

Diseño, desarrollo y evaluación de un campamento urbano de Educación Ambiental para preescolares

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Resumen: Esta propuesta educativa consistió en el diseño, desarrollo y evaluación de un campamento urbano de temática ambiental en el campus de la Universidad de Navarra. El objetivo de este campamento, dirigido a niños y niñas de 4-5 años, fue emplear la Educación Ambiental como una herramienta útil para fomentar la conexión con el entorno, ofreciendo a los niños y niñas oportunidades para jugar al aire libre y explorar la naturaleza. La metodología para el diseño y organización del campamento se basó en la elaboración de una Guía de Actividades, que fue previamente testada en varias sesiones piloto en el contexto educativo formal. Para evaluar las actividades, se empleó una escala de valoración gráfica adaptada a un nivel infantil a través de la cual los niños y niñas pudieron expresar en qué grado habían disfrutado de las actividades. También se recogieron las observaciones de los educadores y educadoras sobre el desarrollo de las actividades y el comportamiento del grupo. Los campamentos se desarrollaron en cuatro semanas diferentes durante el verano de 2021, con un total de 70 participantes. Los resultados obtenidos fueron positivos ya que un 89,2% de los participantes expresó haber tenido una buena experiencia en los campamentos. Las actividades mejor valoradas fueron aquellas relacionadas con experiencias prácticas y manualidades al aire libre. De esta forma, la presente experiencia destaca el potencial de determinadas zonas dentro de las ciudades para convertirse en espacios de aprendizaje y lugares de conexión con la naturaleza.

Palabras clave: experiencia práctica, actividades al aire libre, educación no formal, conexión con la naturaleza, educación infantil.

Design, development and evaluation of an Environmental Education urban camp for preschoolers

Abstract: This educational proposal consisted of the design, development and evaluation of an Environmental Education urban camp at the campus of the University of Navarra. The main objective of this camp addressed to 4-5 year old children was to use Environmental Education as a tool to promote human-nature connectedness and offer children opportunities for playing outdoors and exploring the environment. The methodology for the design and organization of the camp was based on elaborating an Activities Guide, which was tested in several pilot sessions in the formal educational context. The assessment of activities was conducted by using an adapted graphical rating scale through which children were able to express to what extent they enjoyed the activities. Complementarily, educators' observations about the group's behaviour and the activities' development were considered. The full camp experience was conducted in four different weeks during summer 2021, involving a total of 70

participants. The results obtained were positive since 89.2% of the participants expressed that they had a good experience during the camp. The highest rated activities were the ones including hands-on experiences and handicrafts outdoors. Thus, this experience highlights the potential of certain areas within cities to grow into learning spaces and places of connection with nature.

Keywords: hands-on experience, open-air activities, non-formal education, connection with nature, pre-school education.

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Introduction

Nowadays, children spend less time playing outdoors than five decades ago (Freire, 2018). For 21st century kids, playing does not necessarily mean playing outside. Spaniards between the ages of 4 and 12 spend an average of 990 hours per year in front of screens (televisions, computers, or game consoles), more time than at school (960 hours per year) (Freire, 2018). It seems that the society of the Digital Era is teaching young people to avoid direct experience in nature and stay indoors (Louv, 2010). For that reason, children are generally disconnected from the world outside their doors and barely familiarised, mostly through electronic media, with endangered animals and ecosystems around the globe (Sobel, 1996).

It is widely known that if we want to preserve and protect nature, we should encourage people of all ages (but especially children) to engage more deeply in knowing and appreciating this nature, starting with their own close environment (Sobel, 1996). However, this has proved a very difficult task during the last decades, because most people are too stressed about their daily responsibilities to think about the protection of the environment (Pollock, 1988).

Regarding kids, one of the main problems is the lack of green spaces where they can spontaneously explore the environment with their peers (Freire, 2018). Moreover, children's time in nature is conditioned not only by their own busy schedule, but also by their parents' timetable. Children need to spend time in nature to connect with it. As Louv (2010, p. 117) claims: "*It takes time –loose, unstructured dreamtime– to experience nature in a meaningful way*".

All these circumstances usually lead up to what Louv (2010) called a nature-deficit disorder. This disorder is related to a decrease in the use of senses, attention difficulties, and high percentages of physical and emotional diseases. As the nature-deficit grows in our society, new studies demonstrate just how important direct contact with the outdoors is to healthy human development (Dankiw *et al.*, 2020; Pouso *et al.*, 2021; Soga *et al.*, 2021). Early-aged children should be taken to natural environments and take part in outdoor activities to gain knowledge, attitudes, and responsible environmental behavior (Erdogan, 2011; García-González, 2020). Moreover, it has been reported that children with daily access to nature are more creative and feel less stressed (Corraliza & Collado, 2011). They also learn easier and make better use of critical thinking (Plevyak & Mayfield, 2010). Furthermore, spending time playing in nature reduces the incidence rate of physical problems such as obesity and induces positive behavior changes in children diagnosed with emotional or mental health problems (Louv, 2010).

