


Article

Transformative Learning and Pedagogical Approaches in Education for Sustainable Development: Are Initial Teacher Education Programmes in England and Turkey Ready for Creating Agents of Change for Sustainability?

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Abstract: Education for Sustainable Development (ESD) is a feature of academic and policy debates within initial teacher education around the world. A theme within these debates is the extent to which ESD is more than just a body of knowledge, and if it suggests different pedagogical approaches which may be prevalent in most countries. Another feature of these debates is whether ESD can be seen as suggesting a transformative approach as opposed to a transmissive approach. As a qualitative study, using examples from research and evidence gathered in England and Turkey through document analysis, this article identifies both the opportunities and challenges for teacher education courses using ESD as a means for promoting a distinctive pedagogical approach and whether they can be seen as posing transformative learning.

Keywords: education for sustainable development; transformative learning; initial teacher education



Citation: Bourn, D.; Soysal, N. Transformative Learning and Pedagogical Approaches in Education for Sustainable Development: Are Initial Teacher Education Programmes in England and Turkey Ready for Creating Agents of Change for Sustainability? *Sustainability* **2021**, *13*, 8973. <https://doi.org/10.3390/su13168973>

Academic Editor: Eila Jeronen

Received: 15 June 2021

Accepted: 5 August 2021

Published: 11 August 2021

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1. Introduction

The changes in climate, the increasing rate of pollution, the number of people suffering from hunger, the rates of children staying away from education as they need to work, and the number of people losing their lives to immigrate to another country aiming to find peace are some reasons that indicate the need for a global environmental, economic, social and political change in the world. Education for Sustainable Development (ESD) is the pedagogical response to these challenges.

Education for Sustainable Development (ESD) is a major theme of educational programmes in many countries around the world in the twenty-first century. There are a number of reasons for this, the leadership provided by UNESCO, most notably through the Decade of ESD, the references in the United Nations (UN, New York, NY, USA), the Sustainable Development Goals and more recent campaigns and initiatives by thousands of young people around the world on climate change. Within a number of these initiatives, teacher education is a major priority. The focus on this area reflects the recognition that for ESD to have any impact, it needs to be embedded within classroom practice and the approaches of teachers.

Unlike other international educational initiatives such as those on global citizenship or human rights, ESD gained considerable support in all regions of the world. Within the discussions and calls for ESD to be embedded within the training of teachers, there is also the suggestion that this whole field is much more than encouraging new or more content on the subject, but a whole new pedagogical approach. This can be seen in calls within UNESCO to re-orient teacher education towards sustainability and the suggestions that formal education around the world must perform a major interventionist role in securing the survival of the planet.

ESD is a transdisciplinary approach which includes five pillars of sustainable development; environmental, social, cultural, economic, and governance. It has spatial and temporal scales, and a system of values and broad principles such as responsibility, precaution, participation, and solidarity [1]. It also “requires changes in education systems, including strengthening curricula, innovative pedagogies and teacher training, but above all a model for transforming education systems” [1] (p. 43).

Transformative education also requires social action and changes in the behaviours, perspectives, and values of students. It “enables students to understand themselves and their relationships to other humans and the natural world and therefore leads to a shift of paradigm” [2]. To be able to use transformative learning strategies, ESD can be seen as a methodology that includes lifelong learning, social collaborative learning, problem-based learning, active and experiential learning, and student empowerment. Its role can be recognised as transforming “learners’ values and perspectives so that they are able to embrace sustainability as a new paradigm or a lens through which to view the world and make a change” [3].

The debates therefore pose what form of ESD, and what is its purpose as a key element of teacher education. They also pose the fundamental question of, to what extent can teacher education pose or suggest a new and distinct pedagogical approach. This article aims to address these questions by reviewing the ways in which a number of teacher education courses in England and Turkey pose a transformative approach as opposed to a transmissive approach to ESD.

England and Turkey are the two countries reviewed for several reasons. They have two contrasting teacher education programmes, the former mainly decentralised but with nationally agreed quality assurance standards. England also has a number of institutions that have a strong tradition of engaging in ESD. The latter is more centralised but with a growing interest in ESD. What they both share however, is hostility from central government to the areas with a higher profile; although, there is recognition in England and Turkey of the need for teachers to be trained to respond to the challenges of the 21st century in terms of skills development. Most teacher education programmes around the world refer to environmental, economic and societal themes, but the extent to which they are interconnected, and above all, seen as posing an approach to teaching and learning the dominant pedagogical approach and train learners to be the agents of change is open to debate.

1.1. Overview of ESD in Initial Teacher Education

As the study for UNESCO by Bourn et al. [4], and other studies have noted, ESD was often seen as a specific project or initiative and not part of core provision [5–7]. The theme of the extent to which ESD is seen either as an optional extra, or being central to the initial training of teachers, is part of the discussions both within UNESCO and amongst academics. UNESCO led a consistent call for ESD to be embedded in the curriculum which means putting its values and principles at the core of education [8]. Thus, ESD should not be a separate subject, but part of an interdisciplinary approach.

The theme of mainstreaming ESD is the subject of numerous articles and studies [9–11]. Mainstreaming is described as “the inclusion of the content and practice of a particular idea (such as learning for sustainability) within an organisation, institution or system (such as pre-service teacher education) to such an extent that it becomes embedded within its policies and activities” [9] (p. 99).

But to numerous academics in the field, ESD is seen as more than mainstreaming but as posing a conceptual framework that is posing a more transformative approach to learning that questions dominant assumptions and is interdisciplinary with social and ethical competencies and critical pedagogy [1]. A transformative approach implies changes to behaviour. It “enables students to understand themselves and their relationships to other humans and the natural world and therefore leads to a shift of paradigm” [2].

For that reason, Wals [12] (p. 388) describes sustainability as “the creation of space for transformative social learning”.

Within initial teacher education, there are numerous studies that observe ESD. An overview of the trends in this area was produced by Bourn et al. [4] as a background paper for UNESCO. They found a range of ways ESD was reflected within ITE including content within specific courses, specialist modules and initiatives in partnership with civil society organisations. This evidence suggests that whilst there was a plethora of initiatives around ESD within the initial education of teachers, there were challenges in trying to make it central to their training. This and other evidence suggest that a major challenge was to promote an approach towards learning that posed more transformative approaches. Summer [13] for example, found from her study of some student teachers that ESD posed higher elements of learning than merely transmitting knowledge. She also found that there were a few examples amongst both tutors and students who were “beginning to see things differently” [13] (p. 219). Above all she found that the “seeds of change had been sown” [13] (p. 220) but that more evidence and further studies were needed.

As the evidence from the literature shows, ESD, whilst evident within many courses for teachers, tends to be seen as an additional part of the curriculum and not an approach calling for the rethinking of its aims and purposes. Moreover, ESD is also predominantly seen as adding more to the teacher education curriculum and not in terms of posing a different pedagogical approach. There are exceptions to this, as already noted [14,15].

The rest of this article will look at ESD within initial teacher education by looking at evidence from England and Turkey. It will address what the approaches taken to include ESD within teacher education courses, the extent to which they suggest a transformative approach to learning and challenge dominant orthodoxies of teaching and learning. The questions therefore addressed are:

- To what extent is and can ESD be a distinctive pedagogical approach that goes across subject courses in both countries?
- What does transformational as opposed to transmissive learning mean in the context of ITE in England and Turkey?

1.2. Contexts of England and Turkey Regarding ITE

1.2.1. Context of England

The training of teachers and the teaching profession in England has been subject to numerous policy changes since 2010, often with an overt political agenda. There was also an emphasis towards more school-based routes for teacher training which resulted in a perceived lesser important role for university-based teacher education.

