social sciences

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Are Our Schools Carrying Out Effective Environmental Education? In-Service and Pre-Service Teachers' Perceptions

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Abstract: Faced with the environmental challenges facing today's society, it is necessary to form critical, conscious, committed and competent citizens that can take action. Children represent, at the same time, the need for care and hope for a better and more sustainable world. The school is the ideal place to carry out this training. All citizens pass through school for many years and many hours a day. Everything in the school is designed to teach people how to learn and live together: the people who work there, the infrastructure, the rules, the resources and the opportunities to share daily actions. But are schools prepared to carry out effective environmental education? Several reasons have been pointed out as potential explanations of the lack of awareness and sustainable behavior observed in a large part of the population. Surely, one of the most important is the lack of adequate organization, which leads to a lack of long-term planning, of people in charge, or of an evaluation and communication of the results. In this paper, we present a study on environmental education carried out in a group of Early Childhood and Elementary education schools using structured interviews conducted by students of the Catholic University of Valencia San Vicente Mártir. The results obtained are congruent with the contributions made by previous studies, which have highlighted the lack of coherence between training, attitudes and teaching practices. The conclusions drawn seem to indicate that, although practicing teachers are aware of the importance of the subject, the presence of environmental policies in the school and the implementation of good educational action are far from being considered optimal, given the current need for them.

Keywords: teacher training; environmental education; Agenda 21; school eco-audits; sustainable development goals; practicum

Citation: Ivorra-Catalá, Eugenio Salvador, María Catret-Mascarell, and Elena Moreno-Gálvez. 2024. Are Our Schools Carrying Out Effective Environmental Education? In-Service and Pre-Service Teachers' Perceptions. *Social Sciences* 13: 425. https://doi.org/10.3390/socsci13080425

Academic Editor: Nigel Parton

Received: 30 June 2024
Revised: 7 August 2024
Accepted: 9 August 2024
Published: 14 August 2024

1. Introduction

This study is part of a broader project that arose from the efforts of two teachers to improve the training in environmental education (EE) and sustainability of future teachers in Early Childhood Education and Primary Education. The part of the study described in this article corresponds to the analysis of aspects related to the quality of EE in educational centers where student teachers carry out their internships. The collection of information was carried out by the students themselves, taking advantage of their time in the schools. In this way, the development of competencies related to active learning and inquiry is favored.

In line with this, we posed a series of research questions. The first set of questions refers to teachers' personal beliefs about the importance of the environment in education, their knowledge of the sustainable development goals (SDGs) and the importance of support from the school and fellow teachers in carrying out environmental education initiatives. As a second block, we wondered to what extent teachers are aware of environmental education actions and present in the educational project being developed at their centers. Finally, we wanted to find out whether they were aware of the use, by their center, of some of the most powerful structured EE tools, such as Agenda 21 or school eco-audits.

With respect to the methodology to be used for the study, we wanted to involve the student teachers in the training, so that, in addition to obtaining data, we could improve their training in environmental education and the reality of environmental education in the school environment.

1.1. Importance of EE in Addressing the Current Challenges Facing Humanity

The environmental challenges we face require the joint action of an ethical, responsible and committed society capable of understanding and rethinking the paradigms that have brought us this far and making the necessary behavioral changes to achieve sustainability. These behavioral changes do not occur spontaneously or immediately, so education is recommended as one of the essential tools to achieve this (Bautista et al. 2019; Nousheen et al. 2020; Blanco-Portela et al. 2020; Orbanić and Kovač 2021; Castro-Zubizarreta et al. 2022; Rodríguez et al. 2023; Ekselsa et al. 2023). In turn, we cannot consider an education to be of quality if it does not incorporate, in its approaches, the objectives and goals of EE (Ministry of Education and Culture 2000).

EE began its historical trajectory at the end of the nineteen-sixties. Since then, it has become increasingly relevant in the political, social, economic, educational and scientific spheres (Márquez-Delgado et al. 2021). At the same time, the concept of EE itself has been evolving. In this evolutionary process, a very significant milestone was the emergence of the concept of sustainable development (Meza et al. 2023). In fact, currently, environmental education is considered a tool without which it would be impossible to achieve sustainability (Bautista et al. 2019).

As a result of the growing concern for the future of the planet, the United Nations approved, in 2015, the 2030 Agenda and the SDGs. This is an ambitious action plan that contemplates, in its proposals, the complex relationship between society, the environment and the economy. The 2030 Agenda acknowledges education's crucial importance in the achievement of all the SDGs and, in addition, SDG 4 refers to it explicitly and proposes to "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". EE, in particular, appears implicitly in target 7 of the 10 targets included in this goal: "By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including through education for sustainable development and sustainable lifestyles. . .".

UNESCO (1997), as well as many other authors, agree that EE has to be initiated as early as possible, since an early connection with the environment favors the development of sustainable attitudes, not only during childhood but also in adulthood (Ramos and Torralba 2020; Orbanić and Kovač 2021).

1.2. The School Is an Ideal Setting for Environmental Education

Given the need for EE for all as an unavoidable requirement to achieve sustainability, many authors consider the school as the most natural place; the ideal environment in which to carry it out (UNESCO 1997; Cuello 2003; Castro and Rivera 2020; Pérez and Gértrudix 2020; Ramos and Torralba 2020; Ramos 2021).

The school must respond to its meaning as a center that generates culture and opinion to become an environment where children, in addition to acquiring knowledge, learn to organize themselves and act in a shared way (Cuello 2003; Jiménez et al. 2015). Schoolchildren, even if they do not make decisions of great impact on their environment in the present, should be a priority object of EE due to the future projection they possess (Cuello 2003). The school can become the conscience of a world that needs to change (Tirelli and Jacobsen 2023). It is necessary to use models that prepare students for individual and collective action (Varela-Losada et al. 2016).