On the other hand, there is a natural bond between children and nature that leads to an innate empathy feeling and interest for living beings. This bond is present at all ages but is especially during childhood when it becomes more important. All these attitudes introduced at this stage could turn into a deeper respect for the environment when kids become adults (Hueso & Camina, 2015). Complementarily, exploration of the natural world during early childhood is strongly linked to emotions. Once these emotions are firmly established, they can be linked to knowledge to create long-lasting meanings (Carson, 1965). Environmental Education (EE, henceforth) is a useful tool to achieve this connection at all ages, but especially during childhood.

Nevertheless, EE has been strongly criticised because it seems to fail in bringing about necessary and fast changes in people's behavior towards the environment (Saylan & Blumstein, 2011; Benayas & Mercén, 2019). It does not seem very effective to increase the environmental awareness of students in a society that does not recognise the seriousness of current environmental problems and continues exploiting the planet's resources (Calvo & Gutiérrez, 2012). Moreover, some EE programs have also been reproved for being too utopian (Serrano & Serrano, 2007). Beyond this necessary critical examination, we need to celebrate not only the survival but the vitality and importance of a movement, the EE, on the road to sustainability (Bautista-Cerro *et al.*, 2019).

Environmental Education can take place at school using traditional teaching methods, but sometimes this cannot cover all the educational goals. For that reason, new teaching options are emerging outside the formal educational system (Lloret, 2017), which involve different settings such as parks, zoos, museums, or camps (Meredith *et al.*, 2000).

Camps can be complete training, educational, and recreational experiences. They include social, affective, and cognitive aspects explored through living together; usually in a natural environment (Ruiz, 2019). Outdoor settings can help learners of all ages become more familiar with the natural world and can unlock natural curiosity and appreciation of the environment (Meredith *et al.*, 2000).

As previously said, an important obstacle for children to spend time in nature is the prevailing urban lifestyle. That poses the challenge of providing nature-learning opportunities for children in the environment where they live: the city (Smith-Lossiah, 2019). When traveling away from the city is not possible, urban green areas such as parks offer an accessible setting for EE.

The [campus of the University of Navarra](#) is one of the biggest urban green zones in the city of Pamplona (Navarra, Spain). Taking advantage of it, the Science Museum of the University of Navarra joined the developing trend of nature-based education of future generations in 2019, by creating environmental theme urban summer camps for children between the ages of six and fourteen in this setting. During the first edition of the camp, a new demand turned up: many parents asked for their 4 and 5 year old children to participate in the activities with their older siblings. Unfortunately, the activities were not adapted for those ages. For that reason, the organisers decided to promote the creation of a camp for 4 and 5 year olds in 2020.

In this context, the present didactic proposal develops an environmental urban summer camp for preschoolers on the campus of the University of Navarra. On the following pages the article will present the objectives of this proposal, explain its design, and discuss some of the aspects related to its implementation in 2021.

Objectives

The main objectives of the project were:

- Designing an environmental theme summer camp for preschoolers that fosters their environmental awareness and helps them develop their physical, emotional, social and cognitive skills.
- Conducting previous practical sessions at schools to test if the activities proposed for the camp were appropriate for preschoolers.
- Implementing the improved didactic proposal for the summer camps at the campus of the University of Navarra.
- Evaluating the activities' enjoyment degree experienced by children.

Design of the didactic proposal

Summer camps are much more than playing games in nature (Frainšic *et al.*, 2016). Educational camps have a defined purpose, and they are structured and planned to achieve their educational objectives (Ruiz, 2019).

This project was conceived as an urban day summer camp based on an interdisciplinary pedagogical strategy. This strategy emphasises hands-on experiences in which concepts and principles will be explored first-hand through activities that address them in more direct forms to achieve meaningful, effective, and long-lasting learning (Eick *et al.*, 2010). With EE as the unifying thread, students would work in groups and learn new contents related to natural sciences, language, artistic disciplines, and ethical and civic values, among others.

During early childhood, the specific goals of EE should be: to foster the enjoyment of the beauty and wonder of natural world; to make children aware of the diversity and interconnection in nature; to foster a sense of appreciation, respect and caring for the natural world; to present people as part of the natural world, and to teach children how to contribute to the well-being of the Earth (Meredith *et al.*, 2000). This project aims to address most of the EE aspects through the different activities proposed for the camp.

This project also adopted the *No Child Left Inside* philosophy proposed by Louv (2010): all children must have the opportunity to play outdoors and learn about the environment. Furthermore, the project activities rested on place-based education, giving special importance to local environments (Sobel, 2004). Teaching children about their close environment would help them to develop a local sense of place (Fisman, 2005), which would eventually lead to a bioregional sense of place and hopefully to an environmental consciousness and caring for those places (Sobel, 2008). In this context, it is necessary to start at a local scale to finally reach global aspects, meaning to adopt what Murga-Menoyo and Novo called a *glocal* development model (2017).

The methodology for designing and organizing this urban camp for preschoolers mainly consisted of elaborating an Activities Guide. This guide included the camp's timetable and budget, instructions for educators, and a detailed explanation of the activities to be conducted.

Before carrying out the actual camp, some of its educational activities were undertaken at schools to test if they were appropriate for preschoolers or needed any changes. The formal educational context was chosen to test the activities because of the easy and direct accessibility to larger groups of children.