Approaches towards providing a more pedagogically based ITE curriculum can be mirrored within the ways in which Education for Sustainable Development is perceived by policymakers. Prior to 2010, Education for Sustainable Development was recognised as a cross-curricula theme for schools; therefore, there was considerable interest and support for the area amongst teacher educators. This reflected a desire by many teacher educators to encourage and support approaches towards teacher education that recognised a broader social purpose to education [16].

A comprehensive study about teacher educators’ approach to Education for Sustainable Development and Global Citizenship (ESDGC) in their courses was conducted in 2011 by the UK Teacher Education Network for Education for Sustainable Development and Global Citizenship (TEESNet). Through a survey of 27 higher education providers, the aim was to define patterns in teacher education provision for Education for Sustainable Development and Global Citizenship across the UK. It was found that there are different ways of covering ESDGC across and within institutions, but it was not embedded into the programmes and relied on the enthusiasm of individuals [17].

From 2010 to the present day, Education for Sustainable Development, whilst evident in subjects such as geography and sciences, no longer has the profile and political support it once had. This means that support and engagement for ESD within teacher education in

England since 2010 had to rely on enthusiastic individuals and networks and bodies with specific expertise in the field. These included professional bodies such as the Geographical Association, Association for Science Education, and the UK Network of Teacher Educators on Sustainability (TEESNet). The only relevant political support is from the Department for International Development (DFID) through their funding of the Global Learning Programme from 2012 to 2017, and the successor initiative, Connecting Classrooms Through Global Learning, which has a specific teacher education component.

1.2.2. Context of Turkey

Teacher education in Turkey is provided by higher education institutions and the Council of Higher Education (CoHE, Ankara, Turkey) is responsible for teacher education since 1981. The programmes are designed as an undergraduate programme of 4 years. The framework of teacher education programmes and the courses they should offer for each department are also determined by CoHE because of the centralised education system.

There is also a tendency for teacher education programmes to be revised regularly in Turkey. Local and global economic, social, and political developments, technological improvements, the research on accreditation and the changes of the national education curriculum are among the main reasons why teacher education policies are revised regularly. The attempts to be a member of European Union is another factor that affected Turkey's teacher education policy. The application of the Bologna Process has shaped the teacher education system as well since 2001 [18]. Following the changes in primary education programmes in 2002, and Turkey's becoming a member of the European Higher Education Area, the Ministry of National Education (MoNE Ankara, Turkey) performed a study supported by the European Union on teacher competencies, which was another step for the standardisation of ITE programmes in 2006 and led to another revision on the programmes [19].

ITE programmes were revised for the 2018–2019 Academic Term [20] due to the cultural, social, ethical, and moral problems Turkey and the world have encountered recently [21]. The pedagogical knowledge of the teachers that focuses on equity, diversity, and social justice is stated to be supported more in the programmes, which indicates CoHE's point of view regarding the concept of sustainable development.

Research about teacher education and sustainable development has also increased, especially focusing on the attitudes of teacher educators and student teachers towards ESD recently [22–34]. They all indicate teachers and student teachers having positive attitudes towards ESD. Another research indicates that although student teachers have positive attitudes towards sustainable development, they do not think that they have adequate knowledge about ESD [35]. These research studies also lead the way for some teacher educators to integrate ESD into ITE programmes.

1.2.3. Similarities and Differences between ITE Programmes of England and Turkey

England and Turkey share some similarities and differences regarding ITE context. England decentralised ITE programmes allowing teacher educators more autonomy in designing their programmes. There is also a wide range of bodies responsible for providing teacher training including, not only universities but private companies and school-based provision. Sustainability themes may be seen within specific curriculum subjects but there is no promotion of the area within the aspect of teacher education by policymakers.

Turkey has more centralised teacher education programmes with a growing interest in ESD. Though teacher educators have less autonomy in designing the programmes, the policymakers and curriculum specialists in CoHE are framing the programmes for quality assurance standardisation in teacher education. However, it is possible that this top-down management might limit teacher educators' creativity and productivity. The number of institutions engaged with ESD is lower comparatively and the collaboration of them with the universities needs improvement. Though with the recent revision in 2018, teaching practice sessions are allowed more space compared with the previous ones, but

comparatively they are still less. However, pedagogical knowledge courses are emphasised more in ITE programmes in Turkey.

Although there is recognition in England and Turkey of the need for teachers to be trained to respond to the challenges of the 21st century in terms of skills development, the knowledge focus in content driven programmes, the space and time constraints and political, ideological, and managerial constraints are among the challenges of teacher educators in both countries. Teacher educators need more support from both the government and universities for developing their own skills for ESD.

2. Materials and Methods

2.1. Research Design

The study aims to form an overview of ITE programmes in England and Turkey regarding ESD as a pedagogical approach with the focus of transformative learning. It also reflects the similarities and differences between the two countries as England and Turkey have different geographical, economic, and social characteristics.

This study employed a qualitative research design through a case study. A case study “is a detailed examination of one setting, or a single subject, a single depository of documents, or one particular event” [36] (p. 59). Thus, this study was conducted as a detailed examination of the curriculum documents in the specific context of ITE programmes in England and Turkey.

This study is also a document analysis. In a document analysis, documents are interpreted by the researchers to be meaningful on a research topic [37]. For the credibility of the research, multiple data sources need to be used as a strategy [38,39]. As data sources, the documents analysed are ITE programmes of the two countries presented by policymakers and universities through their websites such as programmes and course descriptions; and the materials provided by the teacher educators on the topic of ESD.

The documents are analysed through qualitative content analysis with a deductive coding approach according to pre-set themes by the researchers based on the literature on the content, skills, and values of ESD and the characteristics of transmissive (teacher-centred) and transformative approaches (learner-centred) [1,15,40–43] (Table 1).

Table 1. Pre-set themes.

Teacher-centred learning;
Teacher led activities;
Lecturing;
Prescriptive following of curriculum;
Transmission of knowledge;
Knowledge focused learning;
Learner-centred activities;
Inquiry-based approach;
Experiential learning;
Problem-based learning;
Interdisciplinary thinking skills;
Reflective thinking skills;
Future thinking skills;
Dialogic thinking skills;
Values-based approach;
Critical thinking skills;
Social-collaborative learning;
Student empowerment;
Integration of socio-emotional and behavioural domains;
Integrated use of knowledge, skills, and values of ESD.

For data collection, the critical case sampling method is used as it “yield[s] the most information and [has] the greatest impact on the development of knowledge” [44] (p. 236). Thus, for the document analysis of ITE programmes in Turkey, as it can be seen from

Table 2, the programme descriptions, and the detailed programmes on the website of CoHE [21] were analysed as it is responsible from the preparation of ITE programmes at universities. The documents related to the specific courses named Education for Sustainable Development and Community Service Practice are collected from the universities' websites and from teacher educators as they are considered to indicate the critical cases.

Table 2. Analysed documents for Turkey context.

Documents	Source
General ITE programme description of CoHE	Website of CoHE
Detailed ITE programmes of CoHE	Website of CoHE
Course descriptions of ESD in two universities	Website of the universities
Teaching materials for ESD courses of two universities	Websites of the universities
Course descriptions of Community Service Practice in universities	Slides of teacher educators
	Website of the universities

As for the document analysis of ITE programmes in England that can be seen in Table 3, based on critical case sampling, the ITE programmes from PGCE courses at one of the leading universities and two other universities, where the focus is more on undergraduate programmes that include a teacher qualification within them, were reviewed and related research evidence.

Table 3. Analysed documents for England context.