Many are the reasons that have been adduced in favor of the school as an ideal setting for EE (Cantú 2014; Castro and Rivera 2020; Benayas and Marcén 2019; Rodríguez et al. 2023):

- It is the institution to which society has granted the socializing and educational function par excellence.
- It is the only institution that welcomes the entire population and does so for a long time. At least, for the time corresponding to compulsory education. Moreover, students spend many hours a day there.
- Everything in the school is prepared for teaching and learning: the professionals who work there, the organization of spaces and schedules, the rules that regulate them, the facilities, the material resources, etc.
- This is the best moment, evolutionarily, for children to learn positive and sustainable behaviors and habits on which to base their behavior in adulthood.
- The school is an ideal place to approach the study of the environment due to the opportunities offered by everyday situations, the possibility of starting from the students' personal representations, the variety of resources and methodological strategies that can be used, etc.
- The school has the capacity to favor interactions between different members of the educational community (students, teachers, families) but also other social, cultural, political, economic, etc., agents.

1.3. Despite Its Suitability, EE in Schools Has Not Worked Well

Despite the possibilities of the school as an ideal setting for EE, the results obtained to date do not seem to be as positive as could be expected. Rodríguez et al. (2023) report deficiencies in the acquisition of knowledge, a lack of behavioral changes and an inability to make decisions in the face of environmental dilemmas. On the other hand, some authors (Dieser and Bogner 2015) highlight the non-correspondence between environmental knowledge, pro-environmental attitudes and behaviors. Many are the reasons given by experts for this lack of results:

- The influence of the socioeconomic system, which often addresses EE more as a matter of image than of real concern for training citizens (Cuello 2003; Bautista et al. 2019).
- The lack of support and institutional resources necessary for EE in the school environment (Bautista et al. 2019).
- The externalization of EE: for years, many of the EE activities promoted by schools have been carried out by external experts, who, although they provide scientific and technical rigor, have didactic limitations (Pérez-Martín et al. 2022).
- The lack of data: the complexity of educational processes means that their fruits can occur in the short, medium, or long term and, therefore, it is difficult to create indicators and objective data to assess the effectiveness of EE in the acquisition or change of habits (Benayas and Marcén 2019). Moreover, there are numerous factors that influence the achievement of environmental awareness and behavior and it is difficult to measure them in an empirically valid way (Dieser and Bogner 2015.
- The lack of the communication of results: Very rarely are the results of good environmental habits practiced by citizens or students made known. This information would be of great interest to reinforce them and, if necessary, to recognize them, so that their efforts can be rewarded (Cuello 2003).
- The scarcity of specific didactic publications on EE that serve as a reference for teachers (Ramos and Torralba 2020).
- The traditional educational inertia and the current management models of educational centers, which are subject to the instability of management teams, who do not favor the incorporation of the environmental policies necessary to build a culture of sustainability (Cuello 2003; Ministerio para la Transición Ecológica y el Reto Demográfico and Ministerio de Educación y Formación Profesional 2021).
- The lack of teacher training, both in terms of didactic and scientific aspects, on environment and sustainability. In this regard, there is evidence of the presence of personal misconceptions, a lack of knowledge, a lack of coherence between the knowledge possessed and the teaching performed, or a lack of transformative illusion

(Cuello 2003; Feinstein and Kirchgasler 2015; García-Esteban and Murga-Menoyo 2015; Varela and Arias 2019; Benayas and Marcén 2019; Nousheen et al. 2020; Pérez-Martín et al. 2022). This lack of adequate training has different consequences on teachers' EE performances:

- The activities turn out to be inconsequential or superficial because they lack a sufficient scientific or pedagogical basis (Cuello 2003; Meza et al. 2023).
- The activities lack continuity over time. Most EE proposals are of a punctual nature, covering a number of days or weeks, with a very scarce the percentage of them outliving the school year (Cuello 2003; Benayas and Marcén 2019; Castro and Rivera 2020; Ramos and Torralba 2020; Alcívar and Alcívar 2022).
- Often, EE activities are inserted into festive events that transmit a folkloric and bucolic image of the environment, which does not really favor environmental awareness or responsibility for action (Cuello 2003).
- The objectives of the activities are not clearly formulated, so that the students are not aware of their usefulness. Other times, the objectives focus on the acquisition of values or attitudes, but with no connection to decision-making or active participation (Cuello 2003; Varela and Arias 2019; Pérez-Martín et al. 2022).
- Activities are not properly evaluated, so the effectiveness of the activities is not known. At other times, the evaluation focuses more on the quantitative results of participation or participant satisfaction than on the achievement of environmental objectives (Cuello 2003; Pérez-Martín et al. 2022).
- A traditional approach to teaching practice does not contemplate the social dimension of EE or promote meaningful student learning. The activities serve, fundamentally, the acquisition of content and are often fragmentary (Bautista et al. 2019; Castro and Rivera 2020; Pérez-Martín et al. 2022).

1.4. What Can We Do to Change Things?

In the current context, it is necessary to promote an EE with a democratic and participatory approach that favors cooperation, critical and system thinking, autonomy and personal responsibility, shared commitment and the promotion of collectives and strategic competency to enable action in one's own environment with an environmental basis and coherence (Calvo and González 1999; Ministry of Education and Culture 2000; Varela-Losada et al. 2016; UNESCO 2018).

As for the way by which this could be transferred to the school environment, the experts point out three areas of action: (1) didactic aspects, (2) aspects related to the organization and management of the school center and (3) teacher training.