Objectives

The main objectives for children to achieve through the proposed activities were:

- Supporting the observation and exploration of the natural and social environments in their city.
- Reinforcing their emotional attachment to nature and the environment.
- Developing attitudes of respect and care for the environment.
- Acquiring progressive autonomy in their usual activities.
- Fostering elementary guidelines for coexistence and social relationships by practicing the peaceful resolution of conflicts.
- Developing communication skills and different forms of expression.
- Enjoying the learning process.

Target group

This project focuses on 4 and 5 year old children, considered as preschoolers by the Spanish Educational System. Children at these ages show particular physical, emotional, social, and cognitive skills that need to be considered when designing activities for them.

There are different classifications of children's stages of development. This project adopts Sobel's theory, which relates development stages with EE goals. According to Sobel's classification, 4 and 5 year old children are in the early childhood stage, at which home is the center of their worlds. Children often describe the animals that live in their yards, and sometimes express their desire to protect them (Sobel, 1996). For that reason, Sobel (2008) understands this stage as the perfect moment to foster empathy with the natural world and cultivate the senses of emotional connection with it just as intended through this didactic proposal.

Contents

The designed activities were based on the official curriculum for Preschool Education in Navarra (Decreto Foral 23/2007) (Table 1) to facilitate their application in formal and non-formal educational contexts. This curriculum specifies that learning processes must be active and creative to foster the acquisition of abilities for future autonomous learning. It also encourages some educational values such as self-esteem, emotional control, perseverance, creativity, confidence, responsibility, critical thinking, and care and respect for nature. This proposal tries to foster the same values through the activities designed for the camp.

Regarding the environment, the curriculum of Navarra establishes the necessity of encouraging the sustainable use of natural resources, environmental care, and responsible consumption. This document points out that, at this stage, development and learning are dynamic processes intimately linked with the environment. The project shares all these ideas and focuses on children's different learning paces (also mentioned in the curriculum) to adapt the experience to their different personalities.

Table 1. Summary of the contents addressed in some of the camp activities and their connection with the official curriculum. Letters a, b, and c are related to the three main areas addressed in the curriculum: a) Self-knowledge and personal autonomy, b) Knowledge of the environment, and c) Language. Source: own elaboration adapted from Decreto Foral 23/2007.

Activities	Description of the activity	Connection with the curriculum
1. Flora Tale	Storytelling about the lifecycle of trees and forests. Children can share their opinions and ask questions at the end of the tale.	<ul style="list-style-type: none"> • Basic notions about plant's parts and life cycle, forests, deforestation and fires. (b) • Basic notions of movement coordination. (a) • Interest and attention for stories, explanations, instructions or descriptions, read or given by other people. (c)
2. Trees drawing workshop	Children draw something related with the story addressed in the Flora Tale. At the end, all the participants share their drawings with their peers.	<ul style="list-style-type: none"> • Development of original, imaginative and creative expression forms. (c) • Interpersonal relationships based on confidence and empathy. (b) • Basic notions about plant's parts and life cycle, forests, deforestation and fires. (b)
3. Listening	Children close their eyes and try to identify some sounds. Sounds of wind, rain, waves, thunders, birds, and other animals are reproduced using a speaker. When children identify one sound, they have to raise their hand, wait to talk and finally express their guess.	<ul style="list-style-type: none"> • Attention and initiative. (a) • Knowledge of some common sounds coming from nature. (b) • Exploration of the environment in an active and curious way. (b)
4. Finding a tree	Children divided in two different groups (trees and birds) have to walk around while the music sounds. When the music stops, they have to form pairs of bird-tree as fast as they can.	<ul style="list-style-type: none"> • Autonomy and initiative for solving problems. (a) • Basic notions of orientation and movement coordination. (a) • Respect and care for living beings and their habitats. (b)

Methodology and resources

After finishing a draft of the Activities Guide, activities 1-4 (Table 1) were tested at schools to evaluate if they were appropriate for preschoolers. These activities were adapted to the school's facilities and schedule. Irabia-Izaga School and San Miguel of Orkoien Public School agreed to collaborate with the project.


After this pilot test, a final version of the Activities Guide was created for its application in the summer camps. The Guide was structured by establishing a specific environmental theme for each day of the camp: Air (Day 1), Water (Day 2), Soil (Day 3), Flora (Day 4) and Fauna (Day 5) (Figure 1).

Timetable	DAY 1: Air	DAY 2: Water	DAY 3: Soil	DAY 4: Flora	DAY 5: Fauna
8:00 - 9:00	Reception of participants				
9:00 - 9:30	Spider web	My house and its river	"Soil" tale	Trees drawing workshop	Snake
9:30 - 10:00	Team building and introducing pets	Dirty water	Textures	"Flora" tale	Museum's Gymkhana
10:00-10:45	Exploring Listening	Looking for the river Exploring	Creating soil	Finding a tree Tasting (mid-morning snack)	
10:45 - 11:15	Mid-morning snack				
11:15 - 11:45	"Air" tale	"Water" tale	Material collection	Open-air museums	"Fauna" tale
11:45 - 12:15	Clean air or polluted air	Water filter	Land Art		Bats and moths
12:15 - 12:30	Break				
12:30 - 13:00	Natural air fresheners	Watering trees	In the soil lives	Open-air museums	Trough for birds
13:00-13:40	Weathercock	STOP Melting	Seeds Planting	RE-Drawing trees	
13:40 - 14:00	Daily reflection Daily evaluation Session closure				Daily evaluation Diplomas
14:00 - 15:00	Back home				

Figure 1. Camp's timetable. Source: own elaboration.