Documents	Source
Programme handbooks for PGCE courses from two universities	Teacher educators
Course descriptions	Websites of universities
Teaching materials of PGCE courses	Teacher educators
PhD thesis with evidence from Liverpool Hope University	Doctoral student

2.2. Data Analysis

The collected data from these multiple sources were analysed through a deductive coding approach. The data were analysed closely to identify meaningful units according to the research questions and descriptive codes were assigned to these units. Then, the codes formed the categories, and the categories were assigned to the pre-set themes (Table 4).

Table 4. Sample for data analysis.

Codes	Categories	Themes
To provide the teacher candidates to be informed about sustainable development to help them understand the relationship between sustainable development and education	Teachers as passive knowledge seekers; Cognitive domain	Teacher centred learning
The conceptual and theoretical explanation of the lecturer on the subject	Knowledge transfer	Teacher centred learning
The shape the future of our country and humanity take a leading role in the process of social transformation	Active learners; Use of behavioural domains	Future thinking
Innovative, creative	Being active in their learning	Active learning strategies
Developed ethical values	Having ethical values	Values-based approach
Can establish effective communication and cooperation with stakeholders	Working collaboratively	Social-collaborative learning

This analysis led to the holistic understanding of the ITE programmes in two cases regarding ESD as a transformative approach. As Grauer [45] (p. 70) suggested, “each data source is [used as] a piece of the “puzzle” to contribute to the researcher’s understanding of the whole phenomenon”.

The recording units used for the analysis of the documents were themes and approaches relevant to understanding how ESD was taught within ITE courses. The themes that are observed in this study related to transmissive approaches can be summarised as:

- Teacher centred approaches;
- Knowledge transfer;
- Based on cognitive domain;
- Emphasis on definition of terms;
- Content knowledge.

The themes that are reached related to transformative approaches can be summarised as:

- Learner-centred approaches;
- Inquiry-based approaches;
- Meta-cognitive skills;
- Active learning skills;
- Deep thinking skills;
- Critical analysis;
- Critical thinking;
- Reflective thinking;
- Problem solution skills;
- Future thinking skills;
- Values-based approach;
- Social-collaborative learning;
- Holistic thinking skills;
- Interdisciplinary thinking skills.

This means that areas explored in the analysis of the documents included level of understanding and conceptual explanation of sustainable development and the extent to which the theme of encouraging a more transformative approach is promoted. Another key theme was the extent to which ethical values were promoted. Within both country examples, a key code to be identified was the extent to which sustainable development was seen in a pedagogical context and located within a process of learning. As identified in the literature, one of the key challenges within ESD in teacher education is to ascertain the extent to which the learning moves beyond a passive transmission of knowledge approach. Hence, themes such as teacher centred learning and active learning strategies are adopted.

This means that the coding undertaken was focused on four main areas:

- The nature and form of the approach to teaching and learning, the extent to which the emphasis in the documents is on information, transmission of knowledge and includes mention of enquiry-based learning;
- The level of and extent to which theoretical and conceptual understandings of sustainable development are reflected within the documents and courses. This means if and where reference is made in the documents and including sessions on conceptual questions;
- The extent to which there is reference in the documents to active learning processes, and to promoting a sense of social transformation. For example, do the examples provided in the documents refer to encouraging the learners to question their own assumptions, to consider their social role and see themselves as agents of change;
- Ways in which values are reflected within the documents and therefore the programmes. For example, themes of social justice, co-operation, and care for others are referenced in the documents.

2.3. Validity and Reliability

There are a range of methods to provide validity and reliability [46,47] for qualitative studies. In this study, regarding validity, the triangulation of resources and researchers are secondary sources, for both countries, general programme descriptions presented on websites, course descriptions of the courses, and teaching materials provided by teacher educators were analysed.

This means the following:

UK

BA Undergraduate Programme:

- Wider curriculum course module guide;
- Summary of material for activities with external organisation;
- Geography course subject specific guidance and PowerPoint presentation;
- Geography handout for activity, such as Globingo;
- Geography resource lists including indicative bibliography, cross-curricula texts and recommended texts.

PGCE Geography Course

- Secondary Geography Guide. This includes programme structure, details of assignments, reading lists, lesson plan guidance and links to other modules.

This programme guide must be externally verified within the institution to ensure compliance with national guidelines on teacher training and the curriculum. They are also documents that would be included in any form of national inspection.

Turkey

- The National ITE programme description provided by CoHE (https://www.yok.gov.tr/Documents/Kurumsal/egitim_ogretim_dairesi/Yeni-Ogretmen-Yetistirme-Lisans-Programlari/AA_Sunus_%20Onsoz_Uygulama_Yonergesi.pdf) (accessed on 23 December 2020);
- The National Undergraduate ITE Programmes (<https://www.yok.gov.tr/kurumsal/idari-birimler/egitim-ogretim-dairesi/yeni-ogretmen-yetistirme-lisans-programlari>) (accessed on 23 December 2020). This includes 25 undergraduate programme descriptions and the course descriptions in these programmes;
- The course description of ESD courses on two universities' websites. This includes the aims of the course, the content of the course, the materials used, the teaching and learning strategies followed, and the way the assessment was conducted;
- ESD course content and PowerPoint slides from two teacher educators;
- The course description of Community Service Practice presented on the websites of the universities. This includes the aim, content, materials, and teaching strategies of the course and sample projects conducted in this course.

All these materials were cross checked to assess if specific materials related directly to broader subject and curriculum guidance.

This material was verified by the authors with their contacts in the appropriate institutions. For example, the extent to which the themes suggested in the programme documents were actually used. The authors sorted for evidence from teacher educators of course materials that demonstrated ways in which sustainable development was interpreted. An example of this from the UK and Turkey was through the sharing of teachers' presentation notes to the author, their PowerPoint presentations and reading lists. The two authors then independently checked the evidence from each country to assess their validity and reliability in terms of their relationship to programme and the aims and relevance to sustainable development.

In qualitative research, providing reliability is also challenging. According to Silverman [48], there are some approaches to enhance reliability. In this study, from these approaches, descriptions of data sources and samples, constant data comparison and use of tables and samples in analysis were used to enhance reliability.

3. Results

In this section, results are presented in two parts as the extent to which programmes promote distinctive pedagogical approaches and the extent to which they promote transformative approaches regarding the case of England and Turkey.

3.1. Extent to Which Programmes Promote Distinctive Pedagogical Approaches

3.1.1. Case of England

Teacher education in England was developed from a strong pedagogical basis in terms of methods and approaches to learning. Despite the political pressures and its promotion of the traditional styles of teaching, ITE courses reflect approaches that are more learner centred, and encourage an empowerment approach with an emphasis on problem solving and participatory methods.

Within the courses reviewed for this article, undergraduate courses including teacher qualifications and postgraduate courses, there were significant differences between the two areas. Within undergraduate courses, there was more space and time to bring in wider societal themes into the course such as social justice. Here, from a number of universities evidence of pedagogical approaches that are learner centred, encouraging a range of approaches and relate learning to practical experience could be found. Sustainability themes for example could be seen as part of courses on wider purposes of education.

An example of this can be seen from one course within a BA in education on primary geography. An introductory presentation to the course starts from an enquiry-based approach; start from a position of curiosity and wonder. It then states that enquiry can unify the human and physical, connecting people to the places, spaces and environments inhabited, linking to dialogic teaching and encouraging students to think in different ways. The presentation then goes on to demonstrate how an enquiry-based approach can develop a child's geographical imagination. One of the practical ways such approaches can be applied is through fieldwork and gathering evidence from local areas.