1.4.1. Didactic Aspects

Think of EE as a new educational paradigm that changes traditional teaching–learning models, focused on lists of contents, to a competence approach and achieves a progressive coherence between didactic contents, methodological strategies and the management of the school environment (UNESCO 2018; Benayas and Marcén 2019; Peraza 2022; Ochando et al. 2022).

Activities must have continuity over time. For sustainable habits and behaviors to be consolidated and maintained into adulthood, despite consumerist pressures, EE programs must persist over time (Cuello 2003; Ramos and Torralba 2020; Castro and Rivera 2020; Pérez-Martín et al. 2022).

According to current approaches in EE such as constructivism, the development of system thinking, problem- or project-based learning, or action competence, several studies agree that it is necessary to make students feel that they participate in the proposals and take an active role in their learning process (UNESCO 2018; Ramos 2021; Ochando et al. 2022; Pérez-Martín et al. 2022). Among the characteristic features of this approach are the following:

- Using students' initial ideas as a starting point and awakening their interest to achieve meaningful learning. Design coherent sequences of activities that, starting from simple, concrete situations close to the students, increase their complexity, abstraction and globality (Cuello 2003; Jiménez et al. 2015; Sanmartí 2009).
- Ensure that students take an active role. This means that it should not be the experts who transmit knowledge or determine the behaviors to be adopted, but rather it should be the students who ask themselves questions, seek answers, make decisions and act in accordance with the answers found (Guevara-Herrero et al. 2023). In this way, they will acquire the knowledge, attitudes and environmental values necessary to participate in the processes of change required for sustainability (UNESCO 1997; Ochando et al. 2022).
- Use active methodological strategies. Jiménez et al. (2015) propose the use of action research, problem solving, field work, projects, simulation, games, etc. Cuello (2003) highlights techniques related to the exposition, debate and communication of ideas; information exchange; cooperative work; opinion polls on environmental problems; documentary research; collaboration with public administrations, etc. Pérez-Martín et al. (2022), for their part, emphasize the importance of encouraging students to reflect and propose solutions, tools for autonomous work, a multidisciplinary approach, socio-scientific controversies and the use of evidence and argumentation. The MMA Eco-audits Guide (...) also emphasizes the use of value clarification techniques.

1.4.2. Aspects Related to School Organization and Management

The education system should not only seek to educate citizens on environmental issues. It must also incorporate the logic of sustainability into its daily work through new models of management and the use of resources. The environmental management of a school needs to set quality, educational and social objectives in line with the SDGs (UNESCO 2018; Ministry of Education and Culture 2000; Hernández-Castilla et al. 2020).

In line with what was mentioned in the previous section about the coherence that should be generated between didactic content, methodological strategies and the management of the school environment (Benayas and Marcén 2019; Ochando et al. 2022), numerous authors highlight the importance of incorporating EE in the School Educational Project (SEP) (Jiménez et al. 2015; Ministry of Education and Culture 2000; Hernández-Castilla et al. 2020). The SEP is the reflection of the values, objectives, identity and priorities for action of a center. It guides the teaching task and the collaboration between the different members of the educational community. The SEP should be developed taking into account the social and cultural characteristics of the center's environment and the educational needs of its students (Grupogestam 2006; Hernández-Castilla et al. 2020). EE can contribute to the SEP with pedagogical criteria specific to this discipline, updated contents on the environment and strategies that favor the involvement of the institution in the community to which it belongs (Ministry of Education and Culture 2000).

The capacity of a school to carry out quality EE depends, to a large extent, on the commitment and drive of the management team and the existence of coordination figures, who can guarantee the coherence of all the actions undertaken. Among them are Environmental Commissioners, whose role is to reflect, validate and promote the proposed initiatives and to dynamize the necessary changes to achieve sustainability. It is also very useful to appoint a Coordinator who is ultimately responsible for all these processes (Hernández-Castilla et al. 2020).

1.4.3. Teacher Training

Teachers, because of their responsibility for the training of future citizens, are key, not only for the development of EE in schools, but also to society as a whole (Tilbury 2011; Jiménez et al. 2015; Varela and Arias 2019; Nousheen et al. 2020; Orbanić and Kovač 2021; Peraza 2022). It is necessary, therefore, to have teachers who area well trained about the

reality of environmental problems, the factors that shape them and the consequences that citizens' decisions have on all of this (Pérez-Martín et al. 2022).

Universities, as the main body responsible for the initial training of teachers and educators, have an indispensable role in the development of teaching competences related to sustainability (Varela and Arias 2019). Innovative content and methodologies should be incorporated here to help university students understand the meaning and usefulness of the 2030 Agenda and the SDGs, both in their personal lives and in their future work environments (Cuello 2003). The inclusion of co-evaluation and self-evaluation activities will help students to develop their responsibility, autonomy and critical sense. All this will favor deeper and more transformative learning (Cuello 2003; Pérez-Martín et al. 2022).

An interesting aspect for teachers' professional development is the creation of networks of teachers working on the same environmental problems, through which contacts are established, information is exchanged, resources are shared, advice is given, etc. (Cuello 2003).

1.5. Eco-Audits and Agenda 21

Agenda 21 and eco-audits can be conceived of as participatory pedagogical tools and processes aimed at improving sustainability at the level of the school and its environment (Ministry of Education and Culture 2000). They should be considered a didactic instrument, in which the school community designs and agrees on action plans to implement sustainability (Weissmann and Llabrés 2004). These tools and their implementation allow for, based on an internal evaluation led by the educational community, the continuous improvement of spaces and interactions with the surrounding environment, organizational models and their effects, as well as training processes.

