions Text 1 – Noise Pollution

Main questions	Further questions in case these aspects are not mentioned
Did you understand the text? Explain it to me, please.	* Tell me what do you know about “noise pollution” now.
From what you read, what is new?	*What did you learn?
Have you ever experienced this? How was it?	*How did you feel?
Do you agree or disagree with what is written?	*Why?
What do you think of this idea about going out and try to listen to the sounds of the environment?	
*But would you do it?	*Yes: Why? What is nice about it? *Could you imagine where? *No: Why not? (Ask until it is clear if this activity specifically has a problem or if the problem is to go outdoors).
Before we go back to the computers, I would like to know if you know what “biodiversity” is. Again, if you don’t know, it’s not a problem.	* Tell me then what you imagine it could be OR *How do you know this?

Questions Text 2 – Biodiversity

Main questions	Further questions in case these aspects are not mentioned
What did you understand of the text? Tell me as I did not read it.	*There is a story in the text about some species. What is this story?
Does the text bring any new idea?	*Could you explain now (OR again) what biodiversity is?
What do you think about these connections between the elements of the nature? Did you already know this idea or ever thought about it?	
Does this text changes any feeling or previous idea you had about nature?	*How?
The text says that every little plant, every little animal is important to nature, it plays a role. If there is an unbalance, everybody is affected. Do you agree or disagree?	*Is there anything in the text that look like a lie or suspicious? *Can't we just let go of these little plants? *Why?
The text shows a conflict. To use a specie, a coral, as souvenir or to cure a disease. How should the people deal with nature in your opinion?	*Do you know other examples of dispute between money and nature?
What do you think about this idea of going out to photograph and to observe nature with a cellphone?	*Would you do it? *Where? * Why not?
Before we go back to the computers and finish, I would like to know if there is anything about nature or your personal experience with nature that you would like to tell me and I did not ask.	

Individual interviews

Main questions	Further questions in case these aspects are not mentioned
Introduce yourself to me as if it was your first day at school, as if we don't know each other.	*Born location, grown up location, house location, house or apartment, new at the school, age, brothers and sisters, profession of the parents, pets, who with she/he lives, who with spend more time together, routine, time in the nature.
What is your favorite place?	*Why? What do you do there?
What is fun for you?	*How do you have fun?
Do you usually play outdoors? Where?	* Why not?
Is environment a topic of conversation in your house?	*Yes: Who introduces the topic? What do you talk about? What your parents say about it? Do you agree with them? *No: why not?
Have you ever heard your parents saying anything about the environment, such as "it's important to protect it" or "this is all very silly"?	*How was it?
Is there any additional comment related to the topics we talked, about your life that you would like to make?	
I will name the books that you chose in our activities and I would like you to explain me why did you choose them.	
Now I will mention the images you remember and I would like you to tell me, only if you remember and if you don't it is not a problem at all, why do you think these images were in your mind. Why was it for you easier to remember these.	

Appendix B – Overview of the Typeform Script (translated version)

Hello! We are going to start our activities soon. Please, wait for the sign so that we all start together.

Start press ENTER

1 → Look attentively at the pictures:*



A



B



C



D



E



F



G



H



I



J



K



L

2 → Which book(s) among the listed below would you like to read?*

Write down the correspondent **letters** to your answers in **Activity 2** on your answer sheet.

Choose as many as you like

- A Tips for doing well in the exams
- B Get to know the plants that eat meat
- C Be up on the world of TV celebrities
- D The best jokes from different countries
- E Have lots of fun at the school
- F Which sport suits you?
- G Why do we feel tickled?
- H How to take good care of your pet
- I Tales to gladden your day
- J The secrets of your music idols
- K How is a sport created?
- L Why do ships and cars cause nausea?

Click on the link below to read the first text:

<http://www.maistato.com.br/2017/02/10/barulho-e-poluicao/>

Next text press ENTER

Click on the link below to read the second text:

<http://www.maistato.com.br/2017/02/09/quanto-vale-uma-especie-viva/>

Continue press ENTER

3→ Now look at these new images:*



A



B



C



D



E



F



G



H



I



J



K



L

4 → Again: which book (or books) would you like to read?*

Write down the correspondent **letters** to your answers in **Activity 4** on your answer sheet.

Choose as many as you like

- A The latest news of the pop world
- B How to make good friends at school
- C Our greatest sport medalists
- D The funniest stories ever published
- E Learning to learn (and to get very good grades)
- F Does fish sleep? Questions and answers about animals
- G How do medications act in our body?
- H Get up close your favorite youtubers
- I The best book of jokes that you will read
- J Incredible plays to enjoy in the nature
- K The curiosity book (answered by Science)
- L Everything about the Olympic games in Brazil

Appendix C – Translated Journalistic Pieces

Text 1 – Noise Pollution

Is noise a kind of pollution?

When you think of pollution, what is the first image that comes to your mind? Is it smoke? Dirty water? We associate many images with pollution, but sometimes it is an invisible enemy as is the case with noise. Yes, very loud sounds and excessive noise are called "noise pollution" because they affect our quality of life, causing problems such as stress, tinnitus, dizziness, hearing loss and increased risk of diseases, among other problems.