Within another course at the same university on the wider curriculum observed particularly in four subject areas, computing, religious education, geography and physical education, there were references to pedagogical approaches. The criteria for the assessment, based on a PowerPoint slide presentation with accompanying rationale, makes particular reference to the sequence of learning and its relationship to the curriculum.

This example shows that within the constraints of a prescriptive curriculum, teacher training programmes can encourage the importance of pedagogy, of exploring and developing a process of learning.

However, there was evidence that all too often, some of these courses were optional extras rather than part of the core programme.

Within PGCE courses, due in part to the lack of space and time and also the dominance of subject-based approaches, ESD tended to be addressed primarily as content within specific subjects such as geography and the natural sciences. However, within these subjects, ESD themes lend themselves to participatory approaches such as groupwork, role play and fieldwork. However, what was less evident from one university in London was that the extent to which they could be seen as reflecting a distinctive ESD pedagogical approach is perhaps more open to question and debate.

3.1.2. Case of Turkey

Sustainable development was recognised as a group of themes regarding development and environmental protection, and it is included in some of the courses related to economy and geography in Turkey. Together with the global changes in 2005, some courses on environmental education were added to teacher education programmes with the inclusion of sustainable development and the constructivist approach in the primary school curriculum as part of the United Nations Development Programme [49–51].

Though ESD is not directly specified to be integrated into the current ITE programmes in programme descriptions of the Council of Higher Education (CoHE, Ankara, Turkey), its

principles as a pedagogical approach can be observed in some parts of the ITE programmes especially through some elective courses [21,52] such as Human Rights and Democracy Education, Character and Values Education, Disaster Education, Children at Risk and Education, Global English and Culture, Inclusive Language Teaching, Critical and Analytic Thinking, and Special Education and Inclusion.

In addition, an elective course specifically named Education for Sustainable Development and a compulsory course for each programme named Community Service Practice is offered at some universities considering ESD as a pedagogical approach. The content of the Sustainable Development and Education course is described by CoHE, as:

- Sustainability concept and usage areas;
- Sustainability in terms of social sciences and natural sciences;
- Sustainability in the context of social change;
- Education and sustainability;
- The future of humanity and sustainability;
- Migration, poverty and inequality;
- Sustainable environment;
- Ecology, global environment, and sustainability;
- Sustainable society in harmony with nature;
- Consumption habits and environment;
- Social responsibility studies, sustainability in terms of tangible and intangible cultural heritage;
- Rethinking human-nature relations in the axis of sustainability.

As can be understood from the course description of CoHE, the course of ESD basically includes the environmental, social and economic pillars of ESD and the content related to it such as migration, consumption habits and cultural heritage. However, the pedagogy of ESD, its skills and values are not directly emphasised in the description. This might be one of the reasons why ESD courses at some universities have a transmissive approach.

On the other hand, the content of Community Service Practice is described as:

- The concepts of society;
- Community service and social responsibility;
- Social responsibility projects in terms of social and cultural values;
- Identifying recent social problems;
- Developing projects as a solution to social problems;
- Volunteering social responsibility projects individually or in groups;
- Being in cooperation with the social responsibility projects of non-governmental organizations and/or their local communities;
- Participating in scientific activities such as panels, conferences, congress and symposiums as an audience, presenter or organiser;
- Evaluating the outcomes of the projects.

As can be understood from the course description, this course aims to make all the pre-service teachers from each program take an active role in the transformation of society. When the projects pre-service teachers participated in are analysed it can be seen that they take active roles in projects regarding community service to care homes, solutions to environmental problems, preventing pollution, protecting animals, helping people with special education needs, and organising libraries for visually impaired students.

On the other hand, the use of ESD as a pedagogical approach can be recognised in some pedagogical knowledge courses such as Educational Psychology and Theories of Teaching and Learning deeply focusing on the importance of project-based, inquiry-based, constructivist, and transformative approaches.

In addition, although there are some universities highlighting the importance of ESD as a pedagogical approach, there are many universities that recognise ESD merely as content. For instance, Semiz and Teksoz's [53] study indicates ESD as a pedagogical approach. They worked on developing system thinking skills of science teachers through

an outdoor ESD course. However, Sagdic and Sahin's study [54] indicated some elementary school teachers' lack of knowledge regarding ESD and their lack of knowledge on how to teach ESD as the biggest barrier in front of teachers.

3.2. *Transmissive vs. Transformative Learning: Evidence from England and Turkey*

3.2.1. Evidence from England

Where sustainability approaches are evident within courses in English universities, there are two clear themes that emerge in terms of the extent to which they pose a transformative as opposed to a transmissive approach.

The first is that within PGCE courses that are subject-based, tutors in one institution tried to address this by posing the need for sustainability to be seen in a more interdisciplinary way. This is however an ongoing activity and changes are yet to be realised.

However, teacher educators tried to weave these themes into the subject specific courses. This can be seen in the ways in which values are reflected within a range of PGCE subject courses (Table 5).

Table 5. Values of ESD in PGCE programmes.

Subject Knowledge	Values of ESD
Primary Education	Looking after the world, taking responsibility, caring, and moral responsibility
PGCE Secondary Physics	Valuing the natural world, valuing the biodiversity, planet, other people, other cultures, other generations, valuing humans, individuals, and society.
PGCE Secondary RE	Living peacefully, equality, understanding about peace and conflict
PGCE Secondary Citizenship	Equality, fairness, interconnectedness, sharing, creating, thinking about the world as a globalised unit.
PGCE Secondary Maths	Empathy, sharing ideas
PGCE Secondary Biology	Social justice, democracy, viewing the planet as a resource for all humans and organisms, interdependence
PGCE Secondary Geography	Valuing position, ideologies, valuing belief systems, values of education, effects of values in teaching.
PGCE Secondary Chemistry	Helping individuals, helping society, making sensible personal decisions.

Within the broader courses for all PGCE student teachers and when students were provided a relatively free rein in terms of assignment topics, a considerable number chose subjects with a clear sustainability theme such as:

- How to teach climate change;
- How to teach the importance of Sustainable Energies.

This aim to bring a broader values-based approach and to encourage more interdisciplinary thinking resonates with wider debates in teacher education and transformative learning, about posing different ways of thinking and encouraging more critical and reflective approaches. An example of this was the way in which the history PGCE programme began to bring in themes such as what does extinction mean and looking at the topic from different historical times and perspectives. What the tutors on this programme and others from geography and religious education particularly were interested in was to encourage engagement with more moral and ethical questions and to show their applicability both within and across subject areas.

Within the geography course, there is also an attempt to bring in ideas from NGOs such as Oxfam and future thinking, particularly the ideas of Dave Hicks [55]. This leads to encouraging learning from perspectives that may well challenge dominant ideas, to encourage dialogic thinking and above all a more questioning approach.

The second example can be seen from another university through its BA Education programme which includes teacher qualification status, a number of references to ESD and

a pedagogical approach that could be said to be transformative. The geography course for example refers to encouraging questions and enquiry approaches and deep thinking. This approach was developed further through posing the following questions as the basis for classroom activities:

- What do we feel about the environment around our school?
- How can we develop a child's geographical imagination?

One of the most potentially transformative learning experiences for primary trainee teachers on this course is the opportunity to watch the Chimande Adichie TEDtalk on the dangers of a single story which presented challenges for what and how we present different places around the world. Other universities used the Sustainable Development Goals as a way of suggesting a whole school approach to ESD themes.

