Article

Making Future Teachers More Aware of Issues Related to Sustainability: An Assessment of Best Practices

Mª del Carmen Olmos-Gómez [1,*] **, Ligia Isabel Estrada-Vidal** [1,*] **, Francisca Ruiz-Garzón** [1] **, Rafael López-Cordero** [2] **and Laila Mohamed-Mohand** [3]

[1] Department of Research Methods and Diagnosis in Education, Faculty of Education and Sport Science, University of Granada, 52005 Melilla, Spain; fruizg@ugr.es
[2] Department of Didactics on Social Science, Faculty of Education and Sport Science, University of Granada, 52005 Melilla, Spain; raloco@correo.ugr.es
[3] Department of Developmental and Educational Psychology, Faculty of Education and Sport Science, University of Granada, 52005 Melilla, Spain; lafu@ugr.es
* Correspondence: mcolmos@ugr.es (M.d.C.O.-G.); ligia@ugr.es (L.I.E.-V.)

check for updates

Abstract: The aim of the present research was to uncover the opinions of future teachers about whether the formative knowledge of education for sustainability received in seminars during their practicums improved their competencies in sustainability and their values in educational teaching for their future classroom practice. The study entailed qualitative research with a thematic analysis. Semi-structured interviews comprising 14 questions, which were validated by 15 experts, were used to solicit the opinions of 52 future teachers with respect to the importance of sustainability and the development of intercultural competencies among their students. The information from the interviews was analyzed using thematic analysis on the basis of education for sustainable development (ESD). We conclude that the teachers' practicum placements and training experiences were very positive because a lecturing pedagogical approach, taught via practical application in a school environment by an expert of recognized prestige, can be a useful resource to develop awareness of both sustainable development and its education, as well as to learn didactic strategies to apply ESD, which addresses aspects that are relevant in multicultural contexts, such as tolerance and empathy.

Keywords: teacher training; education for sustainable development; environmental education; teaching competencies; teacher training prior to service; teacher training curriculum and teacher training programs

1. Introduction

The sustainability of the planet is seen to be increasingly compromised as a result of human activities. These circumstances have been conditioned by technological-scientific evolution and the socioeconomic organization of society, which drives people to interact with their environments in a way that favors human development [1–3]. In consequence, we are experiencing a magnitude of problems that are harming our physical and mental health, our diet, our home, our skin, our emotions, and our relationships with the physical-chemical environment and other human beings. All of these challenges have resulted from the alteration of biodiversity and water, accelerated waste generation, unnecessary consumption of materials, alteration of the environment, or the supremacist beliefs of some people, which impart a low quality of life on others. Therefore, it follows that human behavior has an environmental impact that has provoked a series of environmental problems, which, in turn,

have direct repercussions for us. Accordingly, the concept of sustainability has transitioned from a model focused on the physical environment, to another based on the conservation and protection of natural resources, to the one used today, which is founded on human development [4].

The world is facing a wide array of problems that could be prevented or resolved by humans to improve the quality of life of all people on the planet, assuming that a sustainable approach is taken. Thus, we consider Education for Sustainable Development (ESD) to be the backbone of diverse learning. Sustainable Development is understood as a polyhedral concept which holistically assesses the environmental, social, and economic challenges faced [5] in order to develop an ecologically sustainable, fair, and economically viable future [6]. That is, it is understood as the integral development of various aspects such as respect for biodiversity, social entrepreneurship, and the values it promotes such as tolerance, interculturality, cultural and linguistic diversity, support for social justice, or equity in a community [7–10]. In the case of the cultural value, it is important engage with it since, due to the characteristics of national and local contexts, and the diversity of sustainable practices, a large variety of cultural values need to be taken into account [11]. Sustainability initiatives were included in the 17 Sustainable Development Goals (SDGs) and the 169 Goals at the 2015 United States Summit [5]. Consequently, international recommendations have been directed toward initiatives that incorporate environmental, social, and economic aspects [3,12,13]. This imparts a broad meaning on sustainability with regard to the settings in which individuals can act. The main solution available involves the thinking approach taken by human beings. In recent decades, this approach has shifted from an anthropocentric model to an eco-focused one, in which the individual does not think only about the benefits to him or herself [14–17]. All of these recommendations are encapsulated by the global proposals and objectives in the 2030 Agenda for Sustainable Development of the WHO and UNESCO [18–21]. Thus, achieving these goals relies on various international forums and reports [22–24].

The perception and the current model of sustainability, influenced by the principles of solidarity, respect, equality, and cohabitation, equip us to act while thinking about the environment at a global level and considering future generations under the premise that environmental problems are detrimental to all human beings [22–26].

Being equipped requires the development of competencies in which one is able "to know", "to know how", and "to know how to be". This "knowing" involves knowledge of environmental challenges and the negative impacts that these challenges exert on the environment. In addition, "knowing" involves strategies to prevent or resolve issues using that knowledge and facilitates the change in attitude that is necessary to develop strategies and find possible solutions [27,28]. "Knowing how" involves the habit of identifying environmental challenges, seeking the best solution, and acting to prevent or improve the challenging situation. Finally, "knowing how to be" involves attitudes that improve both interpersonal and intrapersonal relationships, with the aim of fostering the harmonious cohabitation of all living beings under the premise of a better quality of life for all [29] by improving emotional intelligence, regulation, self-esteem, empathy, solidarity, and tolerance. Thus, it is necessary for individuals to acquire positive values, competencies, behaviors, and, ultimately, lifestyles that are coherent with a viable future [30].

The aforementioned knowledge ("to know") leads the individual to become aware and commit to acting under the principle of socio-environmental responsibility. Education is a key tool for acquiring this level of awareness, which is ultimately expressed as a behavioral change among individuals who have transitioned to a pro-environmental lifestyle [31]. If we include the right of the entire population to receive education [22–26] and to attend school, we can see that this "knowing" is influenced by professionals working in formal education (teachers, pedagogical researchers, secondary education teaching staff, and social workers). That is, the school is a tool that can increase the social awareness of students at an early age regarding the impacts of their lifestyles, making Sustainable Development (SD) an inclusive process aimed at people who benefit from this process and facilitating the participation of all, including children and youth [24,26]. As the ambit of Higher Education (HE) provides the space

in which educators are trained, meaning HE is considered one of the pillars of change that drive society [5,21,30,32–36]. As a responsible institution, HE organizations must also raise awareness of and provide strategies for providers of early training in order to educate society from within schools. Teachers have a huge impact because they mediate the earliest stages of learning. If this learning is carried out in the best way possible, then deconstruction processes are reduced, thereby optimizing the training process undertaken by younger members of society.

The training of youth is vital. Future teachers must know how to choose topics with current social impact that are adjusted to the curriculum and applied within educational settings, seeking further progressive involvement of the educational community and using joined-up problem-solving strategies [37] (pp. 121–143).

The educational proposals from the Higher Education for Sustainable Development (HESD) are being developed to incorporate SD into the curricula for future generations of professionals. Specifically, as stated in the scientific literature, there are up to three ESD types (universal; community and social justice; environmental education), which are grouped into twelve types of pedagogical approaches (including case studies, lecturing, community service learning, eco-justice, and community) [23]. While it is true that some approaches are better than others for the development of certain SD competencies, no single approach covers all of them. Moreover, most approaches focus on the development and effects of sustainable skills as more focused approaches in order to learn strategies that facilitate ESD.

In another sense, we find ourselves in a world in which cultural diversity is inherent to our society. This may be to the result of migratory mobility, which, at a local level, has created a setting that comprises different backgrounds. The context at an international level is one in which the cultural hegemony of the most advanced countries does not respect the value systems, beliefs, and ideologies of other countries. This situation requires individuals living together to think openly, respect the diversity of other customs and ideologies, and show understanding, tolerance, solidarity, collaboration, and social skills. They should also possess a set of values, beliefs, and norms that support culture, peace, and positive cohabitation [24,25] [37] (pp. 145–167) [38–40]. Consequently, these interpersonal relationships necessitate another set of intrapersonal skills, including the identification and management of emotions, self-regulation, and self-esteem, in addition to other factors that facilitate positive relationships and the quality of life of others.