Agenda 21 and the eco-audits arise from the interest of a center itself and its teaching staff. They begin with a motivational phase, the aim of which is to raise awareness and involve the educational community in these long-term projects. For this reason, it is advisable to have a Monitoring or Environmental Commission, as well as one or more Coordinators of the process. This team is in charge of making the work dynamic and guaranteeing the coherence of the whole process and of the decisions taken, in accordance with the established objectives.

The second stage is the reflection stage. During this phase, the center's environmental philosophy and its SEP are evaluated based on the fundamental principles of sustainability and environmental education. Additionally, it is important to examine the coherence of behaviors, actions, attitudes and both individual and collective values within the educational community (Grupogestam 2006).

This is followed by the environmental diagnosis phase, in which the environmental problems generated by the school are identified. The aspects to be diagnosed are very varied: curricular contents, teaching and learning styles and the characteristics of the context in which teaching and learning take place (the social climate of the center, physical and functional aspects and relationships with the environment) (Grupogestam 2006).

After the diagnosis, an action plan is designed, which should establish priorities, specify objectives and seek and study options for improving or solving the center's environmental problems.

Finally, we move on to the Monitoring and Evaluation phase, during which the actions undertaken are evaluated in terms of the objectives set. For this, it is necessary to establish a series of indicators and evaluation instruments. The indicators may correspond to aspects such as the commitment and participation of the educational community, the implementation of Agenda 21, the impact on people and the environmental impact.

The implementation of an eco-audit or Agenda 21 process is part of the life of the center. It should be approached from the perspective of EE and with an interdisciplinary focus. Eco-audits and Agenda 21 address the content (conceptual, procedural and attitudinal) of all areas of knowledge and at all educational stages. These processes should be included

in the center's educational project and incorporated into the different levels of curricular specifications (Grupogestam 2006).

Agenda 21 can be conceived of as systematic processes of participatory research–action that help students to analyze and understand environmental problems and prepare for the exercise of responsible citizenship in favor of a more just, ecological and sustainable society (Fernández-Ostolaza 2002).

Eco-audits favor the incorporation of the objectives and goals of EE into the school. They facilitate the acquisition of knowledge, the development of competencies and training in environmental values, attitudes and skills. They create evaluative habits and favor the participation of the entire educational community (Ministry of Education and Culture 2000).

2. Objectives

The present work has the following objectives:

1. To find out the importance that Early Childhood and Elementary Education teachers attach to the environment and to the support of the center to carry out EE activities.
2. To study the degree of the implementation and structuring of EE on sustainability that is carried out in the practice centers of the Early Childhood and Elementary Education Degree students from the Catholic University of Valencia through the perceptions of the teachers working in them.
3. To contribute to the development of the capacity of Early Childhood and Elementary Education Degree students to collect information on environmental education in a real school context.

3. Methods

As already indicated, the work presented here is part of a broader project, which has been developed since the 2020–2021 academic year and which seeks to improve the training of teachers of infants and primary school children in environmental education on sustainability.

3.1. Description of the Participants in the Project

3.1.1. Early Childhood and Elementary Education Degree Students

The students participating in the project are first-year students of the Methodological Innovation Plan for Education Degree (PIMM for its acronym in Spanish) of the Catholic University of Valencia San Vicente Mártir. This plan was implemented in the double degree of Early Childhood Education and Elementary Education and its main feature is that it combines learning in the university classroom with learning in a school classroom. Thus, the methodological innovation of this plan is that future teachers acquire their knowledge not only through class sessions at the university but also from personal experience at schools. These students attend an educational center in the morning and university in the afternoon. The teachers of the different subjects take advantage of their experience in the center to propose theoretical–practical content for direct application in the school classroom. This allows the linking of the university academic world with work and the professional world (Gomar 2019; Ivorra and Catret 2022).

This project has involved 181 students (163 females, 16 males and 2 who did disclose their gender).

3.1.2. Schools and Practicing Teachers

Seventy schools participated in the study, the vast majority of which were private and state-subsidized schools in the city of Valencia (Spain) and nearby towns.

A total of 299 practicing teachers were interviewed, 177 in Early Childhood Education and 122 in Elementary Education. Most of them were tutors external to the practicum of the student teachers.

3.2. Description of the Proposal

3.2.1. Academic Context

This project has been carried out on the subject the "Fundamentals of Natural Sciences", which corresponds to the compulsory didactic–disciplinary training module of the Elementary Education Degree. The general, specific and transversal competences linked to the whole project are shown in Table 1. Those more related to the present work are highlighted in bold.

Table 1. Competences related to this project.

Competences		Description
General		G9. Value individual and collective responsibility for achieving a sustainable future.
Specific		E27. Recognize the mutual influence between science, society and technological development, as well as relevant citizenship behaviors, to ensure a sustainable future.
Transversal	Instrumental	**I1. Capacity for analysis and synthesis of organization and planning.** **I2. Basic knowledge of the profession.** I3. Oral and written communication in one's own language.
	Interpersonal	T1. Critical and self-critical capacity. T2. Teamwork. **T3. Ethical commitment.**
	Systemic	**S1. Ability to apply knowledge in practice.** **S2. Ability to learn.** **S4. Ability to work autonomously.**

3.2.2. Timing

The project was conducted in the second four-month period of an academic year, specifically, in the month of May. The training activities before and after the intervention in the school took up part of the time of different class sessions. The field work to be carried out in the school was organized by consensus between the students and the internship tutors.

This project also required autonomous work performed by the students for the search of information and the elaboration of the final report.