Finally, one of the leading universities in the north of England offering teacher education as part of its BA primary course, has a Wider Perspectives in Education (WPE) course which has a clear transformative and social justice component. Research at this institution as part of a wider study noted that personal change "does not relate to the student merely thinking about something in a new or different way; it also involves having a personal connection to the issue and taking decisions for action", for example, he continued "students might recognise the fact that climate change is impacting the planet, but they never really thought about it deeply or planned to take actions to change the situation. It is also possible for students to gain fresh knowledge or broaden their current understanding without rejecting their past beliefs and assumptions" [56] (p. 159).

Bosio's research also found that it was difficult to define whether students were personally transformed through their learning experiences. He noted that some academics suggested that students are frequently resistant to accepting more integrated worldviews, for example by issuing challenges to their own stereotypical thinking. They also suggested that even if students had a transformative experience, this does not inevitably inform future behaviours.

There was also evidence from Bosio's research that academics felt that the Wider Perspectives in Education (WPE) programme allowed some students to reflect upon what was meant by education and sustainability. As one academic noted "When students give their presentations at the end of the programme, they frequently raise important matters related to inequality both locally and globally, climate change, immigration and especially the refugee crisis" [56] (p. 165).

Bosio concluded that the WPE experience included a degree of transformation. He however further noted that academics acknowledged there were differences in terms of their transformative impact depending on level of participation and extent to which there was an emphasis on social justice [56].

These examples demonstrate that in England there is evidence of transformative approaches but that they demand both the enthusiasms and expertise of the individual academics but also the spaces that might exist within courses.

3.2.2. Evidence from Turkey

The analysis of the documents regarding ESD, and Community Service Practice specifically indicated that there are both transmissive and transformative learning opportunities education for sustainability in Turkish ITE programmes.

In one of the universities, ESD was given through an open courseware programme. Although the course has a critical approach all through its well-prepared content, the way it is covered has a more transmissive approach. Firstly, the course objectives indicate a transmissive approach focusing on the transfer of knowledge for sustainable development in the cognitive domain:

"To **provide** the teacher candidates studying in different teacher training programmes **to be informed about** 'sustainable development' and to help them **understand** the relationship between sustainable development and education".

This objective indicates the use of teacher-centred approaches rather than learner-centred ones. The aim is providing the students with the knowledge rather than encouraging the discovery of the concept for making student teachers active in their learning. The use of teacher-centred approaches can be seen in the description of methods as well. Teacher educators are active in the students' learning process rather than the students themselves. Although a discussion method is used for active participation of the student teachers, it comes after knowledge transmission of the teacher educator:

“Discussion will start after the **conceptual and theoretical explanation of the lecturer** on the subject at the beginning of the lesson”.

The impact of the transmissive approach can also be followed through the content of the course. There are also some slides prepared for the presentation of the course defining the terms and concepts of sustainable development and they are directly presented to student teachers. They mostly focus on the economic aspects of sustainable development and education separately, then the relation between sustainable development and education is explained rather than considering ESD as a distinct approach.

Although some materials focus on Sustainable Development Goals and ESD specifically, they only present the definitions of SDGs with all their indicators in the knowledge domain and students are expected to read and understand them. The skills and values of ESD are also not emphasised in the materials directly. On the other hand, the discussion part of the selected articles reflects an inquiry-based approach which would make students more active and criticise the concepts they learnt.

The impact of the transmissive approach can also be seen in student assessments. The questions mostly assess the content knowledge of the students such as description of the terms about sustainable development. There are only a few questions prepared to encourage metacognitive skills:

1. What does economy mean?
2. What does economic development mean?
3. What does sustainability mean?
4. What is the relation between economy and development?
5. How would you describe educational rights?
6. Can education be a solution to equality problems?
7. How can education be used to promote SDGs?

On the other hand, in the course description, the assessment includes the students' oral presentations and written term papers which might make students more active in their learning.

There is also another university promoting ESD in a more transformative approach. This can be seen in its mission statement by mentioning their aims for training teachers with 21st century skills and emphasising their role on social transformation:

“To train educators and education researchers who will **shape the future of our country and humanity** with an academic staff that follows and produces new educational technologies, is **innovative, creative, has developed ethical values, can establish effective communication and cooperation with its stakeholders,** and take a **leading role in the process of social transformation** in a contemporary sense.”

The analysis of course content indicates that this course has a critical approach and deep-thinking skills integrated to its curriculum. Rather than giving sustainability merely as a content, the focus is on the critical analysis of some of the local and global problems and finding solutions to them through discussing SDGs such as no poverty, zero hunger, good health and wellbeing and quality education in an integrated way. The local and global problems are indicated, and students are asked to rethink them considering the interrelationship among SDGs. The reasons behind the local and global problems and their possible solutions are discussed through the critical analysis of some articles. In that way, the concepts, skills and values of ESD are discovered. Rather than the teacher educators'

transmission of their own concepts, students are encouraged to become active in their own learning and construct their own knowledge.

In terms of assessment, the course has a written exam of which questions based on metacognitive skills such as critical thinking and reflective thinking as part of a transformative approach:

- How would you reflect your individual responsibilities in SDGs?
- How would you evaluate quality education after pandemic?
- What are the problems that can be encountered for quality education after pandemic?
- Could you provide some examples from recent local and global samples?
- How can you analyse migration in Turkey? Please state the reasons and managing policies, and reflect your own opinions for precautions towards migration.

Apart from ESD courses, there is also one compulsory course for each programme named **Community Service Practice**, based on the transformational learning approach. Basically, as a project-based course, it aims to make students identify the local and global problems and find solutions to them with their own projects by “taking an active role in their own projects” [21].

According to the data collected, this course indicates that its aim is to make all the pre-service teachers from each programme take an active role in the transformation of society. It aims to raise awareness of the social problems, indicate the importance of the relation between society and education, build up collaboration between universities, non-governmental organisations and society, develop critical thinking and problem-solution skills, creative-thinking skills, holistic thinking and future thinking skills, introduce the concepts of volunteering and sharing, recognise the importance of diversity and inclusion, and develop the concept of our global world.

Özdemir’s [57] study also indicates that students “felt more sensitive to the societal problems” after having this course and they want to “take more active roles” in solutions to these problems. He commented that this course helped to improve university-society collaboration, improved student’s communication skills in the society and made them more active and creative in their roles in society. That means, each person graduated as a teacher in Turkey since 2006 has taken an active role in solving a societal problem of the country with the help of the Community Service Practice course.

These examples indicate that although the evidence of transformative approaches can be observed in ITE programmes in Turkey, there is a need for highlighting ESD as a pedagogical approach for teacher educators as there is some evidence of transmissive approaches even in ESD courses.

4. Discussion

Whilst the literature around ESD suggests that it can be seen as a distinctive pedagogical approach including transformative learning, the extent to which teacher training courses reflect this is more open to debate. The evidence gathered from courses in both England and Turkey suggest that there were examples of more transformative approaches, this relied on the enthusiasms of interested academics. The structure of programmes and the broader political context in both countries were major obstacles. There is also the danger, as some of the examples observed in this article suggest, that ESD is seen as an optional extra and not as a core element of the initial training of teachers.

As both studies identified, there are possibilities of ESD within ITE having a more transformative approach, particularly if there are spaces within the course for more creative approaches and there is interest from relevant lecturers. However, the extent to which these spaces exist not only vary from institution to institution but also depends a great deal on the type of course. For example, in England, there are many more opportunities for more innovative approaches within the undergraduate programmes than within the one-year postgraduate courses.