Teachers have multiple supports that favor the implementation of ESD in the formal educational system. First, the UNESCO Educational Strategy (2014–2021) and the Decade of Education for Sustainable Development recommend a quality Education for Sustainable Development (ESD), in which students reflect, learn, and actively participate through the use of diverse methodologies [22,23]. For this, there are a number of Sustainable Development Goals (SDGs) that serve as a reference and can be found in the Action Plan known as the 2030 Agenda [18,24,40]. Efforts at the national level, such as international agreements in which the leaders of the Spanish Government, as well as Higher Education, have committed to promoting and developing the 2030 Agenda, have already obtained a series of advancements, achievements, and results through the creation of specific government bodies (such as the Sustainable Development Council to encourage civil society's participation in the fulfillment of the SDGs), policies (such as the circular economy), and transformative measures (such as the promotion of ESD and citizenship) [18]. To date, the application of SDGs in the Spanish educational system has been included in Additional Provision VI of the Draft Organic Law that modifies the Organic Law of Education (LOMLOE) [41], which is focused on teacher training and the establishment of a calendar for its achievement, including the initial teacher training and a guarantee for an education in civic values that allows one to develop active and participatory citizenship. Similarly, among the five transversal axes that are proposed for the LOMLOE, one of them is ESD [41].

At the local level, the public administration of school education provides support by regulating ESD through educational policies and offering resources, such as projects and programs or mediations for achievements, while simultaneously synergizing with other spaces of learning, such as eco school

projects [42]. These supports, together with the intrinsic motivation of students, enable the planning and implementation of initiatives within the educational system.

Nevertheless, while many initiatives that support ESD are provided in the educational system, and environmentalizing the university curriculum is a priority aim of all courses, especially for educators [5,32–34], the Spanish context is lacking in this respect. In Spain, fewer courses offer ESD-specific material. When such material is available, it is always optional [43], and few teachers apply ESD or sustainability approaches transversally throughout their subjects [21].

Further, although environmental concern forms part of our current social identity, the necessary knowledge, attitudes, and skills are not always present in order to guarantee its protection [44]. This is confirmed by students themselves, who have indicated that they give limited consideration to environmental protection, both at a personal level and as education professionals [45].

In the context of research, there is no specific subject that captures ESD in the degree courses of Early Childhood Education and Primary Education, and not all teachers environmentalize their curricula. Thus, we need to train students in ESD by introducing it to the seminars provided during internships in schools as a mandatory subject.

It was decided to use the lecturing approach for the acquisition of particular competencies, such as Systems thinking, Anticipatory thinking, Justice, responsibility and ethics, Empathy and change of perspective, Strategic action, and Assessment evaluation [23]. A service orientation model was used by inviting a professional experienced in ESD implementation in schools—specifically, a coordinator of the Ecoschool program of the Center for Early Childhood and Primary Education with multiple educational awards, including the Green Flag. Various environmental strategies and problems were discussed through the presentation, and ideas were exchanged surrounding the four most relevant projects that immerse ESD in schools.

Given a context of great cultural diversity and a coastal zone location, the issues that were addressed include environmental health [46,47], fair trade [48], social entrepreneurship [49], the economy of common good and human capital [50,51], water [52], biodiversity [53], air pollution [47], the empowerment of vulnerable groups (e.g., women and indigenous peoples) [12,54,55], responsible consumption (e.g., water, waste, and energy) [56,57], the sea coast [58], climate change [46,53], transport [13,59], poverty, migration, and human settlements [2], as well as education and awareness.

The exhibition approach, as an essential idea for ESD, can serve as an instrument that integrates holistic learning, in which various themes and aspects that facilitate the integral education of people converge, acting as the backbone of not only curricular contents but also personal and social contexts.

In summary, the present research aims to discover the opinions of future teachers about their experiences of explanatory seminars. Further, through practical application, this study examines these teachers' opinions about education for sustainability based on the knowledge and practice of different actions carried out in their context to facilitate the improvement of skills related to sustainability and the values of students. This study strives to promote the future development of teachers in the classroom and strengthen their skills development while also seeking to reveal the current state of knowledge and beliefs about sustainability development in classrooms and the values they promote in future teachers.

To this end, a qualitative research design was implemented in which data were analyzed through a thematic analysis using a research focus that enabled objectivity when analyzing the research questions [60].

2. Results

2.1. Participants

Non-probabilistic sampling was used to select 52 future teachers from Andalusia (Spain): 30 students were enrolled in an Early Learning degree course, and 22 students were enrolled in a Primary Education course. The students were in their third year of Primary Education or Early Learning degree courses and were completing their practicum placement at the time of this research.

The average age of participants was 20 years (SD = 3.837). In this sample, 7.5% were male (n = 4), and 92.5% were female (n = 48).

The sample was selected using causal and accidental sampling from a convenience sample of students who were working toward education degrees at the University of Granada. Only potential future teachers (i.e., those in training to become teaching professionals) were invited to participate. Prior to commencing the research, permission was solicited from the relevant educational authorities. Participation was voluntary, and the future teachers were assured that their responses would be kept confidential.

Further, given the context of the present study, it is worth noting that the faculty under study has a culturally diverse student body, with diverse religions: Christian (56.6%), Muslim (30.2%), Jewish (1.9%), and areligious (9.4%).

2.2. Instrument

In the present research, semi-structured interviews were conducted [61]. The initial ad hoc interview was prepared, which was based on and adapted from the interview being conducted [62]. This interview was complemented with questions related to the categorization of values [63]. After the instrument was administered to the future teachers [62,64], content validity was analyzed. This analysis was carried out with the participation of 15 experts, whose responses served to analyze the content validity index [65] for to establish a consistency check based on saturation and consensus of the experts panel responses as credibility control, thus to confirm whether the interview had measured what it set out to measure. The panel was asked to classify the importance of each evaluation item related to future teachers' opinions about the importance of sustainability and the development of their intercultural skills (values). A four-point Likert scale was used for the classification (1 = irrelevant, 2 = barely relevant, 3 = somewhat relevant, and 4 = highly relevant). The validity of the questions was then established by determining the percentage of experts who rated each interview question over the fair value of the three. All questions with a value below 3 were eliminated. Next, the total for the overall interview was obtained by evaluating the mean value of each question. A value of 93% agreement was obtained [65], the initial ad hoc interview showed excellent content validity.

After the interview was conducted with the future teachers, the content validity was re-evaluated. In this case, the semi-structured interviews conducted with future Early Learning or Primary Education teachers in the 2018–2019 academic year obtained a total content validity of 95%. This further provides strong evidence of content validity.

2.3. Process

2.3.1. Data Collection

Once permission was obtained from the relevant educational authorities, semi-structured interviews were conducted with future Early Learning and Primary Education teachers during the 2018–2019 academic year. Interviews took place in the classrooms of participating students and lasted 20–30 min. The students were recorded, and their answers were directly transcribed, with each participant being assigned a pseudonym. Participants were provided an initial explanation of the study and given the opportunity to clarify any uncertainties about sustainability and related values.

Throughout the entire interview process, the ethical recommendations established in the Declaration of Helsinki were followed, and the protocol was approved by the Ethical Committee of the University of Granada.

2.3.2. Data Analysis

Interviews were analyzed using thematic analysis [66,67]. Data were included using an inductive process, and responses were evaluated according to the data obtained. This provided new perspectives in order to better understand the situation. The specific process is described below.

Manual transcription of the interviews was completed in the first phase.

In the second phase, initial codes were generated and applied to the data. These codes were drawn from an analysis of the teachers' responses to the 14 questions in the semi-structured interviews. The first 5 questions obtained demographic data. The code describing ESD knowledge was obtained from an analysis of questions 6 and 7. ESD learning improvement was coded from an analysis of question 8 and part of question 9. Codes for the development of intercultural ESD values emerged from perusal of questions 9–13. Finally, an analysis of question 14 resulted in the code that describes the lifestyles of future teachers with regard to ESD.

In the third phase, responses attributed to each code were grouped according to similar content.

In the fourth phase, sub-codes were identified, and, in the final phase, the established sub-codes were re-defined (see Table 1).

Table 1. Categories extracted from the opinions of the future teachers evaluated. ESD, education for sustainable development.