3.2.3. Methodology of the Didactic Proposal

The methodological strategies used in the design and implementation of the whole project are of a constructivist nature. This has been chosen so that the student has an active role in his learning and feels responsible and a protagonist of his education. It also intended to link learning with the reality of students' future work context. Inquiring into the situation of EE carried out in the practice centers, through observation and interviews with the teachers, makes them aware of the challenges they will have to face in their professional future.

The entire project was structured following the Learning Cycle (Figure 1) proposed by Sanmartí (2009). In this model, the activities are organized, according to their didactic purpose, into four phases: the recognition of initial models, the evolution of initial models, the structuring and generalization of the new elaborated models and the application of the new elaborated models (Ivorra and Catret 2022). Table 2 shows the activities that make up the complete project. Those corresponding to the present study are highlighted in bold.

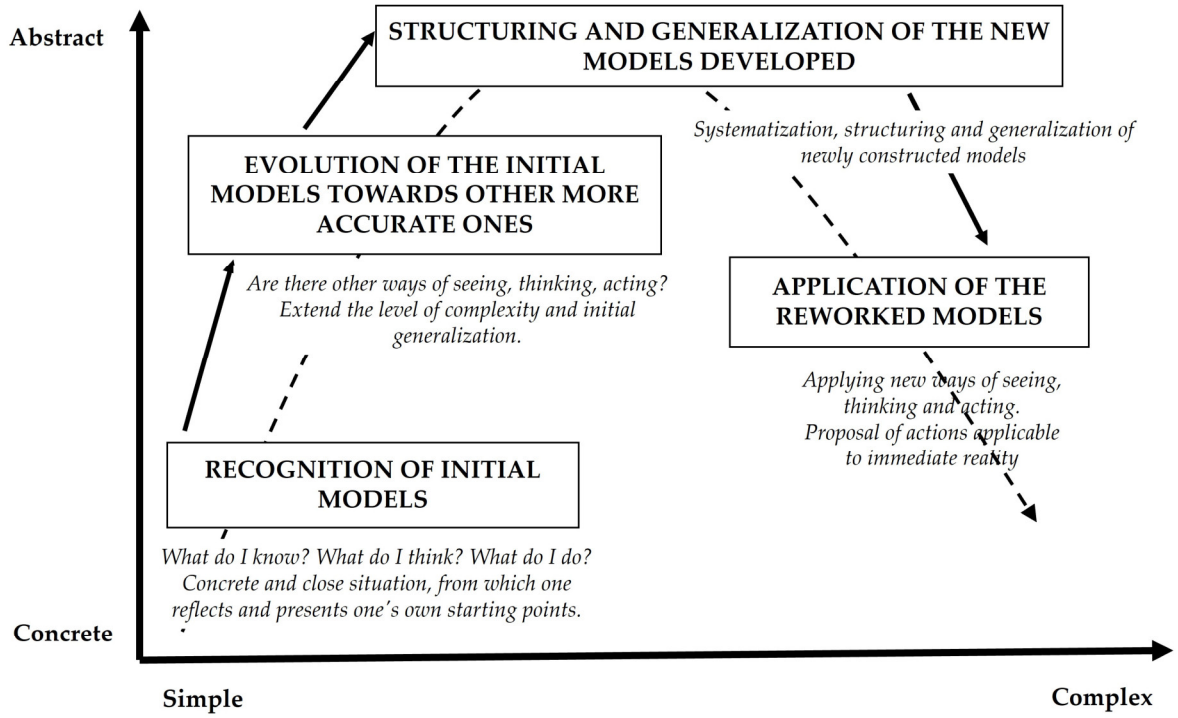


Figure 1. Graphical representation of the Learning Cycle. Own elaboration based on Sanmartí (2009).

Table 2. Outline of the complete education project.

Phase	Didactic Purpose	Didactic Activities
Recognition of initial models	To highlight the students' initial ideas about sustainability and eco-audits. Motivate and interest students in the subject.	- Presentation of the project and organization of working groups. - Pre-test on sustainability.
Evolution of initial models	Guiding students in the construction of new learning about sustainability and the way in which this topic appears in the Primary Education Curriculum in Spain.	- Guided search for information on 2030 Agenda, Agenda 21 and Eco-audits in schools. - Analysis of the Primary Education Curriculum regarding the presence of elements related to the environment and sustainability. - Elaboration of a glossary of relevant terms.
Structuring and generalization of the new models developed	Guiding pupils towards the formalization, structuring and generalization of the learning acquired.	- Post-test on sustainability. - Sharing and discussion of the results of the pre- and post-test.
Application of the new models developed	To offer students the opportunity to apply the learning acquired in order to check its meaning and usefulness.	- Environmental diagnosis of the school. - **Interview–questionnaire with teachers at the school.** - **Delivery of the data obtained** and the intervention proposals. - Discussion of results. - Preparation of the final report. - Global evaluation of the project.

3.2.4. Preparation of the Interviews

To prepare the questions to be asked in the interviews, two types of references were consulted: (a) questionnaires already validated for assessing the level of introduction of sustainability into teaching activities (ADEAC-FEE 2006; Aznar et al. 2017; Agència de Qualitat de l'Ensenyament Superior d'Andorra and Agencia de Calidad y Prospectiva Universitaria de Aragón 2019; Peris 2019) and (b) recommendations made by different experts on how to carry out quality QE (Ministry of Education and Culture 2000; Fernández-Ostolaza 2002; Weissmann and Llabrés 2004; Grupogestam 2006). The selected questions were adapted to the characteristics of the participating students and teachers (Peris 2019; Ivorra and Catret 2022).

All the questions included in the present work are closed-ended. Question 1 is multiple choice (options: Not at all important, Not very important, Important, Quite important, Very important). Questions 2, 4, 5, 6, 7, 8, 9, 10 and 11 are trichotomous (options: YES, NO, Don't know/No answer) and question 3 is dichotomous (options: YES, NO).