What is evident within the broader international literature around ESD and ITE is that there is support for more transformative approaches. Unlike transmissive strategies

that aim for knowledge or value transfer from one person to another, studies indicate that transformative strategies aim to change the learner and the organisation in response to the changes in the outside world [58–60]. In transmissive strategies, individuals can only observe ESD implementation, and the importance is given to equipping students with knowledge such as pollution, reducing energy and consumption [61]. However, in transformative ones, all individuals need to be involved in the implementation process and the focus should be on social change [60,62]. The study of Blake, Sterling and Goodson [63] also indicates the need for transformative learning approaches in a college in the UK for a sustainable future. Kioupi and Voulvoulis [64] “[redefine] ESD as a tool that can deliver the transformation required for society to reach a sustainable state” (p. 1). They recommend reaching a vision of sustainability by identifying the competencies needed and developing appropriate learning strategies and pedagogies.

The study of Balsiger et al. [65] highlights the key conditions for transformative education in higher education institutions. According to their study, ESD should integrate critical reflection on goals and values and help to build an autonomous critical action. Social context even as a learning environment needs to be criticised. It should also facilitate the reconstruction and assimilation of sustainable perspectives. The other important point is that transformative teaching is the foundation of transformative learning. The teaching should include “the emphasis on personal experience, inter- and trans-disciplinarity [65]; service-learning arrangements; self-organized engagement with knowledge, values, and emotions; and living labs” (p. 359). Teachers should also be the coaches and facilitators of learning. The study of Rodriguez and Barth [66] also indicates the overlap between transformative learning and sustainability. They emphasise the importance of the transformative learning theory in the design and implementation of educational interventions of learning for sustainability.

Therefore, simply including topics of sustainability such as climate change or recycling is not sufficient for transformative learning. Instead, the curriculum should include fundamental changes with its approaches and practices; and encourage a critical shift of perspectives regarding values, knowledge, thoughts, emotions and actions [40,42,43,67,68]. As Förster, Zimmermann and Mader [41] emphasised, to be able to use transformative pedagogies in ESD, a transformation of the epistemological dimension of knowing is not enough, the transformation of how we know through knowledge production and meaning making, the ontological transformation of what we know and how we define reality [69] and the normative transformation of how we value is of great significance.

This article has also identified the ways in which ESD is promoted within initial teacher education courses in Turkey and England. It showed that there is academic and international organizational support for the approaches to ESD that encourage a more transformative approach to learning. However, as the evidence showed, the implementation of this approach was due more to individual enthusiasms than any particular policy initiatives.

In England, despite the political and structural constraints, academics brought in ESD themes within a range of courses. The extent to which they are integrated varies from course to course but what is evident is that with imagination, goodwill and relevant expertise and experience, ESD can be more than just bodies of knowledge.

Integration of ESD into the aims and content of some programmes, designing a specific course for ESD and the integration of the Community Service Practice course into each programme can be considered a vital step for training teachers with a sustainable development approach in Turkey. However, there is also a need for encouraging the professional development of teacher educators and their being informed about the philosophy of ESD and the transformative approach in ITE programmes for them design their own courses accordingly. Otherwise, ESD is considered only as a content rather than a pedagogy and it cannot reach the aim of transforming the world into a just society for all.

The results above all show that in both England and Turkey there is increasing interest in teaching a more transformative approach but there are more pedagogical constraints in Turkey due to the historical cultural approaches to education. For example, in Turkey, both

the policies and the practices are more teacher centred. In England, there is a history of more learner-centred approaches. However, as the evidence from Bourn et al. [4] indicates, around the world, teacher education programmes on ESD are heavily influenced by expertise of the academic profession, the available resources and above all, policy guidance. It is the extent to which there are spaces for creative and imaginative approaches that is perhaps key to progressing to a more transformative approach to ESD [7,11]. However, in both Turkey and England, and this can be reflected even in countries such as Scotland where there is strong policy support for ESD, the expertise, enthusiasms, and confidence to teach these areas remains a major issue.

The evidence outlined in this article, whilst reflecting similar themes within other academic literature on the subject, shows that a major feature of the constraints on a more transformative approach are the broader social, political and ideological factors. The constraining factors in England and Turkey can also be seen in many other countries around the world. However, what this article addressed, unlike other recent studies [70] is that by looking into existing policies and documents, there are openings and opportunities for more creative approaches. As a recent study on teaching for social justice and sustainable development in Ireland [71] suggests, there are creative ways of bringing these themes into the training of teachers. What is needed is support for and encouragement of teacher trainers to be innovative, regardless of the wider constraints. In addition, Ferivel et al. [72] emphasises the importance of a general educational shift for a transformative approach to ESD and highlights the roles of teachers in enhancing an education of a different kind.

5. Limitations

There are of course limitations with the approach taken in this article. Document analysis does not provide, for example, any sense of understanding as to how they are interpreted and used by lecturers. There is also the challenge of the extent to which these documents are used by lecturers as the basis for their teaching and learning.

In response to this, two comments can be made. Firstly, all teacher education programmes are externally verified by independent bodies, be they ministries in Turkey or inspection bodies in England. Lecturers are required to follow the guidelines and standards prescribed. Secondly, in both countries, the researchers approached relevant lecturers for their advice on the most appropriate and relevant documents to review. The examples, including outlines of presentations were provided in response to these requests.

What this means, is that there is no evidence and analysis to assess how the presentations were perceived and understood by students.

6. Conclusions

With the worldwide concerns about climate change and the future of the planet and the growing interest in these areas by millions of young people around the world, ESD clearly must have greater prominence within teacher training courses. For it to have any real meaning to teachers, ESD must be more than part of a subject or an additional content. It must be part of courses that address wider purposes of education and encourage the idea that young people can make a difference.

Author Contributions: The literature review, materials and methods, analysis and writing of the research article was collectively done by the two authors. Both authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: See references regarding literature review. Restrictions apply to the availability of these data. The data based on course materials was obtained from the teacher educators and are available from the authors with the permission of teacher educators. The data on course

content are available on request from the corresponding author. The data are not publicly available due to privacy concerns.

Acknowledgments: We would like to thank to teacher educators for their support in providing course materials.