Categories	Questions
Knowledge of ESD	Indicate what you knew about the seminar (environmental themes and the teaching of them in schools or educational centers). If you remember, write down where you learned this information (primary school, secondary school, university while studying for a degree, training courses, information searches, self-directed information searches).
	Explain what you know about the topic of the seminar (environmental themes and the teaching of them in schools or educational centers).
Learning improvement	Do you intend to work on these themes at the same school where you completed your practicum, assuming that the school allows this? How about in the school where you studied as a student? How would you work? What, how, and with whom?
Intercultural values	As future teachers, do you think that we can contribute solutions to intercultural challenges in the classroom through improvements in ESD? Explain how.
	What actions would you develop in your classroom to target sustainability in order to improve tolerance and empathy?
	Do you think that diversity exists between members of the academic student body as a result of different cultures? How would you improve solidarity between students via ESD?
	What actions would you deliver in your classroom to target sustainability in order to develop self-regulation and self-esteem?
	What actions would you deliver in your classroom to target sustainability in order to improve emotions?
Lifestyle	Do you think that attending the seminar has changed your opinion in any way? How do you propose to change your lifestyle?

The entire process was carried out independently by two researchers and an internal expert using the latest version of the qualitative software NVivo.

Reliability analysis of the obtained data was conducted by considering the agreement of the categories and codes produced by the two researchers. The outcome ranged from ≥72 to ≥96. Finally, an external researcher who was not familiar with the research analyzed 55% of the interviews. This researcher's data analysis and the categories produced were compared with the rest. This process produced a concordance correlation of ≥86.

Interviews were carried out in Spanish and later translated into English.

3. Results

3.1. Thematic Analysis of the Responses Given by Future Teachers

After the data were analyzed, the classification of the opinions revealed four main themes for the future teachers' opinions about ESD: (1) knowledge of ESD (KE), (2) ESD learning improvement (EL), (3) the development of intercultural values related to ESD (IV), and (4) lifestyles (LE).

These themes were divided into sub-themes. The categorization system used in the thematic analysis is shown in Table 2.

Table 2. Categorization system and coding.

Categories	Coding
Knowledge of ESD	Themes and contents Purpose, objectives, and skills Resources
Learning improvement	Awareness Environmental educational methodology Intentionality of implementation
Intercultural values	Tolerance and empathy
	Cohabitation and respect
	Self-regulation and self-esteem
	Emotional intelligence
Lifestyle	Sensitization

3.1.1. Knowledge of ESD

Most of the participants said that environmental issues were discussed at some point during their school career. Some participants claimed that this education was brief and theoretical. Through talks, the participants were taught concepts such as the environment, climate change, and the importance of preventing excessive energy consumption. However, these discussions did not address the practice or impact of not caring for the planet.

> *"In school, they taught us a rough idea of what the environment is, but they rarely taught us the repercussions of not taking care of the planet".*
>
> (KE 1)

> *"They also give talks about the environment and climate change".*
>
> (KE 1,4)

Other students, on the other hand, affirmed that they received relevant information during school through the various school recycling practices. One of the most frequently listed practices listed was the use of different recycling containers for different materials, such as paper, plastic, batteries, oil, and plastic caps.

> *"I learned about this topic at school when I was very little, when there was a box in the classroom for recycled paper, and on the playground, there were various different containers. They also gave talks about the environment and climate change".*
>
> (KE 1,4)

> *"We have often dealt with the topic of recycling in my school; we had a recycling area where we took batteries, used cooking oil, and also collected bottle tops for a good cause".*
>
> (KE 1)

Other information was learned through participation or collaboration with different organizations that work on environmental management projects, in which the participants observed the possible ways to re-use various materials and the life that they can have.

"They made a basketball net with plastic bottles, whose ring was formed by empty cans, and in the receptacle that they placed underneath the ring, they stored the bottle tops that they would later use for a good cause".

(KE 1,2)

Some of the respondents stated that, throughout their education, they were raised to take care of the planet and the lives that it supports, both on land and in the sea.

"It is very important that we take better care of our planet and of animals; we mustn't throw plastics into the sea, and we must have knowledge about it so that we learn. I also knew about the Sustainable Commandments, as I had some knowledge about them since I was little, and it is vital to have a healthy and recyclable world".

(KE 1,4)

In addition to contributing to the maintenance of a sustainable world, the benefits of recycling were found to vary widely, such as financing healthcare for diseases

"I said that I felt identified because, a short time ago in Mallorca, I collaborated with a small organization that also collected bottle tops to help a little, sick girl. The whole project encapsulated recycling themes, such as sports and being a helpful citizen; for this reason, it was considered a total success".

(KE 1,2)

The interviews revealed information that had never been discussed by the interviewees before the seminar. These matters include the amount of waste that each person generates throughout their lives and awareness of the impact of people's actions on the environment, as well as the great duty that we all have in this regard.

"While there have been various data and details about which I have not been able to stop thinking, such as, for example, the quantity of waste that each one of us generates throughout our life, this has impacted me and made me see, even more, the importance of every one of our acts on the environment and the huge duty we have in this regard".

(KE 1,2)

Other interviewees said that they did not know about the various innovative and sustainability management projects that exist in different institutions. This knowledge gave the participants the ability to learn about innovative practices and inspired ideas about implementing them in the classrooms, working with students, and collaborating for a cleaner and more sustainable planet. One of the projects that obtained the most attention was the International Eco-School Project—a project that strives to comply with environmental parameters. In another project, we worked on the historical relationship between Andalusians and the sea. This project is intended to visualize the environmental impacts of human beings. The projects address, in a transversal way, sustainability issues and multiple initiatives committed to the environment:

"I was not informed about the Museo del Mar [Sea Museum] that they created and about how they imparted this type of education to the students".

(EL 2,1)

The project "The World at Your Feet" was also unknown to our participants. This project addresses childhood obesity by working on environmental concepts, knowledge of the geographical environment, and the promotion of physical habits. Another area of knowledge that precipitated many questions among our interviewees is the issue of nutrition and the types of packaging used for certain products.

3.1.2. Improvement of Learning Related to ESD

All of the interviewees felt that there is a great awareness of ESD. This was true for every respondent, except for two interviewees who reported that they lacked sufficient information to implement ESD in their classroom. They stated that they would enact ESD throughout their teaching career using learning models that help students improve their awareness and learning. This process will help the students move toward the future in a holistic and bidirectional manner that promotes thought and reflection, as well as develop attitudes that reflect a commitment to caring for the environment. All of this would be achieved through fun activities that are intended to sensitize students and increase their awareness. Notably, as a result of the seminar and the knowledge imparted by various programs developed from ESD, the participants felt capable of designing their own programs involving not only the school but also joint actions with other centers.

> *"If they allow me, I would love to be able to address this topic at the school and be able to transmit my desire to resolve this problem and get all of my students to participate in it. I would work with all of the students and teachers because we shouldn't only raise awareness amongst children but also among many adults about the importance of these topics, and I would work on this through games, outings such as to the School Farm, etc.".*
>
> (EL 3,1,2)

Furthermore, the participants indicated that they would work as a team by involving students, education professionals, families, and all those who want to collaborate to improve sustainability

> *"It is a group model of shared experiences and interactions with others".*
>
> (EL 3,1,4)

> *"I would involve both parents and people outside the educational community who want to participate, and I would try to do so in a visible and accessible way for all, trying to meet the aim of being able to raise awareness of the greatest number of people possible to achieve small changes that will help us to achieve a more sustainable world".*
>
> (EL 3,1,2,4)

The participants believed that sustainability education must go beyond knowledge and practice. It must entail significant learning that leads to an internal transformation in all subjects—a modification in their ways of being. The students interviewed asserted that they could achieve these objectives through a permanent process of discovery, elaboration, and reinvention.

> *"This approach to teaching] doesn't involve education to inform (and even less so to shape behaviors) but seeks to shape the student and transform their reality. Education is understood as a permanent process within which the student goes about discovering, elaborating, and reinventing".*
>
> (EL 3,1)

The teacher cannot be only a transmitter, nor can a student be solely a receiver. It is important that there is a permanent bidirectionality between teachers and students. In this sense, many interviewees spoke of a model of "educators-learners" and "learners-educators". In this model, a teacher aims to stimulate and facilitate analysis and reflection, learn with and from the student, and recognize reality and rebuild it.