Therefore, there are limits to permitted noise. In Brazil, there are laws that consider noise pollution an environmental crime. The sound is measured in decibel (dB) and the human ear tolerates sounds up to 65 dB. Above this level, problems begin to appear. For you to compare, an electric trio produces around 120 dB. Of course, it's not just us who suffer from it. The noise pollution caused by humans has consequences for plants and animals. Research indicates that the noise of ships stresses whales and dolphins and disrupts their communication. They even try to change their voice to communicate, just like we do in places with loud music, but the truth is that the poor animals are getting stressed.

This also hinders the communication of birds, such as parrots and macaws. Usually, they talk about 1.5 km away, but because of the noise that distance is reduced to only 50 meters. And what are they talking about? They help each other, tell them where to find food, attract partners, and warn of near hazards, such as approaching a predator. That means good communication helps in survival. With the animals trying to escape the urban noise, those who suffer are the plants (yes, nature is all connected and you should know this). This is because the natural methods of plant reproduction are aided by animals, such as birds and rodents. Without the help of these animals, the number of plants tends to decrease.

If noise irritates, on the other hand, scientific studies point out that the sounds of nature relax. How do places you usually go sound like? When you close your eyes, do you hear birds or cars? Do you get irritated or calmed down? What are the sounds of a garden and of the street of your house trying to tell you? Make a test! Under adult supervision, go to open places,

preferably where nature is present and compare. Want to see more examples of noise pollution? The Woody Woodpecker shows you in the video:

<https://www.youtube.com/watch?v=ZIsolnlz8>

Text 2 - Biodiversity

How much is a living specie worth?

Direct from the Brazilian coast comes the first hero of South America who can fight the super bacterium *Klebsiella pneumoniae carbapenemase*. Who? The scientific name is complicated, but you can call by the nickname of KPC that is also right. This villain is a microorganism found in hospitals and kills hundreds of people every year in Brazil. Since it first appeared in the country, the presence of this bacterium has increased tenfold!

The good news is that a species found exclusively on our coast, the Elephant ear marine coral, is able to fight this super bacterium. Tests performed by Brazilian researchers showed that the entire KPC population was exterminated after 12 hours in contact with the coral. And it does not stop there. It is believed that the elephant ear can also fight other bacteria.

But in the middle of the solution, there is a problem: the coral is threatened with extinction because of the collection for sale in aquariums and tourists gift shops. You must be wondering how people have the au-da-ci-ty to sell such an important species. It is true! Probably these people do not know all the good it provides. And do we know the good that each part of nature does? No, we don't even know how many species there are. A proof is that last year 56 new species were discovered in the Amazon rainforest, both animals, and plants. Scholars also claim that we know little about species, the relationships between them, the benefits they bring to nature and its functions. How much is a plant that cures an illness worth? And what if this plant is a little bit ugly, has no flowers, like any plant on which we tread without noticing it or uproot and it starts to disappear like the endangered species? How much is the life of frogs that feed on a mosquito that causes problems worth? If the population of frogs decrease, mosquitoes multiply and the problems as well.

"Biodiversity" refers to the richness and variety of the natural world. A good example of a place with rich biodiversity is the Amazon rainforest, which is the home of many different species. The greater the variety of living beings, the more balanced and healthy is everyone's

life, including ours. How about looking at this wealth more closely? Under the supervision of an adult, go outdoors in nature, such as a park or a farm, and photograph the plants and animals that catch your eye. What species are beautiful? What are strange? Which species are being seen for the first time? What would their function be in the nature? Get to know, create your digital album, enjoy! Speaking of fun, watch the video that shows how everything is connected: <https://www.youtube.com/watch?v=CT1VH2vfIYU>

Appendix D – Answer Sheet

8

Grupo: 3

Nome: Eduardo Lilly

Idade: 9

Menino

Menina

Atividade 1

• Homem louco, Espaço, Mulher dançando,
bolas de esportes, Passáaros e casco de
Banano.

Atividade 2 – Anote apenas as letras correspondentes aos livros

A, F, H, I e K.

Atividade 3

• Criança estudando, entrevista, Tigre, Logo
de vôlei, homem fazendo palhaçada crianças
brincando.

Atividade 4 – Anote apenas as letras correspondentes aos livros

B, E, H e F.