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

References

- Diemer, A.; Ndiaye, A.; Khushik, F.; Pellaud, F. Education for sustainable development: A conceptual and methodological education for sustainable development. *Soc. Sci. Learn. Educ. J.* **2019**, *4*, 43–45.
- Morrell, A.; Connor, M.O. Introduction. In *Expanding the Boundaries of Transformative Learning: Essays on Theory and Praxis*; O'Sullivan, E., Morrell, A., Connor, M.O., Eds.; Palgrave Macmillan: New York, NY, USA, 2002.
- Burns, H.L. Education as Sustainability: An Action Research Study of the Burns Model of Sustainability Pedagogy. 2009. Available online: https://pdxscholar.library.pdx.edu/open_access_etds/942 (accessed on 1 June 2009).
- Bourn, D.; Hunt, F.; Blum, N.; Bamber, P. *A Review of Education for Sustainable Development and Global Citizenship Education in Teacher Education (UNESCO GEM Background Paper)*; UNESCO: Paris, France, 2017.
- Gaudelli, W. *Global Citizenship Education: Everyday Transcendence*; Routledge: New York, NY, USA, 2016.
- Petegem, P.V.; Blicek, A.; Ongevalle, J.V. Conceptions and awareness concerning environmental education: A Zimbabwean case-study in three secondary teacher education colleges. *Environ. Educ. Res.* **2007**, *13*, 287–306. [CrossRef]
- Wisely, T.; Barr, I.; Britton, A.; King, B. *Education in a Global Space*; IDEAS/UK Aid; Research and Practice in Initial Teacher Education: Edinburgh, UK, 2010.
- UNESCO; MGIEP. Textbooks for Sustainable Development. 2017. Available online: <http://unesdoc.unesco.org/images/0025/002599/259932e.pdf> (accessed on 1 December 2020).
- Ferreira, J.A.; Ryan, L.; Tilbury, D. *Whole-School Approaches to Sustainability: A Review of Models for Professional Development in Pre-Service Teacher Education*; Department of the Environment and Heritage and the Australian Research Institute in Education for Sustainability: Canberra, Australia, 2006.
- Hopkins, C.; McKeown, R. *Guidelines and Recommendations for Reorienting Teacher Education to Address Sustainability*; Technical Paper No.2; UNESCO: Paris, France, 2005.
- Steele, F. *Mainstreaming Education for Sustainability in Pre-Service Teacher Education: Enablers and Constraints*; The Australian Research Institute in Education for Sustainability: Canberra, Australia, 2010.
- Wals, A. Mirroring, Gestaltswitching and transformative social learning: Steppingstones for developing sustainability competence. *Int. J. Sustain. High. Educ.* **2010**, *11*, 380–390. [CrossRef]
- Summers, D. Education for Sustainable Development in initial teacher education: From compliance to commitment—Sowing the seeds of change. *J. Educ. Sustain. Dev.* **2013**, *7*, 205–222. [CrossRef]
- McKeown, R.; Hopkins, C. Global citizenship and sustainable development: Transformation in the initial education of teachers. In *Education in a Global Space*; Wisely, T., Barr, I., Britton, A., King, B., Eds.; IDEAS: Edinburgh, UK, 2010.
- Sterling, S. *Sustainable Education—Re-Visioning Learning and Change*; Schumacher Society/Green Books: Cambridge, UK, 2001.
- UNESCO UK. *Education for Sustainable Development in the UK in 2010*; UNESCO: London, UK, 2010.
- Hunt, F.; Li, T.; Chung, H.; Rogers, M.; Inman, S. *Taking Stock: A Report from the UK Teacher Education Network for Sustainable Development (ESD)/Global Citizenship (GC) Survey on Provision for ESD/GC in Initial Teacher Education in the UK*; Centre for Cross Curricular Initiatives, London South Bank University: London, UK, 2011.
- Furuzan, V.G. Adaptation to the Bologna Process: The case of Turkey. *Excell. High. Educ.* **2012**, *3*, 104–110. [CrossRef]
- Soysal, N. Review of teacher competency studies in Turkey. *Am. Int. J. Contemp. Res.* **2012**, *2*, 104–108.
- Ataman, O.; Adıgüzel, A. Türkiye ve Avustralya öğretmen yetiştirme sistemleri ve akreditasyon modellerinin karşılaştırmalı incelenmesi. *J. Theor. Educ. Sci.* **2019**, *12*, 678–700. [CrossRef]
- Council of Higher Education. Öğretmen Yetiştirme Lisans Programları. 2021. Available online: https://www.yok.gov.tr/Documents/Kurumsal/egitim_ogretim_dairesi/Yeni-Ogretmen-Yetiştirme-Lisans-Programlari/AA_Sunus_%20Onsoz_Uygulama_Yonergesi.pdf (accessed on 23 December 2020).
- Demirbaş, C.Ö. Sustainable development awareness levels of teachers preservice. *Marmara Geogr. Rev.* **2015**, *31*, 300–316. Available online: <http://www.marmaracografya.com/pdf/31.14.pdf> (accessed on 3 January 2021).
- Kaya, M.F. A scale development study on the attitudes of sustainable development. *Marmara Geogr. Rev.* **2013**, *28*, 175–193. Available online: <http://e-dergi.marmara.edu.tr/marucog/article/view/1012000777> (accessed on 5 January 2021).
- Kılınc, A.; Aydin, A. Turkish student science teachers' conceptions of sustainable development: A phenomenography. *Int. J. Sci. Educ.* **2013**, *35*, 731–752. [CrossRef]
- Özgürler, S.; Cansaran, A. Graduate students, study of environmental literacy and sustainable development. *Int. Electron. J. Environ. Educ.* **2007**, *4*, 71–83. Available online: <http://files.eric.ed.gov/fulltext/EJ1060538.pdf> (accessed on 5 January 2021).
- Öztürk, M. Response of educational research in Turkey to the UN Decade of Education for Sustainable Development. *Asia Pac. Educ. Rev.* **2018**, *19*, 573–586. [CrossRef]