As a terminological clarification, the following is stated: when asking teachers about the implementation of a specific EE strategy, no distinction was made between tools that, although with different nuances, can be considered equivalent in terms of their value as instruments for improving the educational and environmental quality of the center. Thus, in question 10, the terms School Eco-audit, Environmental Audit and Agenda 21 are included.

3.3. Obtaining and Processing Information

The information sought, although much of it refers to organizational aspects of the centers, has been obtained through the perceptions of the participating teachers by means of structured interviews conducted by the internship students. The purpose of all this is that the future teachers approach the reality of what happens in a center as perceived by those directly responsible for EE. In other words, the aim is not so much to verify what the center is officially known to do, but rather what, from a practical point of view, reaches those involved.

In order to conduct the interviews, each student decided, in agreement with the interviewees, how and when to carry them out. Thus, some preferred to answer in writing outside of school hours, while the majority chose to respond orally, taking advantage of the time during which the students were at school.

The students communicated the results obtained through the teaching platform of the subject "Fundamentals of Natural Sciences" for a subsequent joint analysis with those responsible for the project. Consistent with its formative nature, the treatment of the data was only descriptive, in order to be accessible to students who are in their first year of university.

4. Results

4.1. Results of the Interviews

The results obtained from the interviews are grouped into three blocks, which correspond to the three types of questions posed to the teachers: the first refers to personal ideas or beliefs, the second to their perceptions about what is done or exists in the center and the third to the specific question about the implementation of a structured EE tool.

4.1.1. First Block: Personal Ideas or Beliefs

- Question 1: How would you rate the importance of the environment in education?

In response to this question, the vast majority of the teachers interviewed (89.6%) considered it "Important" or "Very important" (Figure 2), and no significant differences were observed between the variables considered with respect to gender (88.9% of women and 93.6% of men) nor to the educational stage at which they teach (90.4% of Early Childhood and 88.5% of Elementary School teachers).

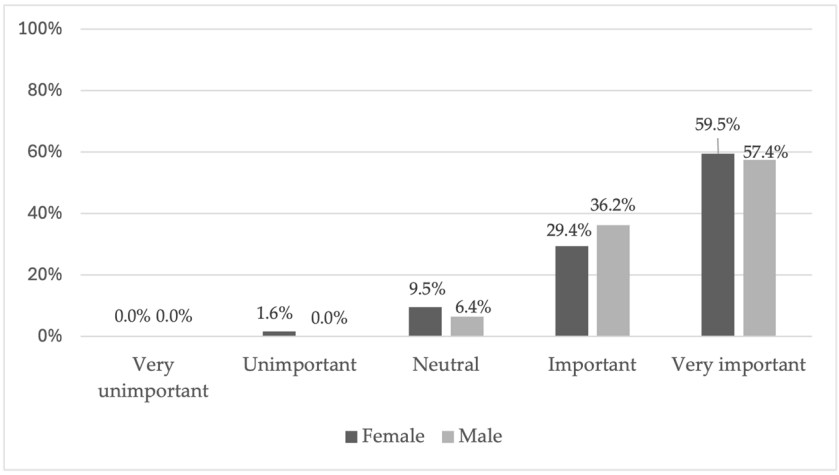


Figure 2. Results of the question "How would you rate the importance of the environment in the educational field?".

- Question 2: Have you heard of the Sustainable Development Goals (SDGs)?

The majority of the teachers interviewed also stated that they have heard of the SDGs, although there was a considerable percentage of them (20.1%) who answered "No" or "Don't know/No answer" (Figure 3), which is striking after more than 8 years since their formulation and the demand for subsequent action in the educational field.

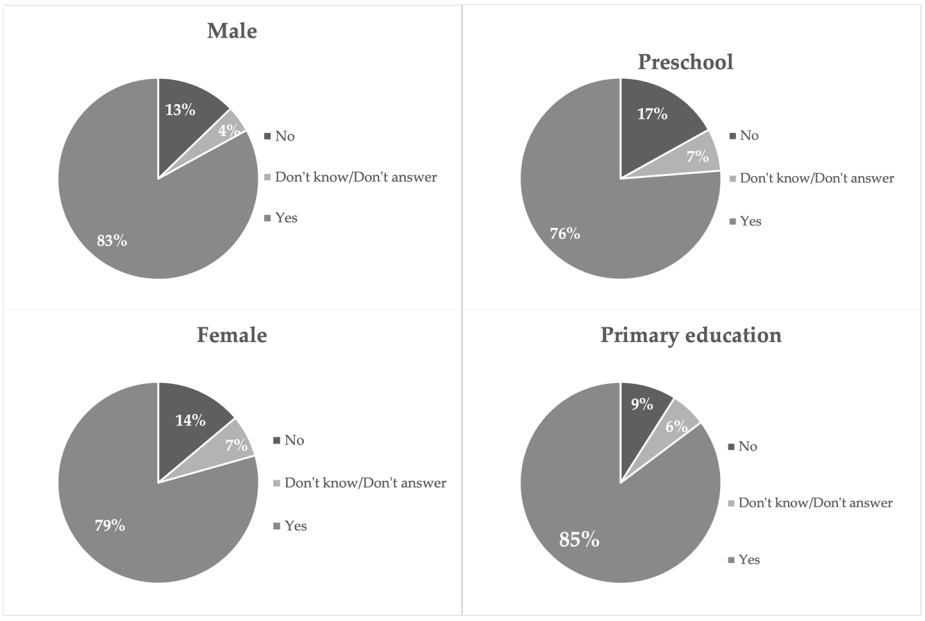
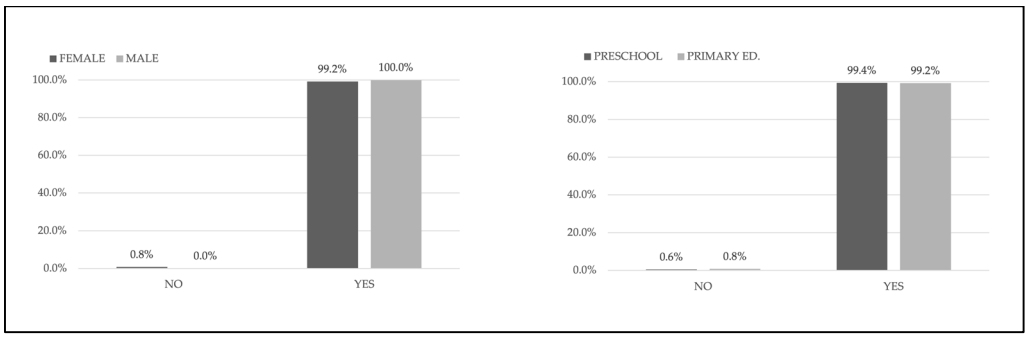