In this model, the educator must endeavor to support the student and ensure that he or she learns to learn, reasons for him or herself, and develops his or her ability to deduce, relate, and elaborate a synthesis of ideas. Teachers must provide instruments that enable students to think, interrelate facts, draw valid conclusions, and understand consequences

> *"[This model] is based on the active participation of the student in the educational process and training for participation in society. Further, it proposes that, purely through participating, investigating, seeking answers, and problematizing, true knowledge can really be achieved".*
>
> (EL 3,1,2,4)

The teacher must encourage students to problematize their environment, facilitate their search process, and listen to and assist the group in expressing themselves by providing the necessary information to advance the process. This would foster solidarity, cooperation, creativity, and the potential capacity of each student. It would also stimulate reflection, participation, dialogue, and discussion

> *"[W]e are role models for students, and we must take advantage of this opportunity to contribute in the greatest way possible to the development of attitudes committed to the environment".*
>
> (EL 3,1,2,4)

Other interviewees indicated that work toward increasing awareness in a more sustainable world must be done daily; it must be a naturalized part of learning, engendering simple habits in the students, including basic actions, such as recycling, saving energy, and cleaning our environment.

> *"I would work every day in a natural way, creating simple habits among students, such as turning off the lights, recycling rubbish, and proposing outings outside of school".*
>
> (EL 3,1,2,4)

3.1.3. Intercultural Values

The link between ESD and values is one of the most crucial factors of ESD learning. All of those interviewed developed activities for sharing, relating oneself to others, and multicultural and intercultural cohabitation. These activities involve cultural diversity and knowledge, such as introducing gastronomical and dressing habits, customs, dialogue, cohabitation, and respect for all traditions, religions, and cultures. All of the individuals interviewed wanted to develop tolerance and empathy by watching videos (among other activities) and respecting and caring for the environment and animals. All of those interviewed conveyed that activities for emotional intelligence were similar to those proposed for tolerance and empathy. The participants also sought to use emotions to raise awareness and sustain future actions in order to improve the health of both flora and fauna on the planet. This process is important because all of these elements have repercussions for the health of the students themselves. With regard to both self-regulation and self-esteem, those interviewed focused on reflection as the main tool of change for the improvement of the planet through solidarity linked to ESD. As activities of change and solidarity, they particularly emphasized recycling (solidarity bottle tops, etc.), the promotion of responsible consumption, and, particularly, the awareness and sensitization of both children and families (through the children).

When referring to ways to solve the problems of cultural diversity in the classrooms through ESD, most respondents noted that it is important to first acknowledge and recognize ourselves and the people around us in order to understand the different cultures which we live with. The participants proposed the use of sustainability to see how this issue is addressed in different cultures, such as the measures that they take to combat climate change. For this purpose, school is the most suitable place to prepare students to live in heterogeneous environments.

The proposals included presenting the social and environmental realities of each student through a virtual journey. Through these activities, students would meet and exchange information about their customs, traditions, and ways of living, thereby viewing the issue of sustainability through different lenses: people would share with each other through communication and dialogue. If we learn to communicate between cultures, then we will learn to live in a diverse world and, at the same time, contribute to the concern of all cultures for the improvement of the planet.

> *"All types of problems can be addressed in classrooms, even those related to interculturality. Taking the idea of virtual journeys, in order to better understand social and environmental realities, it would be great to go to the countries where our classmates originate".*

(IV 3)

> *"The solutions we can provide would be to develop activities in which all children express their opinions about the topic, without having any one opinion above another, thus favoring dialogue between them and their integration. Another example would be to make a mural and decorate it with recyclable elements. One could also put into this [mural] images and drawings that represent the different cultures and come from each one of the children, with the purpose of achieving an environment in which there are equality and respect for everyone".*

(IV 3,1,2,4)

On the topic of developing sustainability to improve tolerance and empathy, our respondents considered the majority who understand empathy to put themselves in the place of the other. Thus, it would be necessary for children to have opportunities to feel what other living beings on our planet are feeling in order to understand their possible suffering caused by our poor environmental practices.

> *"[A]n idea occurring to me is that a child has limited mobility during all of his or her playtimes, thus establishing a comparison of this situation with that of the animals they see around them that are trapped in plastic bags or other waste".*

(IV 3,1,2,4)

Teaching tolerance requires that students have first-hand knowledge of the situation in which they live, as well as the causes of their problems, the consequences of their actions, the benefits of practicing a sustainable philosophy, and the inconvenience of not doing so.

> *"In order to improve tolerance, we could inform students about the damage caused by not bearing in mind on a daily basis the sustainability of animals through explanatory videos about the number of animals that die because of not contributing or the situations faced by animals . . . trapped in plastic, with objects in their stomachs".*

(IV 3,1,2,4)

When the interviewees were asked about the existence of cultural diversity among the students, they all affirmed that in a context such as Melilla, this sort of diversity is normal since they inhabit different religious and/or cultural groups, which is reflected in all the classrooms of the centers of Melilla.

Some of our interviewees considered diversity to be more than simply cultural since diversity is inherent in any person; we are all different in a society in which we strive to be equal. The interviewees considered equality to be related to rights and opportunities, and they opined that a wonderful aspect of humanity is how different we are, as there are billions of people, each with different eyes, faces, thoughts, tastes, etc.

> *"We are different in a society within which we insist that we are all equal. From my point of view, equality refers to rights and opportunities, but if one thing is true, it is that it is marvelous that*

we are millions of people and all have different, eyes, faces, thoughts, and likes; there are no two people the same, and this is the real beauty of our nature. These differences are what makes us special; if we could learn from the principle that we are all different but that we must also accept each other, everything would be easier".

(IV 3,1,2,4)

For many interviewees, the idea that we must be equal was confusing since people strive to resemble others and do not strive to be unique. They considered that this diversity in the classroom is not an inconvenience but instead an opportunity to work on issues of interculturality and solidarity. The diversity that children find in classrooms helps them to interact with other children who possess certain differences and, therefore, from the first stages of childhood, become accustomed to living and interacting with all kinds of cultures. Therefore, students do not usually separate from each other or discriminate against each other. Young boys and girls do not distinguish between different cultures, and everything is seen as equal.

To improve solidarity through education for sustainability, respondents first proposed that we need to know each other: that is, all students should know not only who is by their side but also their cultures, religions, gastronomic preferences, languages, etc. Second, they must know the planet on which they live. The objective is to learn to recognize the needs of their peers and people around them, as well as the needs of the planet, that can work in their favor, according to the capabilities of each person

"In order to improve solidarity, we can deliver some types of activity in order to sustain some of the values that the students have picked up from this topic. For example, depending on the culture, we can run a special culture day, during which groups of cultures will get up to the whiteboard and talk about their customs or rites so that the others will learn about their day-to-day lives. In this way, everybody will be able to put themselves in the skin of others and will learn to internalize all of the cultures present in the classroom, achieving greater respect".

(IV 3,1,2,4)

We must raise awareness that if we help meet the needs of those around us, whether people or the planet, we can prevent many disasters

"For example, I would teach them that every day, more ice is disappearing in the Arctic and, as a consequence of this, it is leading to the disappearance of the Polar bear. I would explain to them that if we all took better care of the environment and the world in which we live, we would be able to avoid things such as this from happening".

(IV 3,1,2,4)

Among the activities that our interviewees would develop in their classrooms to develop self-regulation and self-esteem are the feedback and assessment of each of their students. Some proposals received by our participants focused on the development of teamwork and the incentives among students to achieve the proposed objectives for any task that contributes to improving our ecosystem.

"Through the teamwork and motivation of students, I would set them a goal to achieve. A group of six students, for example, could be charged with collecting all of the rubbish that has been left on the playground after break time. They would collect everything that they find (plastic bags, sandwich wrappers, cans, paper) . . . then, in class, we would classify their recycling efforts according to the help given by the rest of the class. This would provoke a positive emotional response in knowing that they are helping the environment, and they will feel satisfied with themselves for moving the consciences of others".