27. Öztürk, T.; Öztürk, F.Z. Opinions of pre-service teachers about environment and environmental education Ordu university sample. *Balkesir Univ. J. Soc. Sci. Inst.* **2015**, *18*, 115–132.
28. Sağdıç, A.; Şahin, E. Beliefs on education for sustainable development: scale development study. *J. Kirsehir Educ. Fac.* **2015**, *16*, 161–180.
29. Soysal, N.; Ok, A. Examination of Teacher Competencies for Education for Sustainable Development. Unpublished. Ph.D. Thesis, Middle East Technical University, Ankara, Turkey, 2016. Available online: <http://etd.lib.metu.edu.tr/upload/12620158/index.pdf> (accessed on 1 July 2016).
30. Soysal, N.; Ok, A. Attitudes of pre-service classroom teachers towards sustainable development. *Int. J. Sci. Educ.* **2021**, *4*, 28–42. [[CrossRef](#)]
31. Şahin, E. An Examination of Indications for a Green Curriculum Application Towards Sustainability. Ph.D. Thesis, YÖK Tez Merkezi, Middle East Technical University, Ankara, Turkey, 2008.
32. Şahin, E.; Ertepinar, H.; Teksöz, G. Implications for a green curriculum application toward sustainable development. *Hacet. Univ. J. Educ.* **2009**, *37*, 123–135. Available online: <http://eric.ed.gov/?id=EJ871024> (accessed on 1 March 2016).
33. Teksöz, G.; Şahin, E.; Ertepinar, H. Environmental literacy, pre-service teachers, and a sustainable future. *Hacet. Univ. J. Educ.* **2010**, *39*, 307–320. Available online: <http://dergipark.ulakbim.gov.tr/hunefd/article/viewFile/5000048401/5000045722> (accessed on 1 March 2016).
34. Tuncer, G.; Tekkaya, C.; Sungur, S. Pre-service teachers' beliefs about sustainable development: The effect of gender and enrolment to an environmental course. *Hacet. Univ. J. Educ.* **2006**, *27*, 179–187.
35. Soysal, N.; Ok, A. Prospective classroom teachers' perceived competencies on sustainable education. *Soc. Econ. Perspect. Sustain.* **2016**, *1*, 143–157. Available online: https://books.google.co.id/books/about/Social_and_Economic_Perspectives_on_Sust.html?id=tcnqDQAAQBAJ&printsec=frontcover&source=kp_read_button&redir_esc=y#v=onepage&q&f=false (accessed on 1 September 2017).
36. Bogdan, R.C.; Biklen, S.K. *Qualitative Research Methods for Education: An Introduction to Theory and Methods*, 5th ed.; Allyn and Bacon: Needham Heights, MA, USA, 2007.
37. Bowen, G.A. Document analysis as a qualitative research method. *Qual. Res. J.* **2009**, *9*, 27–40. [[CrossRef](#)]
38. Stake, R. *The Art of Case Study Research*; Sage: Thousand Oaks, CA, USA; London, UK; New Delhi, India, 1995.
39. Yin, R.K. *Case Study Research Design and Methods*; Sage: Newbury Park, CA, USA, 1989.
40. Bornemann, A.B.; Förster, R.; Getzin, S.; Kläy, A.; Sägeser, A.; Schneider, F.; Wäger, P.; Wilhelm, S.; Zimmermann, A.B. *Sustainability-Oriented Transformative Learning and Teaching in Higher Education: Eight Propositions on Challenges and Approaches*; Swiss Academic Society for Environmental Research and Ecology: Bern, Switzerland, 2019.
41. Förster, R.; Zimmermann, A.B.; Mader, C. Transformative teaching in higher education for sustainable development: Facing the challenges. *GAIA Ecol. Perspect. Sci. Soc.* **2019**, *28*, 324–326. [[CrossRef](#)]
42. Mezirow, J. Transformative learning: Theory to practice. *New Dir. Adult Contin. Educ.* **1997**, *74*, 5–12.
43. O'Sullivan, E.; Morrell, A.; Connor, M.O. (Eds.) *Expanding the Boundaries of Transformative Learning: Essays on Theory and Praxis*; Palgrave: New York, NY, USA, 2002.
44. Patton, M.Q. *Qualitative Research and Evaluation and Methods*, 3rd ed.; Sage: Beverly Hills, CA, USA, 2001.
45. Grauer, K. *A Case for Case Study Research in Education*; Klein, S.R., Ed.; Action Research Methods; Palgrave Macmillan: New York, NY, USA, 2012. [[CrossRef](#)]
46. Noble, H.; Heale, R. Triangulation in research, with examples. *Evid. Based Nurs.* **2019**, *22*, 67–68. [[CrossRef](#)]
47. Leung, L. Validity, reliability, and generalizability in qualitative research. *J. Fam. Med. Prim. Care* **2015**, *4*, 324–327. [[CrossRef](#)] [[PubMed](#)]
48. Silverman, D., 3rd (Ed.) *Newbury Park; Doing Qualitative Research*; SAGE Publications Ltd.: London, UK, 2009; p. 472.
49. Tahtalioglu, H.; Kulac, O. The role of education in realizing sustainable development in Turkey. *AGATHOS* **2019**, *10*, 201–229.
50. Kaya, M.F.; Tomal, N. Examination of social sciences education program in the context of sustainable development training. *J. Educ. Sci. Res.* **2011**, *1*, 49–65. Available online: <http://ebad-jesr.com/> (accessed on 5 January 2021).
51. Güntürkün, E. Environmental Education Preparation in Pre-Service Teacher Programmes in Turkey. Unpublished. Master's Dissertation, İhsan Doğramacı Bilkent University Institute of Education Sciences, Ankara, Turkey, 2016.
52. Korkmaz, G. Yenilenen öğretmen yetiştirme lisans programlarının sürdürülebilir kalkınma için eğitim bağlamında incelenmesi. *J. Adv. Educ. Stud.* **2020**, *2*, 111–132. Available online: <https://dergipark.org.tr/en/pub/ejaes/issue/56678/742200> (accessed on 5 January 2021).
53. Semiz, G.K.; Teksöz, G. Developing the systems thinking skills of pre-service science teachers through an outdoor ESD course. *J. Adventure Educ. Outdoor Learn.* **2019**, *20*, 337–356. [[CrossRef](#)]
54. Sağdıç, A.; Şahin, E. An assessment of Turkish elementary teachers in the context of education for sustainable development. *Int. Electron. J. Environ. Educ.* **2016**, *6*, 141–155. [[CrossRef](#)]
55. Hicks, D. *Education for Hope in Troubled Times: Climate Change and the Transition to a Post-Carbon Future*; Trentham/IOE Press: London, UK, 2014.
56. Bosio, E. Implementing Principles of Global Citizenship Education into University Curricula. Unpublished. Ph.D. Thesis, UCL, London, UK, 2020.

57. Özdemir, S. Egitim fakultelerinde topluma hizmet uygulamalari dersinin degerlendirilmesi. *Uluslar. Yuksekogretim Kongr.* **2011**, *3*, 2217–2224.
58. Mogren, A.; Gericke, N. ESD implementation at the school organisation level, part 2—investigating the transformative perspective in school leaders’ quality strategies at ESD schools. *Environ. Educ. Res.* **2017**, *23*, 993–1014. [[CrossRef](#)]
59. Nickel, J. Making sense of education ‘responsibly’: Findings from a study of student teachers’ understanding (s) of education, sustainable development and education for sustainable development. *Environ. Educ. Res.* **2007**, *13*, 545–564. [[CrossRef](#)]
60. Sterling, S. The learning of ecology or the ecology of learning? In *Key Issues in Sustainable Development and Learning*; Scott, W., Gough, S., Eds.; Routledge Falmer: New York, NY, USA, 2004; pp. 68–71.
61. Bjorneloo, I.; Nyberg, E. (Eds.) *Drivers and Barriers for Implementing Learning for Sustainable Development in Pre-School through Upper Secondary and Teacher Education (Technical Paper No. 4)*; UNESCO Education Sector: Paris, France, 2007.
62. Wals, A.E.J.; Blewitt, J. Third Wave Sustainability in Higher Education: Some (inter)national Trends and Developments. In *Green Infusions: Embedding Sustainability Across the Higher Education Curriculum*; Jones, P., Selby, D., Sterling, S., Eds.; Earthscan: London, UK, 2010; pp. 55–74.
63. Blake, J.; Sterling, S.; Goodson, I. Transformative Learning for a Sustainable Future: An Exploration of Pedagogies for Change at an Alternative College. *Sustainability* **2013**, *5*, 5347–5372. [[CrossRef](#)]
64. Kioupi, V.; Voulvoulis, N. Education for Sustainable Development: A Systemic Framework for Connecting the SDGs to Educational Outcomes, Sustainability. *Open Access J.* **2019**, *11*, 6104. [[CrossRef](#)]
65. Balsiger, J.; Förster, R.; Mader, C.; Nagel, U.; Sironi, H.; Wilhelm, S. Transformative learning and education for sustainable development. *GAlA Ecol. Perspect. Sci. Soc.* **2017**, *26*, 357–359. [[CrossRef](#)]
66. Rodríguez Aboytes, J.G.; Barth, M. Transformative learning in the field of sustainability: A systematic literature review (1999–2019). *Int. J. Sustain. High. Educ.* **2020**, *21*, 993–1013. [[CrossRef](#)]
67. Sterling, S.; Thomas, I. Education for sustainability: The role of capabilities in guiding university curricula. *Int. J. Innov. Sustain. Dev.* **2006**, *1*, 349–370. [[CrossRef](#)]
68. Jacobs, M. *Sustainable Development as a Contested Concept; Fairness and Futurity. Essays on Environmental Sustainability and Social Justice*; Dobson, A., Ed.; Oxford University Press: Oxford, UK, 1999; pp. 21–45.
69. Taylor, E.W.; Laros, A.; Fuhr, T. (Eds.) *Transformative Learning Theory. Transformative Learning Meets Bildung: An International Exchange*; Sense: Rotterdam, The Netherlands, 2017; pp. 17–29.
70. Filho, W.L.; Lange Salvia, A.; Frankenberger, F. (Eds.) *Handbook on Teaching and Learning for Sustainable Development*; Edward Elgar Press: Cheltenham, UK, 2021.
71. Kavanagh, A.M.; Waldron, F.; Mallon, B. (Eds.) *Teaching for Social Justice and Sustainable Development Across the Primary Curriculum*; Routledge: Abingdon, UK, 2021.
72. Feriver, Ş.; Olgan, R.; Teksöz, G. Achieving Education for Sustainable Development (ESD) in Early Childhood Education Through Critical Reflection in Transformative Learning. In *Learning, Design, and Technology an International Compendium of Theory, Research, Practice, and Policy*; Springer: London, UK; Berlin, Germany; Zürich, Switzerland, 2019; pp. 1–42.