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Teaching for Change: Exploring Transformative Pedagogy in Education for Sustainable
Development

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Abstract:

This thesis aims to investigate how Transformative Education is linked in literature to Education for Sustainable Development. It investigates the origins of Transformative Education and explores who and what the theory is for in terms of sustainability education. Programs such as Eco-Schools, UNESCO forum for Transformative Education, and CoDesignS are described in relation to the intersection of the concepts of sustainability and transformation. Transformative Education for sustainability in the context of non-adult students and teacher education is explored. Recommendations are given for further research to best support the implementation of transformative education for Education for Sustainable Development with non-adult learners. In this thesis I aim to: a) investigate the terms Transformative Education (TE) (including Transformative Learning (TL); Transformative Pedagogy (TP) and Education for Sustainable Development (ESD) b) discuss how and why TE is linked to ESD in research and c) briefly describe some contexts in which TE for ESD is implemented.

Keywords: Sustainability Education, Education for Sustainable Development, Transformative Education, Transformative Learning

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1 Introduction: Teaching Methods for Change

Close your eyes and picture in your mind's eye the room in which you are sitting right now. Which thoughts arise? Are there tasks to be done or obligations to fulfill? Do comforts, worries, or other feelings come to mind? Now expand the circle in your mind's eye into the space just beyond; the other classrooms, offices, or apartment buildings, the street outside. Which thoughts arise? If obligations, tasks, feelings, and emotions come to mind how do they compare to the ones before?

Photo by Anna Heumann, 2023, in analog camera in main hallway at the University of Oulu



Amidst daily activities and duties, it is easy to overlook the reality that both learning and change start in the moment and in the space we are in right now. This thought is an essential point of departure from which basic concepts of lifelong sustainability can be referenced. As the spheres of sustainability expand outwards from self to school, to community, or societal environments, our core perceptions guide whether we challenge or perpetuate the status quo. In response to the recent *IPCC AR Synthesis Report: Climate Change 2023*, Greta Thunberg proclaimed to nearly six million Twitter followers:

“It is getting even more impossible to ignore the climate crisis. The fact that people in power still somehow live in denial, and actively move in the wrong direction, will eventually be seen

for and understood as the unprecedented betrayal it is. It is just a matter of time,” (Thunberg, 2023).

Greta points to the disconnect between the ominous reality of climate change and the inadequate, even negligent response by those in power. Her statement echos the viral slogan of the global climate justice movement, “System change, not climate change!” (Angus & Ensor, 2019). It appears that there is a structural dilemma among knowledge, priorities, and actions for sustainable social change. How do we address this unbalanced equation, bringing actions for social and environmental sustainability up to par with the existing knowledge that human societies must urgently course correct if they are to survive? What role is the role of education and educators in catalyzing this desperately needed transformation of current realities?

a. Personal Motivation

The topic of this thesis is particularly close to my heart for several reasons. In my advantages and disadvantages as a teacher, a woman, a mother, a queer person, and a multinational lover of nature I maintain an ethical, even spiritual, commitment to nurturing a more socially and environmentally sustainable present and future. With grave sobriety, I realize my responsibility in the struggle against injustices of the status quo and urgency to do my part in shaping education that responds to an unknown future. With a sense of hope and unshaken idealism, I aim to contribute to shaping education for the higher purpose of actualizing each student’s *raison d’être*, far beyond supplying only a toolset for future employment. Teaching is my vocation not merely my profession (Manea & Stan, 2015) because I approach it with dedication based on the aforementioned principles. During my Intercultural Teacher Education studies, I have become increasingly convinced that the most important task in education today is to create educational environments and content that nurture students to think, feel, and act sustainably as individuals and members of society. In the wake of environmental and social exigency, little can be determined about how the biosphere, job market, or societal realities will be when today’s primary education students graduate from their basic education. What is to stay is the reality that education is at the front lines of transforming society.