Figure 3. Results of the question "Have you heard of the Sustainable Development Goals (SDGs)?" by (**a**) teacher's sex and (**b**) the education level they teach.

- Question 3: Do you think it is essential to have the support of the school and other teachers in order to carry out Environmental Education proposals and initiatives in schools?

In response to this question, the answer was almost unanimously affirmative, both if we consider all the participating teachers (99.3%) and if we analyze it by sex or educational stage (Figure 4). Among male teachers, the answer was Yes in 100% of cases.



(**a**) (**b**)

Figure 4. Results of the question "Do you think it is essential to have the support of the school and other teachers to be able to carry out Environmental Education proposals and initiatives in schools?" by (**a**) teacher's sex and (**b**) the education level they teach.

4.1.2. Second Block: Teachers' Perceptions of What Is Done or Exists at the Center

- Question 4: Are there days, weeks, etc., held at the school center that have Environmental Education at their core?

The results obtained from this question indicate that only 45.8% of those interviewed affirm that these types of EE initiatives are held at the center. An identical percentage answered No and 8.4% did not know/did not answer.

- Question 5: Is there an environmental policy in the school?

The results obtained to this question indicate that 52.5% of the participating teachers believe that there is an environmental policy in their school, while 26.4% believe that there is no environmental policy in their school. A considerable percentage of teachers (21.1%) answered Don't know/No answer. The responses of these last two groups represent 47.5% of participants, so that, for practical purposes, it can be concluded that almost half of the practice centers do not have an effective environmental policy.

- Question 6: Do you consider Environmental Education to be integrated in the educational project of the center?

The results obtained show that only a slim majority of the teachers interviewed (57.9%) affirmed that EE is incorporated into their SEP, while 24.8% said that it is not. It seems relevant to us that 17.4% of them answered that they did not know or did not answer. The answers of these last two groups, which together represent 42.1%, for practical purposes, can be considered equally negative, since they denote a lack of effective consequences at the level of teaching or school life.

- Question 7: Do you consider the Sustainable Development Goals (SDGs) to be integrated into the school's Educational Project?

The answers obtained to this question are congruent with those given to the previous question. Thus, only 50% of teachers said that the SDGs are incorporated into their CSP and, again, there was a high percentage of those who said no (26%) or don't know/no answer (23.4%). The considerations around the implications of both answers are the same as those discussed for the previous question. It is just as negative that they are not incorporated as it is that teachers do not know about them.

- Question 8: Does the school have an Environmental Committee or similar?

The results obtained in answer to this question show that only one-third of the respondents (29.8%) answered affirmatively, while more than half (52.2%) said no, and what is striking is that 18.1% answered that they did not know/did not answer.

- Question 9: Does the school have an Environmental or Sustainability Coordinator?

The results obtained in answer to this question are very similar to those obtained for the previous question. Once again, there was a majority of teachers (54.2%) who stated that there is no Environmental Coordinator at their school, while 29.4% answered affirmatively and 16.39% answered don't know/no answer.

4.1.3. Third Block: Implementation of Some Structured EE Tools

- Question 10. Has a School Eco-audit, Environmental Audit or Agenda 21 ever been carried out at the school?

The data obtained from this question reflect the scarce implementation of these powerful EE tools, since only 22.1% of those interviewed gave an affirmative answer. The fact that the percentages of teachers giving a negative answer (40.5%) and a don't know/no answer (37.5%) are similar and both very high is considered very significant.

- Question 11. If you answered yes to the previous question, are results monitored and evaluated?

Of those who answered affirmatively to the previous question, 63.7% did again to this one. This percentage represents 19.3% of the total number of respondents.

In summary, considering the results obtained to these questions related to the way in which EE is present in educational centers, it can be observed that as elements of structuring or the organization of EE actions are increasingly considered, the percentage of affirmative responses decreases (Figure 5).