(IV 2,4)

All participants believed that it is important to empower students according to what they know how to do and what they are capable of doing with their work. They would propose activities in which children could see the importance of their actions, as well as the power that they have to change the current situation, thereby supporting the idea that they themselves can protect, destroy, or help the planet. Having the ability to externalize their contributions, as well as to be heard and considered, helps improve students' self-esteem by showing them that they are an important part of this process of change.

"Activities such as employing instructions in order to improve sustainability, for example, creating a series of instructions, developed by students, about ideas for improving the environment, such as collecting rainwater in order to water the plants. In order to improve self-esteem, it would be good if we could all listen to opinions; from this, we would then create an opinion corner for how to improve the environment with things that we could do in class".

(IV 3,1,2,4)

Other participants also thought that a good way to promote self-esteem through sustainability would be with activities that demonstrate the potential that students have to create necessary objects using recycled materials.

"An activity in which each child sees that they are capable of making and creating with recycled materials. In this case, we would make a shopping bag with an old t-shirt or one that is now not useful so that their parents can use it when they go shopping, for example".

(IV 3,1,2,4)

"This could be done by establishing comparisons between their emotions and those of other living things—that is to say, the way that animals feel when we contaminate their space and how they feel when they clean their habitat".

(IV 3,1,4)

The emotions that our respondents felt could be best utilized were those related to disasters (i.e., the destruction and damage that we cause to the ecosystem) to sensitize and raise awareness of the need to modify our attitudes. Some believed that recognizing our failures in many areas of sustainability and environmental care will lead to the awareness of the death of many species, both terrestrial and aquatic, thus contributing to the sensitization of students to the situations experienced by these living beings. This will awaken the critical spirits of students by helping them discover the damage that each of us does to the planet. This impact of human beings on the world would engender feelings of sadness in students, encouraging them to contribute to more positive feelings and become involved in developing improvements.

"Showing a video of how animals have to live, we could make students empathize, and this would get emotions bubbling under the surface".

(IV 3,1,4)

A minority of our participants would choose to work with feelings in a positive way. Some asserted that it is necessary to work with the emotions of love and joy toward nature since things that we love and give us joy receive the most care.

"We would create a waste paper bin with the shape of some type of animal at risk of extinction that we want to save; in this waste paper bin, we would recycle plastic packaging, which the children would pick up when they see it in the street or at home. We love animals, and it is for this reason that we will save them".

(IV 3,1,2,4)

Other positive actions aimed to reinforce what each person knows how to do well and how he or she contributes to the improvement of our planet in his or her daily life. These are attitudes that will improve our self-esteem and our enthusiasm to continue contributing to a sustainable world.

> *"I consider that I could work on it in the same way as improving self-esteem. When they see that each thing they do to the planet, however small it might be, helps, and over the long term could lead to improving our lifestyle in the world, this will not only increase self-esteem but also improve their emotions, and everything they experience will be positive, given that they will feel a part of it and invested in the cause".*
>
> (IV 3,1,2,4)

3.1.4. Lifestyles

Analysis of the conducted interviews generally shows that the seminar proved useful to all of those interviewed. This is seen through reports of improved lifestyles and increased awareness of what schools or academic centers do with regard to ESD. For instance, those who had prior knowledge of ESD were able to determine how to apply and develop not only their aptitude for ESD but also their attitudes toward it. The fact that the teaching degree course lacks a mandatory module with ESD as the core subject matter means that activities, such as this seminar, fill a gap by providing training and sensitization to the problems that develop in our environment.

Among the ideas that they considered modifying is the importance of recycling. Previously, they thought that recycling as individuals was not worthwhile because they could not contribute to any environmental modification. Rather, society in general or large companies should do this recycling work.

> *"The opinion I had about sustainability has changed, as I thought that it is not as important for one person to recycle; instead, a group should do it, but now I understand that if one person recycles, it is a small gesture that helps to save the planet".*
>
> (LE 1,4)

The seminar helped the participants reflect on how important it is to work on issues of sustainability from a very early age in the classroom. In the learning process, in addition to sustainability being covered as something sectoral, children learn to participate with the surrounding environment by exploring, empathizing with others (both peers and teachers), learning about the diverse cultures that co-exist with each other, and paying attention to diversity. A better learning program would aim to make students more able to autonomously solve problems and be part of this society.

> *"Besides, [students] have made me reflect on how education and we as future teachers can be responsible for large changes in the world. We have huge challenges ahead of us, such as that of educating little thinkers and making them aware of social and civic actions".*
>
> (LE 1,2,3,4)

The actions that the respondents proposed modifying include becoming more efficient when buying any product that comes with packaging, saving energy (such as water and light), recycling, avoiding the use of plastics, reusing paper, and caring for flora and fauna. Additionally, the participants referred to the use of public transport to reduce carbon dioxide levels in the ecosystem.

Others talked about being more sustainable by modifying their eating habits by consuming less meat (with more vegetables) and minimizing their production of waste. Active participation in environmental projects entails other modifications that our interviewees proposed to make their lives more sustainable.

> *"I have changed my opinion with respect to participating more in environmental projects. I want to contribute my two cents. For this, I will take note of more sustainability activities".*
>
> (LE 1,2,3,4)

Only one of our subjects believed that his proposed changes would be made only if he had the power to manage some type of local policy since he wanted to modify the types of containers commonly used in cities for different types of recycling.

"I would start by changing the types of bins, as in my neighborhood, for example, we do not have the typical colored bins, which differentiate one from the other and enable you to carry out recycling correctly".

(LE 1,2,3,4)

4. Discussion

While it is true that environmental concern is common in our society, we do not always act coherently because we lack knowledge, the proper attitude, and, ultimately, competencies that favor environmental protection [44]. Given this situation, the most innovative ideas obtained in the present work are focused on the seminar. This was highly beneficial for the students not only for their training but also for promoting positive attitudes about their lifestyles. Participants recognized that they must be able to successfully impart sustainability ideas to their future students in school classrooms, which means not only explaining the competencies that come from textbooks but also the notion that changing the world starts with changing oneself. Further, the educational field provides a platform through which we can support lifestyle changes through training, as is supported in the literature [31].

The training received by students in school is based on the education of their future teachers. Indeed, learning establishes competencies as long-term citizens; therefore, the training of future teachers in higher education is crucial. Other research has confirmed this idea, that active teachers assign great importance to the inclusion of ESD at an early age so that children's attitudes and behaviors toward long-term environmental change can be successfully generated [68] through training in ESD for future teachers in university. The link between the training of future teachers and universities should provide a benchmark not only when transmitting knowledge but also when planning an approach to learning about and promoting sensitization to actions that improve sustainability [5,21,30,32–35] [37] (pp. 121–143).

Any previous ESD training received by the students came from outside the university, with the most notable cases being those who were trained at school. Thus, there is one group of students that have attended school-based educational interventions with a theoretical approach and another group that has had the opportunity to use a practical approach, as established in the results obtained in the knowledge category of ESD. However, in both groups, training addressed only the most common environmental problems, such as waste [68]. Within these groups are students who have practically collaborated in environmental management with organizations. The interviewees attributed positive value to learning about innovative management and educational SD projects and its adaptations to a local school context.

Given the diversity of the students' previous knowledge, the training that they received through the provided readings enriched their environmental knowledge and especially enriched their education and the strategies they can apply at school. The aspect that was most interesting to students was the practical application approach of the subjects under consideration. Hence, the approach to training future teachers should be based on experiences in school contexts, with a practical educational application, and each subject's importance [62].

Students are not detached from environmental challenges. Training on this topic is influenced by the information that students learn at pre-university academic centers. For example, students have knowledge that specifically relates to waste (especially plastics, batteries, or cooking oil under the three 'R's' of reduce, recycle, and reuse), contamination, energy, responsible consumption, and climate change.

Nevertheless, knowledge has either been created or deepened on relevant topics, such as the Eco-schools program [42], the coastline (the development of a Sea Museum within a school, in addition to knowledge of the local marine diversity in danger of extinction), ecological footprint,

and health (diet, physical activity, and mobility related to environmental care) [46,47,69]. In another sense, the repercussions of human activity that damages both human beings and their environment are highlighted. Also outlined was each participant's social responsibility as an individual and the possibility for innovative educational methods within which diverse themes are incorporated that apply ESD. This process is used as a link [38–40] through which the entire educational community and school become collaboratively involved with other academic centers.