The camp was prepared for dividing children into five different groups to undertake activities in which teams were needed. A characteristic pet and a color bracelet distinguished members of each group from others. The figure of the pets, actually plush toys, was created to foster cooperative work and camaraderie among children, and to encourage responsibility. Children must work together to take care of the pet as it is an important member of the team.

Regarding the activities of the Guide, all the information, instructions and materials necessary for each one of them were compiled using the structure presented on Figure 2.



Activity	Name of the activity		
Day	Day of the camp (1, 2, 3, 4 or 5).	Time	0:00-0:00 Hour of the day at which the activity is going to take place and its duration.
Place	Place where the activity is going to be conducted.	Teams	Determine if teams are necessary (Yes/No). If they are, specify the type of team.
Alternative to rain	Place where the activity should be conducted if the climatic conditions stop the activity from being undertaken in the first proposed space.		
Objectives	<ul style="list-style-type: none"> Objectives of the activity: specify which is the purpose of this activity and which are the goals to be achieved. 		
Materials	Not fungible	Materials that can be reused.	
	Fungible	Materials that are consumed by using them.	
Development	Sequence of steps to follow for conducting the activity and in some cases, "script" of the explanations that should be given to children.		
Observations	Advices and reminders for educators.		
Source	Specify it if this activity is based on another one presented in a documented written by a different author (not the student).		

Figure 2. Template for the compilation of activities. Source: own elaboration.

Regarding teaching resources, dramatised tales with puppets stood out as an essential daily activity functioning as the camp's common thread. Each day had its specific environmental theme, so each tale related to these daily topics.

Tales are a common educational tool at Preschool so children are familiar with them (Martínez, 2011). In addition, 4 and 5 year old children are usually fascinated by storytelling (Condori & Morales, 2015). For those reasons, tales can introduce some environmental topics in a comfortable context for children.

The kind of tales proposed for the camp could help children to understand the world around them. Tales may foster new values, beliefs and responsible behaviors in children's lives and, in some cases, can also be therapeutic (VisikoKnox-Johnson, 2016).

Evaluation

This project considered two different assessment groups: children and educators. Children expressed their opinion about how much they enjoyed the activities they carried out everyday. Educators fulfilled a chart every week with their opinion on the group behavior, which the best/worst developed activity was, and why (didactic methods, resources, contents, etc.). These charts (Microsoft Word tables) were collected via email. Furthermore, at the end of each day, all educators shared their daily opinions and impressions out loud. The most relevant aspects of these educator's meetings were registered in charts by the camp's coordinator.

The short duration of the camp prevented measuring explicitly if children have achieved didactic objectives or integrated new concepts. The reduced period available for assessment might be insufficient for detecting a real progress on children's attitudes and skills. In addition, the age of the participants (4-5 years old children) also makes evaluation particularly complicated. Sometimes, it is difficult for children to understand the purpose of the assessment, or they get rapidly bored of the activity. In addition, camp educators do not always devote the required time to evaluation if they do not assume it as a priority.

Therefore, although several aspects were considered for this evaluation, at first, in practice it was limited to assessing whether children enjoyed the activities or not. This enjoyment is essential for summer camps as well as an important didactic tool to foster learning processes. Some authors considered that ludic contexts could make learning easier and more meaningful (Smith-Lossiah, 2019).

The assessment method used with children was a graphical rating scale adapted for them and conducted after each day of the camp. Children had to choose among three different little faces and stick it on the evaluation chart in the table box assigned to each activity (Figure 3). This assessment method proved suitable and useful during the pilot application at schools.

DIARY EVALUATION (Children)

NAME:GROUP:









Activity	DAY 1: AIR	Activity	DAY 1: AIR
Spider web		Tale	
Pets		Clean air or polluted air	
Exploring		Air fresheners	
Listening		Weathercock	

Figure 3. Example of the daily evaluation chart for children. Colours of the different little faces are used to represent if children have had a bad (red), not good not bad (yellow) or good (green) time. Source: own elaboration.

Application of the proposal: Results and Discussion

Pilot test at schools

Activities took place on different days during January and February of 2020. A total of 69 children between the ages of 4 and 5 participated in this pilot test.

The activities were divided into two different sessions of 50 minutes/ 1 hour. Each session included two activities in the following order: first, the *Flora Tale* and the *Trees drawing workshop*, and then, the *Listening* and *Finding a tree* activity (see Table 1 and Figure 4).

All the sessions in both schools were normally developed. At the end of each session a short evaluation was proposed to know children's opinion about the activities.