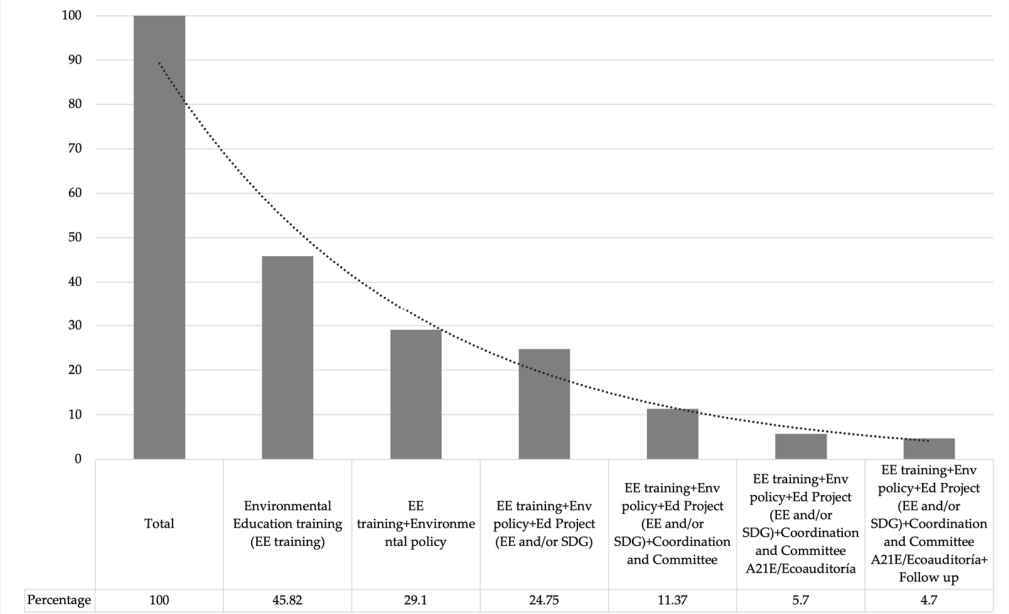


Figure 5. Levels of EE structuring in educational centers.

5. Discussion

Most of the interviewed Early Childhood and Elementary school teachers consider environmental care important, aligning with previous studies indicating high environmental awareness in many countries (Peris 2019; Rodríguez et al. 2023). However, this awareness does not always translate into quality environmental education (EE), as many teachers, while possessing theoretical knowledge, lack the necessary training to implement EE effectively (Peraza 2022; Guevara-Herrero et al. 2023).

Almost all interviewed teachers believe that support from their institution and teaching staff is crucial for carrying out effective EE actions, consistent with Peris (2019) and Tirelli and Jacobsen (2023). This need for institutional support contrasts with the lack of backing noted by authors like Bautista et al. (2019) and Hernández-Castilla et al. (2020).

Regarding the knowledge of SDGs, it is surprising that a fifth of the respondents have not heard of them, reflecting the lack of specific training noted by various authors (Cuello 2003; Feinstein and Kirchgasler 2015; García-Esteban and Murga-Menoyo 2015; Varela and Arias 2019; Benayas and Marcén 2019; Nousheen et al. 2020; Pérez-Martín et al. 2022). Additionally, less than half of the teachers report that EE activities are conducted in their centers, and many are unsure about whether they are. This suggests that such activities are sporadic and symbolic in nature, consistent with impressions from various authors (Alcívar and Alcívar 2022; Cuello 2003; Benayas and Marcén 2019; Ramos and Torralba 2020; Castro and Rivera 2020; Meza et al. 2023).

Only slightly more than half of the teachers acknowledge the existence of an environmental policy in their centers. The lack of knowledge about or the absence of such a policy could signify a lack of participation in the center's environmental management, which is essential for achieving the goals of the 2030 Agenda and the sustainable development goals (Fernández-Ostolaza 2002).

When asked about the inclusion of EE and the SDGs in their School Educational Project (SEP), the results show that only half of the centers include them, and, again, many teachers are uninformed. This, if the recommendations of the experts are heeded (Jiménez et al. 2015; Franco et al. 2019; Ministry of Education and Culture 2000; Hernández-Castilla et al. 2020), hinders the integrated and effective commitment of the educational community to sustainability.

Finally, the presence of environmental committees or coordinators is scarce in educational centers, and many teachers are unaware of their existence. Similarly, the use of eco-audits, Agenda 21 and similar programs is very limited, and most teachers are unaware of their implementation, which is disappointing given their potential as tools for environmental management and education (Bukingham-Hatfield and Percy 2005; Franzoi and Baldin 2009; Ivorra and Catret 2022).

6. Conclusions

This study reveals that although the majority of pre-school and primary school teachers say that the environment is important, this does not always translate into quality EE and the activities they carry out are, for the most part, ad hoc and symbolic.

Knowledge about the sustainable development goals (SDGs) is limited, indicating a lack of specific training in this area.

Although almost all teachers highlight the need for institutional support to implement EE, they consider this support to be insufficient in many cases.

The lack of environmental committees or coordinators in schools is notable, and the implementation of eco-audits or Agenda 21 is minimal.

Author Contributions: Conceptualization, E.S.I.-C. and M.C.-M.; methodology, E.S.I.-C. and M.C.-M.; software, E.M.-G.; validation, E.M.-G.; formal analysis, E.M.-G.; investigation, E.S.I.-C. and M.C.-M.; resources, E.S.I.-C., M.C.-M. and E.M.-G.; data curation, E.S.I.-C. and M.C.-M.; writing—original draft preparation, E.S.I.-C. and M.C.-M.; writing—review and editing, E.S.I.-C., M.C.-M. and E.M.-G.; visualization, E.S.I.-C., M.C.-M. and E.M.-G.; supervision, E.S.I.-C. and M.C.-M.; project administration E.S.I.-C. and M.C.-M.; funding acquisition, E.S.I.-C., M.C.-M. and E.M.-G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki. The study is part of the activities included in the educational cooperation framework agreements signed between the Catholic University of Valencia San Vicente Mártir and the centers at which teachers in initial training do their practicum.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Dataset available on request from the authors.

Conflicts of Interest: The authors declare no conflicts of interest.

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