In this case, the participants have been given an approach to understanding the impact that people's lifestyles can have and formulating solutions to these problems through respectful practices in daily life, especially the practical application of those solutions in the classroom.

Another highlight of this study is that the applicability of ESD learning to the teaching practice of schoolchildren has been improved. However, although ESD intentionality has been realized, obstacles that occur in reality may prevail; some students may apply ESD skills while others may not because of limitations such as time or the prioritization of other issues [68].

In order to eliminate these limitations, practical sessions and, more specifically, training through practical seminars strengthen and complement the weaknesses in typical training received by students. This enables them to access not only the knowledge of their university teachers but also all of the resources, projects, and activities provided by schools. Further, this training leads to greater involvement of university teachers acting as tutors through channels of communication and the implementation of collaborative working strategies between universities (School-University) [70]. This situation provides an opportunity to create an innovative methodological setting [71]. Thus, a collaboration between educational professionals from centers that provide a model for sustainable education, such as the Eco-school program, is a useful resource for transferring experiences.

In another sense, educators perceive environmental considerations and their development through education for sustainability as rarely dealt with in the university setting [45]. Thus, this need demands a specific type of training in order to professionally develop individuals: their personal perspective needs to be addressed first by acquiring lifestyles that are appropriate for current environmental needs [31], followed by the development of the professional aspect by acquiring the competencies that they need as sculptors of society [30].

In relation to lifestyle, students managed to become aware and develop a better understanding of how human behavior impacts their environment, and they were motivated to train themselves in sustainable education and develop educational strategies at school. Changes were produced by knowledge of the causes and the effects of environmental challenges, such as waste and waste management (plastics and paper), water, energy, sustainable mobility, biodiversity, and the coastline [13,52,53,56–59]. Of particular influence is the knowledge of responsible consumption and management of environmental resources (such as promoting acts that favor the provision and maintenance of public separation containers) [56,57]. Such changes have also led to a more conscientious student body with an increased awareness in relation to educational training and its influence at an early age.

Consequently, as was indicated by the students themselves, using innovative environmental methods increased their awareness of environmental care and the importance of addressing it in schools and training. To achieve this, the students would use methodological strategies that favor awareness and learning, with a holistic and cooperative focus [44]. These strategies promote thinking, analysis, reflection, and creativity to generate behaviors committed to an environmental setting. In other words, they create a space of shared experiences and interaction with others in which everybody expresses themselves and is heard, and the role of the teacher is that of a mediator. The aim of this process is to ensure that students develop autonomous thinking and learn competencies that empower them to transform their environment. This is achieved through the discovery and construction of knowledge about their own reality, as well as teachers who respect and learn from students.

Among other educational strategies, these future teachers would run outings to environmental educational centers, excursions outside of school, games, or competitions.

Finally, from an ESD stand-point, cohabitation involves relationships between all living things, not only human beings, that co-exist on this planet [14–17]. To this end, competencies that favor appropriate interpersonal and intrapersonal relationships must be developed. This process aims to maintain a high quality of life for all by supplementing the current sustainability model that focuses on human development [4]. The principle that sustains the aforementioned diversity of all life on the planet can be extrapolated to the development of the cultural diversity that co-exists within a single context. This is important because such cultural diversity is increasingly common in our society. That is, competencies can be developed to support effective cohabitation and a culture of peace through acts related to ESD in schools [37] (pp. 154–167) [38,39].

However, part of this success is debatable since the professional who delivered the conference comes from a private center with an ESD culture, and such centers usually perform better than the public in the three pillars of ESD, as recorded in other studies [72].

5. Conclusions

During their initial training, teachers develop values that facilitate attitudes and behaviors that are fit for cultural diversity. This occurs through ESD, which deals with lessons related to tolerance, empathy, solidarity, self-regulation, self-esteem, and emotional intelligence. The future teachers in this study are conscious of diversity in the classroom, and, for this reason, they indicated that they would work on diversity under a model that focuses on sociocultural aspects, such as customs, traditions, thinking, theological ideology, language, and cooking traditions. As strategies, they would make use of the knowledge of the characteristics of other cultures, with a focus on enrichment through differences (social and environmental realities), with responses to needs presented by other classmates, such as environmental improvements.

To improve tolerance, empathy, and solidarity, these future teachers expressed that they would also explain the causes of the problem and the consequences of students' behavior, in addition to the advantages and inconveniences of participating in the improvement of sustainability. They would create collaborative support spaces, such as spaces to teach students to ride bicycles, to assume responsibilities in work groups (caring for plants or taking charge of recycling), or to increase their awareness empathetically.

To ensure that students develop adequate self-esteem, self-regulation, and good emotional management, these future teachers would deliver activities that teach students how to reflect on environmental improvement strategies as implementing environmental care task lists, sharing spaces for contributing environmental solutions (oral expression and listening), and identifying and managing emotions when faced with environmental injustice resulting from human activity.

It seems that there is a demand to teach SD and ESD at the university level, since other studies have proven that students recognize that they know little about this subject [73,74], active teachers have a general idea about the concept of SD [68], and sustainable schools have an environmental concept of sustainable management and ESD [75]. For this reason, ESD must be introduced more widely in universities to facilitate using the model of serving centers under which ESD operates, for that the curriculum should be environmentalized at various times and for different subjects during their studies. The use of multiple innovative pedagogical approaches [23] can develop meaningful learning of "to know" through the knowledge of cultures and environmental challenges, their ability "to know how to do" through shared responsibilities, and their ability "to know how to be" by creating situations of environmental and social injustice.

With respect to the study design, although the sample used is adequate for a qualitative study, it does not enable us to generalize the results. For this, a control study with a long-term follow-up is necessary. Further, it would be useful to conduct an intervention and evaluation, in addition to adding complementary seminars, in both practical sessions and degree subjects. These seminars should concentrate on educating society to accept ESD, both today and in the future, and tackling the search for improved sustainability. It would also be convenient to complement the present research with

a quantitative study of an intervention with a pre- and post-test; this would allow us to generalize the results.

References

1. Kaya, H.D. Ambientalización curricular y sostenibilidad. Nuevos retos de profesionalización docente. *J. Appl. Econ. Sci.* **2018**, *13*, 293–302.
2. Mbakem, E.A. Population displacement and sustainable development: The significance of environmental sustainability in refugee–host relationships in the Congo−Brazzaville crises. *J. Asian Afr. Stud.* **2017**, *52*, 363–377. [CrossRef]
3. Nevado-Peña, D.; López-Ruiz, V.R.; Alfaro-Navarro, J.L. The Effects of Environmental and Social Dimensions of Sustainability in Response to the Economic Crisis of European Cities. *Sustainability* **2015**, *7*, 8255–8269. [CrossRef]
4. Calixto, P.S.; Prados, M. La evolución del concepto de sostenibilidad y su incidencia en la educación ambiental. *Teoría de la Educación* **2008**, *20*, 179–204.
5. Pérez-Rodríguez, U.; Varela-Losada, M.; Lorenzo-Rial, M.A.; Vega-Marcote, P. Attitudinal Trends of Teachers-in-Training on Transformative Environmental Education//Tendencias actitudinales del profesorado en formación hacia una Educación Ambiental transformadora. *Revista de Psicodidáctica* **2017**, *22*, 60–68. [CrossRef]
6. Sureda-Negre, J.; Catalán-Fernández, A.; Álvarez-García, O.; Comas-Forgasa, R. The concept of "sustainable development" in the curriculum regulation of Secondary Education in Spain. *Estudios Pedagógicos* **2013**, *39*, 253–267. [CrossRef]
7. Helu, K. Teacher capacities for working towards peace and sustainable development. Int. *J. Sustain. High. Educ.* **2010**, *11*, 353–364. [CrossRef]
8. Velasco, L.C.; Estrada, L.I.; Pabón, M.; Tójar, J.C. Evaluar y promover las competencias para el emprendimiento social en las asignaturas universitarias. *Revesco* **2019**, *131*, 199–223.
9. Alsina, A.; Mulà, I. Advancing towards a Transformational Professional Competence Model through Reflective Learning and Sustainability: The Case of Mathematics Teacher Education. *Sustainability* **2019**, *11*, 4039. [CrossRef]
10. Aramburuzabala, P.; Cerrillo, R.; Tello, I. Aprendizaje- Servicio: Una propuesta metodológica para la introducción de la sostenibilidad curricular en la Universidad. *Profesorado. Revista de Currículum y Formación de Profesorado* **2015**, *19*, 78–95.
11. Maruna, M. Toward the Integration of SDGs in Higher Planning Education: Insights from Integrated Urbanism Study Program in Belgrade. *Sustainability* **2019**, *11*, 4519. [CrossRef]
12. De Marco Larrauri, O.; Pérez Neira, D.; Soler Montiel, M. Indicators for the analysis of peasant women's equity and empowerment situations in a sustainability framework: A case study of cacao production in Ecuador. *Sustainability* **2016**, *8*, 1231. [CrossRef]
13. De Campos, R.S.; Simon, A.T.; De Campos Martins, F. Assessing the impacts of road freight transport on sustainability: A case study in the sugar-energy sector. *J. Clean. Prod.* **2019**, *220*, 995–1004. [CrossRef]
14. Smith, W. The role of environment clubs in promoting ecocentrism in secondary schools: Student identity and relationship to the earth. *J. Environ. Educ.* **2019**, *50*, 52–71. [CrossRef]
15. Dunlap, R. The new environmental paradigm scale: From marginality to worldwide use. *J. Environ. Educ.* **2008**, *40*, 3–18. [CrossRef]
16. Dunlap, R.; Van Liere, K.; Mertig, A.; Jones, R. New trends in measuring environmental attitudes measuring endorsement of the new ecological paradigm: A revised NEP scale. *J. Soc. Issues* **2000**, *56*, 425–442. [CrossRef]