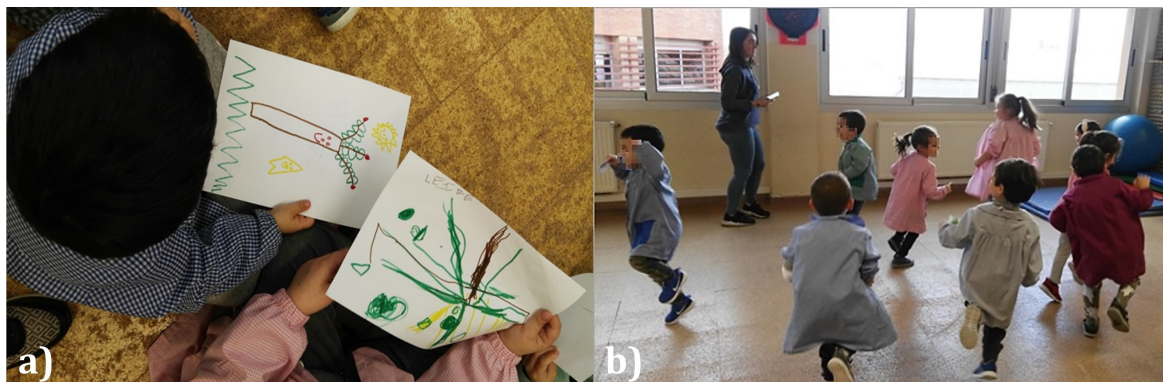


Figure 4. a) Drawing a tree workshop. b) Finding a tree activity. Source: own elaboration.

During the sessions many different ideas emerged, but it would be impossible to discuss all of them. The most relevant, in the opinion of the authors, will be analysed below:

- Children do not know what nature is, but they know that they have to protect it: this situation emphasises the necessity of an effective EE. This EE should encourage children to know and love nature before asking them to protect and save it (Sobel, 1996).
- «There are many different types of trees, but all of them are beautiful»: this phrase said by some children suggests that some of them still have the capacity to wonder at the beauty of nature (Carson, 1965). The activities should make emphasis in this trying to foster their *sense of wonder*.
- Children remember when they have previously heard the different sounds: this shows that children are able to remember previous experiences and connect them with new ones. Regarding this, it would be interesting to introduce Ausubel's theory of significant learning (Ausubel, 2000) in EE. As this project tries to provide memorable experiences in nature for children during summer camps, meaningful learning should be a keystone on it.
- Some students mislead the sound of a thunder with a lion's roar: this partially confirms that some children are generally disconnected from the world outside their doors and more familiarised, mostly through electronic media, with exotic animals and ecosystems (Sobel, 1996). Therefore, it is necessary to teach children about their surrounding environment to develop their local sense of place. To foster this sense of place, the urban camp addresses, for instance, local fauna and flora.

Quantitative results were obtained from the evaluation conducted with children after each session (Table 2). The majority of the students (76.6%) expressed that they had a good time.

Table 2. Results of the evaluation after each session. Colors represented the faces used to express if kids have had a good time or not. Source: own elaboration.

Session	School	Age	Red (Bad)	Yellow (Mediocre)	Green (Good)
First session	San Miguel	4	4 (14.3%)	1 (3.6%)	19 (67.9%)
	Irabia-Izaga	4	1 (5.6%)	0 (0.0%)	13 (72.2%)
	San Miguel	5	2 (5.7%)	5 (14.3%)	23 (65.7%)
Second session	San Miguel	4	5 (17.2%)	2 (6.9%)	18 (62.1%)
	Irabia-Izaga	4	2 (11.1%)	3 (16.7%)	9 (50.0%)
TOTAL			14 (13.1%)	11 (10.3%)	82 (76.6%)

The higher percentage of green faces was registered during the first sessions whereas a bigger percentage of yellow and red faces was associated to the second sessions (Table 2). The main reason for these results could be the differences between the activities of both sessions. The first session included activities more related to formal education in which students were more comfortable. On the other hand, the second session fostered critical thinking and collaboration between students through using all their senses and doing exercise. Taking children out of their comfort zone at school

could have caused insecurity. Moreover, children were more excited as they could move freely (jump, run, etc.) so this excitement brought conflicts and some fights between kids. These problems were easily solved, but they could have left a negative mark in some children's experiences, being reflected as a higher amount of red faces in the evaluation.

The pilot revealed some necessary changes in the Activities Guide for the camp. The main modifications affected the schedule, the language used by educators and other communicational aspects, the puppets used during the tales, and the tools for catching children's attention. Furthermore, new versions of some activities made them easier to understand for 4 and 5 year old children.

Summer camps

The COVID-19 crisis forced some changes in the original proposal regarding organizational issues. A second pilot experience was necessary to test this new version of the camp. Twenty-one children participated in the pilot camp in August 2020 following all the sanitary recommendations. Each group of children in the camp was considered a *bubble unit*, which attended the camp on a reduced schedule (from 09:00 to 13:30). For preschoolers, special emphasis was made on separating groups as they are too young to fully understand the importance of social distancing. After this pilot experience, the camps were offered again during August 2021 following the same schedule but including some improvements and a higher number of participants. This article presents the results obtained in that experience.

A total of 70 children participated in the camps during 2021. They were divided into groups of 8-10 people. Each group was under the care of two educators.