In pursuit of learning more about Education for Sustainable Development (ESD), I took up courses in a new minor program offered at The University of Oulu in Sustainability and Climate Change. I also sought out an internship with the Foundation for Environmental Education (FEE) in Denmark which runs the largest global **Education for Sustainable De-**

velopment (ESD) program, Eco-Schools. Here I expanded my understanding of the benefits and challenges of using transformative education in a global educational framework for a multitude of unique contexts geographical, economic, social, and educational contexts. In this thesis, I aim to deepen my knowledge of TE as a pedagogical framework for ESD and in the process, hopefully, inspire the reader to do so as well.

b. The Case for ESD

In 1973, the philosopher, economist, and author E. F. Schumacher wrote, “the volume of education continues to increase, yet so do pollution and exhaustion of resources and the dangers of ecological capacity.” If education will play its part in saving human societies, it must be “...an education that takes us to the depth of things,” (Schumacher, 1997, p. 208). Fifty years later, this statement could not be more relevant. ESD is centered around the assumption, “that humanity must dramatically shift its present course of development to ensure a healthy, just, and secure world for future generations,” and education is a primary vehicle for this change (Higgit, 2013, p.1). Over recent decades, the development of the term ESD has become increasingly more encompassing, expanding beyond the realm of environmental sustainability to include all aspects of life and the processes of learning how to make decisions towards equity (UNECE, 2012).

A transformation of thoughts, feelings, and actions is called for. In a recent talk by Vandana Shiva, a scholar, feminist, and environmental activist from India credited with popularizing the Eco-feminist movement, she describes humans as subjects with inherent agency “simply because we are a part of nature”. Capitalist patriarchy continues to threaten the realization of humans’ intrinsic value and the worth of all other living things. In capitalistic societies, beings are devoid of their noble worth, intelligence, and creativity. To Shiva, sustainability through the eyes of eco-feminism, means that “life must carry on,” and that every breath is an expression of the connection to the biosphere that sustains all living things (Shiva, 2023). In this sense ESD is best practiced when teaching and learning to live with agency and in harmony with other living things.

Amidst eco-anxiety and growing awareness of global catastrophes, it’s no wonder that ESD has gained increasing attention in school systems, national, and international policy. Collazo and Granados (2020) argue that ESD is at the epicenter of how to approach our, “unavoidable commitment to build a sustainable future for the good of our society and the planet” (p. 2). This reality also begs policymakers and educators to rethink how curricula support so-

cial/cultural, economic, environmental, technical, and individual sustainability. Human experience is multidimensional, multisensory, and deeply interconnected. Why shouldn't our pedagogy speak to those same conditions? If we are to really prepare learners to face the challenging realities of our unknown future, the values underlying our current systems and pedagogical approaches must be changed.

Transformation is needed at the “personal, social, and planetary” levels (Wolff et al.; 2022, p. 1). In terms of education, transformation is a tool *for* change in individuals lives, but it also encompasses, “transforming education itself to make it a better change initiator” from policy to all levels of education (pp.1-2). Amidst increasing environmental and social crises coupled with an increasingly technologically interconnected world transformation refers to change required in the ways people live, think and act at the personal and collective levels to survive and thrive (Lange, 2004; Wolff et al, 2022).

2 Research Tasks

In this thesis I aim to: a) investigate the terms Transformative Education (TE) (including Transformative Learning (TL); Transformative Pedagogy (TP) and Education for Sustainable Development (ESD) b) discuss how and why TE is linked to ESD in research and c) briefly describe some contexts in which TE for ESD is implemented. Following Bowen (2009) and Wolff et al. (2022) I use qualitative document analysis in this thesis. I examine the research to investigate and discuss the points above.

3 Defining Key Concepts

a. **Transformative Education (TE), Transformative Learning (TL), & Transformative Pedagogy (TP)**

Transformative Education, Transformative Learning, and Transformative Pedagogy

Transformative Education (TE) is an educational philosophy built upon the concepts of social activism and social change stemming from the ideas of Freire, Vygotsky, Dewey, Mezirow, O’Sullivan and others (Lynch and Curtner-Smith, 2018; Mezirow, 2000; 2009; Taylor, 2009). Today The development of **Transformative Learning (TL)** theory is largely attributed to sociologist, Jack Mezirow. The theory of TL has evolved over time, with a dual graduation from individual to community and from change in worldview to change in being and acting in the world (Lange, 2004). In *Art as Experience*, Dewey (1934) writes about the enriching possibility of an experience that can change a person’s relationship with the world, a new way of seeing, a new way of being in the world that is transformative (Singleton, 2015). TE also has roots in Paulo Freire’s (2018, 1970) concept of critical pedagogy which offers an opportunity for learners to be self-aware embodied subjects of their own learning.