17. Pires, P.; Junior, R.; De Castro, R.; Lemos, D.C.L.; Filgueiras, A. Ecocentrism and behavior: A bibliographic review on environmental values. *Psicol. Estudo* **2014**, *19*, 611–620. [CrossRef]

18. Objetivos del desarrollo Sostenible. Informe progreso. La implementación de la Agenda 2030 en España. 2016. Available online: https://www.agenda2030.gob.es/sites/default/files/recurso/InformeProgreso%20AGENDA%202030%20ESPA%C3%91A.pdf (accessed on 1 December 2019).

19. Hajer, M.; Nilsson, M.; Raworth, K.; Bakker, P.; Berkhout, F.; de Boer, Y.; Rockstrom, J.; Ludwig, K.; Kok, M. Beyond Cockpit-ism: Four Insights to Enhance the Transformative Potential of the Sustainable Development Goals. *Sustainability* **2015**, *7*, 1651–1660. [CrossRef]

20. Meschede, C. Information dissemination related to the Sustainable Development Goals on German local governmental websites. *Aslib J. Inf. Manag.* **2019**, *71*, 440–455. [CrossRef]

21. Zamora-Polo, F.; Sánchez-Martín, J. Teaching for a Better World. Sustainability and Sustainable Development Goals in the Construction of a Change-Maker University. *Sustainability* **2019**, *11*, 4224. [CrossRef]

22. United Nations Educational, Scientific and Cultural Organization [UNESCO]. *Education Strategy. UNESCO 2014–2021*; UNESCO: Paris, France, 2016.

23. Lozano, R.; Merrill, M.Y.; Sammalisto, K.; Ceulemans, K.; Lozano, F.J. Connecting Competences and Pedagogical Approaches for Sustainable Development in Higher Education: A Literature Review and Framework Proposal. *Sustainability* **2017**, *9*, 1889. [CrossRef]

24. Quiliconi, C.; Peixoto, J. Río+ 20: ¿Hacia un nuevo modelo de desarrollo latinoamericano? *Edición Buenos Aires LATN abril Documento de Trabajo* **2013**, *149*, 13.

25. Iniciativa Carta de la Tierra. La Carta de la Tierra. 2008. Available online: https://cartadelatierra.org/descubra/la-carta-de-la-tierra/ (accessed on 1 December 2019).

26. United Nations Sustainable Development. United Nations Conference on Environment & Development, Rio de Janerio, Brazil, 3 to 14 June 1992, AGENDA 21. 1992. Available online: https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf (accessed on 1 December 2019).

27. Hu, M.; Shealy, T.; Grohs, J.; Panneton, R. Empirical evidence that concept mapping reduces neurocognitive effort during concept generation for sustainability. *J. Clean. Prod.* **2019**, *238*, 117815. [CrossRef]

28. Lee, K.; Jung, H. Dynamic Semantic Network Analysis for Identifying the Concept and Scope of Social Sustainability. *J. Clean. Prod.* **2019**, *233*, 1510–1524. [CrossRef]

29. Owens, T.L. Higher education in the sustainable development goals framework. *Eur. J. Educ.* **2017**, *52*, 414–420. [CrossRef]

30. Ull, M.Á.; Piñero, A.; Agut, M.P.M.; Minguet, P.A. Preconcepciones y actitudes del profesorado de Magisterio ante la incorporación en su docencia de competencias para la sostenibilidad. *Ensen. Cienc. Rev. Investig. Exp. Didact.* **2014**, *32*, 91–112. [CrossRef]Didact.

31. Quelhas, O.; Lima, G.; Ludolf, N.; Meiriño, M.; Abreu, C.; Anholon, R.; Vieira Neto, J.; Rodrigues, L. Engineering education and the development of competencies for sustainability. *Int. J. Sustain. High. Educ.* **2019**, *20*, 614–629. [CrossRef]

32. Aznar, P.; Calero, M.; Martínez-Agut, M.; Mayoral, O.; Ull, À.; Vázquez-Verdera, V.; Vilches, A. Training Secondary Education teachers through the Prism of Sustainability: The case of the Universitat de València. *Sustainability* **2018**, *10*, 4170. [CrossRef]

33. Colás-Bravo, P.; Magnoler, P.; Conde-Jiménez, J. Identification of levels of sustainable consciousness of teachers in training through an e-portfolio. *Sustainability* **2018**, *10*, 3700. [CrossRef]

34. Alvarez-García, O.; Sureda-Negre, J.; Comas-Forgas, R. Assessing environmental competencies of primary education pre-service teachers in Spain: A comparative study between two universities. *Int. J. Sustain. High. Educ.* **2018**, *19*, 15–31. [CrossRef]

35. Dumitru, D.E. Reorienting higher education pedagogical and professional development curricula toward sustainability–a Romanian perspective. *Int. J. Sustain. High. Educ.* **2017**, *18*, 894–907. [CrossRef]

36. Klimková, A.; Orosová, R. The education for sustainable development and teacher competencies for anthropocene. *J. Educ. Technol.* **2016**, *40*, 793–801.

37. Albero, C.M. La larga marcha de la acción ambiental en los centros educativos. Un estudio de caso en Aragón. *Profr. Rev. Curric. Form. Profr.* **2012**, *16*, 121–143.

38. Rohweder, L.; Virtanen, A. Developing the model on the learning for sustainable development in higher education. *J. Teach. Educ. Sustain.* **2009**, *11*, 31–42. [CrossRef]

39. Reyes-Escutia, F. The Living Interculturality of Chiapas to Recreate the Modern University Towards Sustainability Horizons. In *Sustainable Development Research and Practice in Mexico and Selected Latin American Countries*; Leal Filho, W., Noyola-Cherpitel, R., Medellín-Milán, P., Ruiz Vargas, V., Eds.; Springer: Cham, Switzerland, 2018; pp. 39–51.

40. Organización de Naciones Unidas. Resolución A/RES/70/1 Transformar nuestro mundo: La Agenda 2030 para el Desarrollo Sostenible. 2015. Available online: http://www.un.org/es/comun/docs/?symbol~=~A/RES/70/1 (accessed on 1 December 2019).

41. Legislación Consolidada. Ley Orgánica 8/2013, de 9 de diciembre, para la Mejora de la Calidad Educativa. *Boletín Oficial del Estado* **2013**, *295*, 97858–97921.