The results of the assessment carried out by children are presented in Tables 3 and 4. It should be noted that sometimes a given number of children missed some of the activities. In addition, some of the assessment charts (see Figure 3) were invalidated for being incorrectly completed. Therefore, the total number of children participating on the assessment during each of the camp's days (n) presented on Table 4 is not always 70 (the total number of children registered).

Table 3 shows that most of the children (89.2%) had a good time in the camp whereas 3.0% expressed that they had a bad time.

Table 3. Results of the global evaluation of the camp during 2021. Colors represented the faces used to express if kids have had a good time or not. Source: own elaboration.

Week	Red (Bad)	Yellow (Mediocre)	Green (Good)
First week (n = 14)	4.5%	10.3%	85.3%
Second week (n = 21)	4.3%	14.0%	81.7%
Third week (n = 18)	3.6%	5.5%	90.9%
Fourth week (n = 17)	0.3%	2.3%	97.4%
TOTAL GLOBAL (n = 70)	3.0%	7.8%	89.2%

Table 4. Results of the evaluation shorted by activity. Colors represented the faces used to express if kids have had a good time or not. Source: own elaboration.

Day	Activity	Red (Bad)	Yellow (Mediocre)	Green (Good)
DAY 1 Air (n = 65)	Pets	1.7%	6.7%	91.7%
	Exploring	1.6%	6.5%	91.9%
	Listening	3.3%	18.0%	78.7%
	“Air” tale	1.7%	6.9%	91.4%
	Natural air fresheners	3.4%	12.1%	84.5%
	Weathercock	3.5%	10.5%	86.0%
DAY 2 Water (n = 68)	My house and its river	3.6%	3.6%	92.9%
	Dirty water	6.1%	10.6%	83.3%
	Looking for the river	1.7%	12.1%	86.2%
	Exploring	0.0%	13.2%	86.8%
	“Water” tale	3.0%	9.1%	87.9%
	Watering trees	3.7%	3.7%	92.6%
	STOP Melting	3.6%	12.5%	83.9%
DAY 3 Soil (n = 40)	“Soil” tale	2.6%	2.6%	94.9%
	Textures	0.0%	2.6%	97.4%
	Seeds + Planting	1.4%	1.4%	97.3%
	Material collection	0.0%	2.6%	97.4%
	Land Art	2.6%	0.0%	97.4%
DAY 4 Flora (n = 59)	Trees drawing workshop	3.9%	2.0%	94.1%
	“Flora” tale	2.0%	2.0%	96.1%
	Tasting	0.0%	5.9%	94.1%
	Open-air museums	3.2%	6.5%	90.3%
	RE-Drawing trees	6.7%	3.3%	90.0%
DAY 5 Fauna (n = 59)	Snake	9.1%	9.1%	81.8%
	Museum's Gymkhana	0.0%	5.1%	94.9%
	“Fauna” tale	27.3%	22.7%	50.0%
	Through for birds	2.4%	17.1%	80.5%
TOTAL		3.0%	7.8%	89.2%

According to Table 4, the activities that children liked the most were:

- **Textures:** recognizing different materials present in the soil only by touch.
- **Material collection** and **Land Art:** involving the gathering of material for the Land Art sculptures while exploring new parts of the campus (Figure 5a).
- **Flora Tale:** second day's tale about seeds, trees and forests.
- **Seeds + Planting:** different types of seeds were presented to children. After that, bean and lentil seeds were prepared for planting so then the participants could bring them home and take care of them.



Figure 5. a) Land Art. b) Snake. Source: own elaboration.

According to children's opinions the worst activities (the ones with a higher percentage of the sum of red and yellow faces) were:

- **Fauna Tale:** last day's tale about animals and their natural habitats.
- **Listening:** children close their eyes and try to identify some sounds that can be listened in nature (reproduced using a speaker).
- **Through for birds:** a handicraft that consisted in building a weathervane with shared recycled materials.
- **Snake:** a game that consisted in singing a song and forming a line trying to imitate a snake (Figure 5b).

For their discussion, the previous results were analysed in parallel with educators' reports and daily opinions. By doing this, it was easier to understand why some activities had more positive evaluations than others. From the 4 available reports, 3 of them were considered complete and correctly fulfilled for their analysis. All the available daily opinions (10 in total as daily opinions were only collected during the camp's first two weeks) were also used for the clarification and interpretation of the results.

As each kid's behavior and attitude are different, the activities did not develop in the same way in each group. For that reason, activities that worked for some groups did not work for others. In any case, some common aspects for all the groups were highlighted.

According to educators' opinion, the activities which children enjoyed the most were the ones involving handicrafts and hands-on experiences ("Land Art" and "Seeds + Planting") in which kids had to create different things by themselves. This agrees with the results obtained on children's evaluations where "Textures" was the best valued activity. Therefore, the results pointed out the importance of practical work to evoke students' interest and to motivate them to learn. Moreover, working hands-on provides other benefits such as more realistic and exciting experiences for children (Holstermann *et al.*, 2010).