Appendix E – Codebook

Category	Definition	
Knowledge	It refers to what someone consciously knows.	
Subcategories	Definition	Examples
<ul style="list-style-type: none"> <i>Previous knowledge</i> 	It refers to what the children said to know about the proposed topics in the way they construct it in different levels: some more, some less accurate and complete.	<p>G: “Nature for me is the green”.</p> <p>B: “Usually fauna and flora”.</p> <p>G: “Actually, ‘bio’ means life and ‘diversity’ means different, but I think I don’t know”.</p> <p>G: “Biodiversity for me really is the diversity of the nature”.</p>
<ul style="list-style-type: none"> <i>Acquired knowledge</i> 	It refers to knowledge expressed after being exposed to the proposed media content and related to it.	<p>B: “I’ve learned about a bacterium and also that the humans have to stop selling these plants and stuff because the plants have their own importance and their role in the nature”.</p> <p>B: “I’ve never thought noise is a crime”.</p>
Category	Definition	
Decoding	It regards how a message is appropriated as a meaningful discourse, to how it is meaningfully decoded: preferred, negotiated and oppositional readings (Hall, 1980).	
Subcategories	Definitions	Examples
<ul style="list-style-type: none"> <i>Preferred</i> 	Refers to a type of decoding in which the interpretation and the coded content are similar, convergent.	<p>G: “We agree!”</p> <p>B: “I agree because the animals don’t like the noise pollution and the text says exactly that”.</p> <p>G: “I understood that the biodiversity is very important”.</p>
<ul style="list-style-type: none"> <i>Negotiated</i> 	Refers to when content is only globally accepted	
<ul style="list-style-type: none"> <i>Oppositional</i> 	Refers to a globally contrary reading position	

Category	Definition	
Desire	It refers to what children would like to do if they could just choose.	
Subcategories	Definition	Examples
<ul style="list-style-type: none"> <i>Interaction with nature</i> 	It refers to the desire to interact with natural spaces and to how open they are to go outdoors.	<p>B: "Because in the nature there will be many birds singing and it is an environment that we will feel better".</p> <p>G: "I loved the idea".</p>
<ul style="list-style-type: none"> <i>Free time</i> 	Refers to what children would like to do in their free time, if they could freely and spontaneously choose.	<p>B: "I would like to go to a square to play with my dog".</p> <p>G: "To go to an amusement park with my parents because they would have fun".</p>
Category	Definition	
Attitudes	"Attitudes continue to reflect people's evaluative stance apropos object, which is guided by both thought and affective processes" (Argyriou & Melewar, 2011, p. 446).	
Subcategories	Definition	Examples
<ul style="list-style-type: none"> <i>Affective dimension</i> 	Refers to emotions.	<p>B: "I love animals".</p> <p>B: "Sadder because nature is being ruined".</p>
<ul style="list-style-type: none"> <i>Cognitive dimension</i> 	Refers to beliefs.	<p>B: "To me, nature is a beautiful construction of God".</p> <p>G: "I think people should respect the nature more because God built it".</p>
Category	Definition	Examples
Routine	Refers to what children usually do in their routine, to how they occupy their time.	<p>B: "I play ball, watch TV and play Minecraft a lot".</p> <p>G: "I stay at home playing on my cellphone".</p>
Category	Definition	Examples
Responsability	It refers to who or what has responsibility related to environmental problems. Be it regarding the causes of the problems or the responsibility to help.	<p>B: "Parents. Because I don't pollute".</p> <p>G: "I think that even being children, if we collect about five cans we find in the street, it is already a big improvement even being something so small".</p>

Appendix F - Authorization

Technische Universität Ilmenau
Institut für Medien und Kommunikationswissenschaft

TERMO DE CONSENTIMENTO LIVRE E ESCLARECIDO

Prezados pais ou responsáveis,

Convidamos seu filho/sua filha para participar da pesquisa *Jornalismo como um parceiro da sustentabilidade*, sob responsabilidade da pesquisadora Manoella Oliveira e supervisão do Prof. Dr. Jens Wolling. A pesquisa está sendo conduzida dentro da universidade alemã TU Ilmenau e investiga os ganhos educacionais a partir do jornalismo ambiental. O Brasil ainda carece de dados sobre o distanciamento entre crianças e natureza, tema estudado ao redor do mundo, por isso, a relevância do estudo.

A atividade consiste na exposição a textos e imagens sobre meio ambiente seguida de discussão em grupo, dentro do colégio Pio XII. A participação é voluntária. É importante salientar que os temas trabalhados permeiam o conteúdo escolar, são materiais educativos. Posteriormente, algumas crianças serão convidadas para uma breve entrevista individual. **Esse segundo convite não está relacionado a qualquer critério de desempenho**, mas à melhor compreensão de opiniões manifestadas nas discussões em grupo.

Caso seja autorizado, os senhores estarão contribuindo para a produção de conhecimento sobre um tema diretamente relacionado à qualidade de vida de seus filhos. Os senhores não terão nenhuma despesa e também não receberão nenhuma remuneração. **A identidade das crianças será guardada em sigilo.** Para informações adicionais, a pesquisadora está à disposição no endereço: manoella.oliveira-dos-santos@tu-ilmenau.de.

Consentimento-Pós-Informação

Eu, Orara Albuquerque do Amaral, fui informado(a) sobre os procedimentos e objetivos da pesquisa e entendi a explicação. Assim, autorizo Orara Albuquerque do Amaral a participar.

Orara do Amaral
Assinatura do responsável

Manoella Oliveira dos Santos
Assinatura da pesquisadora

Data: 02/03/17

Declaration of Autonomy

I hereby confirm that the present thesis was written by me, Manoella Oliveira dos Santos, without assistance of second parties. I furthermore confirm that it has not been previously submitted for any other qualification at any other university or research institution in Germany or elsewhere. All references are acknowledged und fully cited.

Ilmenau, 22.06.2017

Manoella Oliveira dos Santos