42. Boeve-de Pauw, J.; Van Petegem, P. Eco-school evaluation beyond labels: The impact of environmental policy, didactics and nature at school on student outcomes. *Environ. Educ. Res.* **2018**, *24*, 1250–1267. [CrossRef]

43. Sureda-Negre, J.; Oliver-Trobat, M.; Catalan-Fernández, A.; Comas-Forgas, R. Environmental education for sustainability in the curriculum of primary teacher training in Spain. *Int. Res. Geogr. Environ. Educ.* **2014**, *23*, 281–293. [CrossRef]

44. Vega, P.; Álvarez, P. Formación de profesorado en España orientada a la sostenibilidad: Implementación y análisis de una 'ecometodología'. *Eur. J. Teach. Educ.* **2012**, *35*, 495–510. [CrossRef]

45. González, M.P.; Flórez, R.M.; Díez, J.P. Evaluación de las necesidades de orientación y educación para la carrera en seis grados de Educación. Bases para el desarrollo del plan de acción tutorial. *Educación XX1* **2019**, *22*, 309–334.

46. Kafui, L.; Arku, G. Conceptualizations of climate-related health risks among health experts and the public in Ghana. *Soc. Sci. Med.* **2019**, *223*, 40–50.

47. Niu, Y.; Shen, B.; Cui, Y.; Chen, Y.; Wang, J.; Wang, L.; Xiang, A.P. Generation of gene-modified cynomolgus monkey via Cas9/RNA-mediated gene targeting in one-cell embryos. *Cell* **2014**, *156*, 836–843. [CrossRef]

48. Chalofsky, N.E. Social Entrepreneurship and Social Movement Learning: A Reflective Account of the History of the TPSS Food Cooperative. *Adv. Dev. Hum. Resour.* **2019**, *21*, 193–204. [CrossRef]

49. Valderrama Hernández, R.; Pabón Figueras, M.; Gómez Carrillo, V.D.R.; Fernández Jiménez, M.Á.; Arjona Romero, J.J.; Velasco Martínez, L.C.; Garcia Aguilera, F.J. Evaluar las Competencias Para el Emprendimiento Social en las aulas Universitarias. 2018. Available online: https://revistas.ucm.es/index.php/REVE/article/view/63561/4564456549409 (accessed on 17 September 2019).

50. Ashford, N.A.; Hall, R.P.; Ashford, R.H. The crisis in employment and consumer demand: Reconciliation with environmental sustainability. *Environ. Innov. Soc. Trans.* **2012**, *2*, 1–22. [CrossRef]

51. Sehrawat, M.; Singh, S.K. Human capital and income inequality in India: Is there a non-linear and asymmetric relationship? *Appl. Econ.* **2019**, *51*, 4325–4336. [CrossRef]

52. Bourotzoglou, E.; Emmanouloudis, D.; Georgopoulos, A. A Pedagogical Dimension to the Technocratic Problem of Water Management: Preschool Teacher Beliefs and Attitudes Towards Teaching Water Science and Sustainable Management of Water in the Context of Environmental Education. *J. Eng. Sci. Technol. Rev.* **2016**, *9*, 129–137. [CrossRef]

53. Yousefi, M.; Kafash, A.; Valizadegan, N.; Ilanloo, S.S.; Rajabizadeh, M.; Malekoutikhah, S.; Ashrafi, S. Climate Change is a Major Problem for Biodiversity Conservation: A Systematic Review of Recent Studies in Iran. *Contemp. Probl. Ecol.* **2019**, *12*, 394–403. [CrossRef]

54. Gonzalez, A. Making "a racket" but does anybody care? A study of environmental justice access and recognition through the political ecology of voice. *Geoforum* **2019**, *102*, 142–156. [CrossRef]

55. Jagger, P.; Pender, J.; Gebremedhin, B. Trading off environmental sustainability for empowerment and income: Woodlot devolution in northern Ethiopia. *World Dev.* **2005**, *33*, 1491–1510. [CrossRef]

56. García-Herrero, L.; De Menna, F.; Vittuari, M. Food waste at school. The environmental and cost impact of a canteen meal. *Waste Manag.* **2019**, *100*, 249–258. [CrossRef]

57. Seifi, S. Governance and Socially Responsible Energy Consumption. *Dev. Corp. Gov. Responsib.* **2013**, *5*, 95–110.

58. Kanstrup, N.; Balsby, T.J. Plastic litter from shotgun ammunition on Danish coastlines–Amounts and provenance. *Environ. Pollut.* **2018**, *237*, 601–610. [CrossRef]

59. Smith, P. Exploring public transport sustainability with neutrosophic logic. *Transp. Plan. Technol.* **2019**, *42*, 257–273. [CrossRef]

60. Jelena Stanišić, J.; Maksić, S. Environmental Education in Serbian Primary Schools: Challenges and Changes in Curriculum, Pedagogy, and Teacher Training. *J. Environ. Educ.* **2014**, *45*, 118–121. [CrossRef]

61. Conzelmann, K.; Keye, D. Which aspects of a semistructured interview, besides cognitive ability tests, contribute incrementally to predicting the training success of air traffic controller trainees? *Int. J. Sel. Assess.* **2014**, *22*, 240–252. [CrossRef]

62. Varela-Losada, M.; Arias-Correa, A.; Pérez-Rodríguez, U.; Vega-Marcote, P. How Can Teachers Be Encouraged to Commit to Sustainability? Evaluation of a Teacher-Training Experience in Spain. *Sustainability* **2019**, *11*, 4309. [CrossRef]

63. Agirdag, O.; Merry, M.S.; Van Houtte, M. Teachers' understanding of multicultural education and the correlates of multicultural content integration in Flanders. *Educ. Urban Soc.* **2016**, *48*, 556–582. [CrossRef]

64. Lissitz, R.W.; Samuelsen, K. A suggested change in terminology and emphasis regarding validity and education. *Educ. Res.* **2007**, *36*, 437–448. [CrossRef]

65. Polit, D.F.; Beck, C.T.; Owen, S.V. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res. Nurs. Health* **2007**, *30*, 459–467. [CrossRef]

66. Armborst, A. Thematic proximity in content analysis. *Sage Open* **2017**, *7*, 1–11. [CrossRef]

67. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Rese. Psychol.* **2006**, *3*, 77–101. [CrossRef]

68. Pehoiu, G. Percept of Teachers Regarding Integration of Education for Environment and Sustainable Development in Primary Schools. *Rev. Rom. Pentru Educ. Multidimens.* **2019**, *11*, 256–269. [CrossRef]

69. Teixeira, J.F.; Silva, C.; Neves, J.V. School mobility management case study: German School of Oporto (Deutsche Schule zu Porto). *Case Stud. Transp. Policy* **2019**, *7*, 13–21.

70. Franck, O.; Osbeck, C. Challenging the concept of ethical literacy within Education for Sustainable Development (ESD): Storytelling as a method within Sustainability didactics. *Education* **2018**, *3*, 133–142. [CrossRef]

71. Albareda Tiana, S.; Alférez Villarreal, A. A collaborative programme in sustainability and social responsibility. *Int. J. Sustain. High. Educ.* **2016**, *17*, 719–736. [CrossRef]

72. Korkmaz, A.; Guler Yildiz, T. Assessing preschools using the Eco-Schools program in terms of educating for sustainable development in early childhood education. *Eur. Early Child. Educ. Res. J.* **2017**, *25*, 595–611. [CrossRef]

73. Gairín-Sallán, J.; Díaz-Vicario, A.; del Arco Bravo, I.; Flores Alarcia, Ó. Effect and impact of curricular practices of the early childhood education and primary education bachelor's degrees: Opinion of students, tutors and coordinators. *Educación XX1* **2019**, *22*, 17–43.

74. Asamblea General Naciones Unidas. Transformar Nuestro Mundo: La Agenda 2030 Para el Desarrollo Sostenible. 2015. Available online: http://www.cooperacionespanola.es/sites/default/files/agenda_2030_desarrollo_sostenible_cooperacion_espanola_12_ago_2015_es.pdf (accessed on 1 December 2019).

75. Zachariou, A.; Kadji-Beltran, C. Cypriot primary school principals' understanding of education for sustainable development key terms and their opinions about factors affecting its implementation. *Environ. Educ. Res.* **2009**, *15*, 315–342. [CrossRef]