Regarding tales, sometimes it was difficult to call children's attention, but when focused on the story, children generally enjoyed them (e.g. "Flora Tale"), except for the "Fauna Tale". As tales are a very common educational tool at these ages (4 and 5 years old), children were familiar with them (Martínez, 2011) and expressed that the camp's tales were shorter than other stories that they had previously listened. Despite children's opinions about the tales' length, educators thought that extending stories was not necessary. If it were done, maintaining students' attention for longer periods would be more difficult. This lack of attention is believed to be the main reason for the negative results obtained for the "Fauna Tale". On the other hand, most kids were comfortable with drawing and tales because these were activities children were used to at school.

According to educators' opinion, the activities which children enjoyed the least were the ones involving being in silence ("Fauna Tale") and with their eyes closed ("Listening"), or sharing materials and waiting for others to finish ("Through for birds"). For instance, when sharing materials in bigger groups, children got bored faster as they had to wait for their turn to come. When kids got impatient, they started talking, doing other things, and bothering their peers as happened during the "Snake" activity. Moreover, educators considered that activities conducted at the end of the day or during the last days ("Through for birds", "Snake" and "Fauna Tale") were more likely to obtain worst results as children were more tired and were less capable of maintaining their attention and focusing on the activities.

Educators also reported some problems during the "Exploring" activities because some children did not really know what to do. Some kids were very independent and started to explore by themselves quickly, but others were not so adventurous and asked the educators to tell them what to do. Regarding exploring, the activities that were more successfully developed were the ones involving a specific purpose, for example, "Material collection", that consisted in collecting some specific materials for the Land Art activity. Having a definite mission allowed shy children to participate in the activity while also letting adventurous kids to freely explore their surroundings.

Finally, the results obtained highlighted that a major effort must be done in future camp editions in the fulfilling all the assessment forms for children and educators.

Conclusions

This project reaffirmed the idea of Environmental Education (EE) being a useful tool to encourage the human-nature connection at all ages, but especially during childhood. As confirmed by this experience, EE can take place at school through traditional teaching methods, but sometimes it cannot cover all educational goals. For that reason, non-formal education projects such as the present summer camp for

preschoolers can be effective and complete tools for EE. In addition, the camp was defined as urban because, specially after the confinement period in our homes and the restriction to travelling, it is important to provide nature learning opportunities for children in the environment where they live: the city.

Conducting previous practical sessions at schools made it possible to test if the activities proposed for the camp were appropriate for preschoolers. In general, the activities were satisfactorily developed but some changes were needed to adapt them better to 4 and 5 year old students. The most important changes implied modifications in the duration of activities, the language used by educators and other communication aspects and the tools for catching students' attention.

Even though the initial proposal for the summer camps suffered some modifications due to the sanitary situation, activities were satisfactorily developed. This experience has showed that it is possible to carry out safe camps and outdoor activities for children during the COVID-19 crisis. Furthermore, camp's activities connect with the official curriculum emphasising the potential of non-formal education outdoors to be integrated into formal contexts as a way to *re-naturalise* the school. This proposal could turn into an opportunity as schools may look for alternatives to reduce the time children spend together in closed spaces. In this context, this crisis may show an opportunity to change some aspects of traditional educational models. Increasing the number of classes conducted outdoors using new hands-on learning methods could be a very interesting option.

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References

- Ausubel, D. P. (2000). *Assimilation Theory in Meaningful Learning and Retention Processes*. In: *The Acquisition and Retention of Knowledge: A Cognitive View*. Springer. https://doi.org/10.1007/978-94-015-9454-7_5
- Bautista-Cerro, M. J., Murga-Menoyo, M. A., & Novo, M. (2019). La Educación Ambiental (página en construcción, disculpen las molestias). *Revista de Educación Ambiental y Sostenibilidad*, 1(1), 1103. https://doi.org/10.25267/Rev_educ_ambient_sostenibilidad.2019.v1.i1.1103
- Benayas, J., & Mercén, C. (2019). *Hacia una Educación para la Sostenibilidad. 20 años después del Libro Blanco de la Educación Ambiental en España. Informe 2019*. Centro Nacional de Educación Ambiental (CENEAM).
- Calvo, S., & Gutiérrez, J. (2012). *El espejismo de la educación ambiental*. Ediciones Morata.
- Carson, R. (1965). *The sense of wonder*. Harper and Row.
- Condori, J. J., & Morales, C. A. (2015). *Cuentos infantiles y su influencia en la solución de las dificultades en el desarrollo del lenguaje oral en niños de 4 años del Pronoei "Mi nido azul" del Distrito de San Juan de Lurigancho*. Final Degree Project, Enrique Guzmán y Valle National University of Perú.