The importance of discourse, critical reflection, and action engagement are also cornerstones of **Transformative Pedagogy (TP)** with roots stemming from Freire (Rodriguez et al., 2019). This also necessitates a redistribution of power in education from teacher to student. Sterling (2010) describes the goal of TL to bring about, “deep structural shifts of thoughts, feelings, actions, and consciousness”, (Jeronen et al., 2022, p.3). In this way, TP guides the educational processes towards learning and development of existing and acting in the world rather than the expected knowledge to be gained from an educational interaction (Wolff et al., 2022; Mezirow, 2009). TP has strong basis in social constructivism, in that the learning process is constantly morphing and evolving based on the interaction between prior knowledge/ experiences with new knowledge/ experiences (Rodriguez et al., 2019) that then influence the resulting ‘line of action’ (Mezirow, 1997, p. 5).

The original core components of TE were broad, encompassing all aspects of the learner and learning environment: individual experiences, critical reflection, and dialogue, later expanded to include holistic orientation, awareness of context, and authentic practice/ relationships (Taylor, 2009, p. 4). Mezirow sees TL generally as education for shifting consciousness with which we alter the way of ‘being and seeing’ in the world. The 10 phases of transformative learning include:

i. **Figure 1. O’Grady (2023, pp.2-3) and Mezirow (2009, p. 19).**

Phases of Transformative Learning	
1.	A disorienting dilemma
2.	A self-examination with feelings of fear, anger, guilt, or shame
3.	A critical assessment of assumptions
4.	Recognition that one’s discontent and the process of transformation are shared
5.	Exploration of options for new roles, relationships, and action
6.	Planning a course of action
7.	Acquiring knowledge and skills for implementing one’s plans
8.	Provisional trying of new roles
9.	Building competence and self-confidence in new roles and relationships
10.	A reintegration into one’s life on the basis of conditions dictated by one’s new perspective

Through these ten steps, Mezirow outlines the general educational process of encountering new information or ideas, experiencing the emotions and thought processes that are triggered, guiding the exploration and reintegration of new information with the old that then informs a new way of acting and being in the world.

As TL has developed over time, it has often been paired with various forms of engaged pedagogy such as: community service-learning, critical emancipatory pedagogy, participatory action research, action-based learning, project-based learning, student-centered learning, and environmental education (Levoke, 2014; Sipos et al., 2008; FEE, 2019) with the aim to build a bridge between knowledge and action (Levoke, 2014). Rodriguez et al. (2019) found that since its rise in popularity, in 1999, TE, TL, and TP have been employed in a plethora of research areas within education including: ESD, higher education, non-formal or informal learning, education policy, and teacher education.

b. Education for Sustainable Development

Wolff et al. (2022) point out that society and education are intrinsically interconnected; mutually shaping one another. UNESCO (2017) policy documents show that the call for societal transformation towards sustainability through education began decades ago, and it is still ongoing. Since the Decade of Education for Sustainable Development (2004-2015), **Education for Sustainable Development (ESD)** has gained increasing attention in conversations about education policy and reform. In the interregnum, there have been numerous studies published, programs piloted, and best practices prescribed on which pedagogical approaches are optimum for ESD (Jeronen et al., 2022; Wolff et al., 2022; Rodriguez, et al., 2019). There remains, however, a lack in studies that demonstrate the effectiveness of ESD programs in establishing new sustainable ways of existing and acting in the world (Boeve-de Pauw et al., 2015 and Jeronen et al., 2022). While not a panacea on its own, education is one of the key instruments for tackling environmental and social sustainability challenges. However, fundamental changes are needed in the field of education in order to, "...develop the capacit[ies]y to deal with the complexity of uncertainty of today's world, [and] encourag[e]ing citizens to actively participate in the development of sustainable communities," (Varela-Losada et al., 2022, p. 12). This calls into question what the goals of ESD are and how these goals guide a shift towards the prescribed purpose of education.