- Corraliza, J. A., & Collado, S. (2011). La naturaleza cercana como moderadora del estrés infantil. *Psicothema*, 23(2), 221-226.
- Dankiw, K. A., Tsiros, M. D., Baldock, K. L., & Kumar, S. (2020). The impacts of unstructured nature play on health in early childhood development: A systematic review. *PLoS ONE*, 15(2), e0229006. <https://doi.org/10.1371/journal.pone.0229006>
- Decreto Foral 23/2007, del 19 de marzo, por el que se establece el currículo de las enseñanzas del segundo ciclo de la Educación Infantil en la Comunidad Foral de Navarra. *Boletín Oficial de Navarra*. Pamplona, 25 de abril de 2007, num 51.
- Eick, C. J., Carrier, S., Pérez, K., & Keasal, D. E. (2010). Summer Methods in Summer Camps: Teaching Projects WILD, WET, and Learning Tree at an Outdoor Environmental Education Center. In A. Bodzin, B. Shiner Klein & S. Weaver (Eds.), *The Inclusion of Environmental Education in Science Teacher Education* (pp. 173-189). Springer. https://doi.org/10.1007/978-90-481-9222-9_12
- Erdogan, M. (2011). The effects of ecology-based summer nature education program on primary school students' environmental knowledge, environmental affect and responsible environmental behavior. *Educational Sciences: Theory and Practice*, 11(4), 2233-2237.
- Fisman, L. (2005). The Effects of Local Learning on Environmental Awareness in Children: An Empirical Investigation. *Journal of Environmental Education*, 36(3), 39-50.
- Frainšić, M., Turčová, I., & Martin, A. J. (2016). Czech Youth Summer Camps: More than playing games in nature. *Envigogika*, 11(2), 1-13. <https://doi.org/10.14712/18023061.518>
- Freire, H. (2018). *Educar en verde: ideas para acercar a niños y niñas a la naturaleza*. Graó.
- García-González, E. (2020) ¡Urgente, urgente! Re-naturalicemos la escuela en tiempos de pandemia. *Revista de Educación Ambiental y Sostenibilidad*, 2(1), 1501. https://doi.org/10.25267/Rev_educ_ambient_sostenibilidad.2020.v2.i1.1501
- Holstermann, N., Grube, D., & Bögeholz, S. (2010). Hands-on activities and their influence on students' interest. *Research in Science Education*, 40(5), 743-757. <https://doi.org/10.1007/s11165-009-9142-0>
- Hueso, K., & Camina, E. (2015). *La educación temprana en la naturaleza: una intervención en calidad de vida, sostenibilidad y salud*. Centro Nacional de Educación Ambiental.
- Lloret, B. (2017). *Educación no formal. Los campamentos de verano: una escuela más*. Final Degree Project, University Jaume I.
- Louv, R. (2010). *Last child in the woods: saving our children from nature-deficit disorder*. Atlantic.
- Martínez, N. (2011). El cuento como instrumento educativo. *Innovación y Experiencias Educativas*, 39(1), 1-8.

- Meredith, J., Cantrell, D., Conner, M., Evener, B., Hunn, D., & Spector, P. (2000). Best practices for Environmental Education: Guidelines for success. *Environmental Education Council of Ohio*, Akron, Ohio, USA.
- Murga-Menoyo, M. Á., & Novo, M. (2017). Sostenibilidad, desarrollo «glocal» y ciudadanía planetaria. Referentes de una Pedagogía para el desarrollo sostenible. *Teoría de la educación*, 29(1), 55-78. <https://doi.org/10.14201/teoredu2915578>
- Plevyak, L., & Mayfield, A. (2010). Environmental Education Within Early Childhood. In A. Bodzin, B. Shiner-Klein, & S. Weaver (Eds.), *The Inclusion of Environmental Education in Science Teacher Education* (pp. 51-64). Springer. https://doi.org/10.1007/978-90-481-9222-9_4
- Pollock, K. (1988). On the nature of social stress: Production of a modern mythology. *Social Science & Medicine*, 26(3), 381-392. [https://doi.org/10.1016/0277-9536\(88\)90404-2](https://doi.org/10.1016/0277-9536(88)90404-2)
- Pouso, S., Borja, Á., Fleming, L. E., Gómez-Baggethun, E., White, M. P., & Uyarra, M. C. (2021). Contact with blue-green spaces during the COVID-19 pandemic lockdown beneficial for mental health. *Science of The Total Environment*, 756, 143984. <https://doi.org/10.1016/j.scitotenv.2020.143984>
- Ruiz, J. (2019). *La Educación Ambiental a través de un campamento educativo*. Final Degree Project, University of Valladolid.
- Saylan, C., & Blumstein, D. T. (2011). *The Failure of Environmental Education (And How We Can Fix It)*. University of California Press.
- Serrano, R., & Serrano, C. (2007). Ideología y educación ambiental: su incorporación en el currículo universitario, utopía y praxis. *Educere*, 11(36), 53-59.
- Smith-Lossiah, S. (2019). Nature Play For Urban Elementary Preschoolers: Benefits To Their Development And Connectedness To The Environment. *School of Education Student Capstone Projects*, 277. Hamline University.
- Sobel, D. (1996). *Beyond ecophobia: Reclaiming the heart in nature education*. Orion Society.
- Sobel, D. (2004). *Place-Based Education: Connecting Classrooms and Communities*. Orion Society.
- Sobel, D. (2008). *Childhood and Nature: Design Principles for Educators*. Stenhouse Publishers.
- Soga, M., Evans, M. J., Cox, D. T., & Gaston, K. J. (2021). Impacts of the COVID-19 pandemic on human–nature interactions: Pathways, evidence and implications. *People and Nature*, 3(3), 518-527. <https://doi.org/10.1002/pan3.10201>
- VisikoKnox-Johnson, L. (2016). The Positive Impacts of Fairy Tales for Children. *HOHONU*, 14(1), 345.