c. ESD in the UN Sustainable Development Goals

The United Nations Economic Commission for Europe (UNECE) Strategy for Education for Sustainable Development describes sustainability as an ethical stand point. This ethic includes, "solidarity, equality and mutual respect among people, countries, cultures and generations...in harmony with nature, meeting the needs of the present generation without compromising the ability of future generations to meet their own needs, " (p. 6, 2012). Education often fails to enable people to live together in sustainable ways. ESD then should offer authentic opportunities for learners to reorient themselves towards a sustainable lifestyle developing the necessary emotional, cognitive, and practical capacities (Rieckmann, 2018). ESD is an ongoing process of development of individual learners and learners in the context of society (UNECE, 2012; Jeronen, 2022).

Quality Education emphasizes the role of education in developing and maintaining inclusive and equitable quality education. The Sub-Target 4.7 specifically addresses the need for Education for sustainable development and global citizenship. The target outlines the need for learners everywhere to be provided opportunities through ESD to develop the skills

and knowledge necessary to live sustainably. This includes a lifestyle that is in line with: “human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development,” (UNECE, 2012, p. 8). The single indicator 4.7.1 of this target includes how national education policies, curricula, teacher education, and student assessment mainstream ESD.

4 Contextualizing TE for ESD

Song Link: [In the Anthropocene by Nick Mulvey](#)

As a future primary school teacher, I am particularly interested in TE in the context of non-adult learners. It is important to note that TE was originally based in adult education and has the majority of research in the field of TL continues in the same context (Mezirow, 2009; King, 2009). TE theory, first published in the *Journal of Adult Education Quarterly* in 1978, aimed to modify learning in adulthood to “recognize, reassess, and modify the structures of assumptions and expectations that frame points of view,” (p.18-19). As TE seeks to challenge existing worldviews, the theory must be adapted when working with young learners whose worldviews are not yet fully formed. At the core of TE lies personal transformation and growth through disorienting dilemmas (Rodriguez et al., 2019; Lange, 2009), which also must be uniquely adapted to children and adolescents. Shaler et al., (2023) note that grief arising from difficult situations is experienced differently between adults, young children, and adolescents. Carter & Nicolaides (2023) offer that the strong emotional components in TE of facing difficult dilemmas and passing through the stages of grief that lead to action require specific adaptations for young children.

Using the search criteria: "transformative learning" or "transformative education" AND "adolescents" OR "primary education" OR "basic education" in the OULA-FINNA database, I found that there was very little information on adapting TE for learners before adulthood. The closest research to be found on the impact of transformative education on primary school students is in connection with larger programs or teacher training initiatives (Murphy et al., 2021).

A number of studies are available linking TE and ESD (Gunnlaugson et al., 2023; Tung & Tri, 2022; Walsh et al., 2020; Rodriguez et al., 2019) in higher education, but a deficit of research in TE in primary and secondary environments. The studies I have found linking TL to primary and secondary education do not always mention ESD. Manan (2020) investigates the role of TE in language education to create multilingual educational spaces in elementary education environments in Pakistan but focuses on teachers as the agents of TP. Pavlou (2020) describes the implementation of transformative pedagogy in primary art education, offering recommendations to primary teachers on how to enable students to tell unique stories that are meaningful to their lives. Desai & Wane (2022) investigate the use of TP in the form of radical spirituality to promote anti-colonialism/anti-racism in K-12 educa-

tion in Canada from a structural perspective. Lynch & Curtner-Smith (2019) employ TP to teach social justice through PE in an elementary school environment.

5 Linking TE and ESD

In this section, I will demonstrate how TE and ESD are linked together in a variety of studies and what impact they are shown to have on one another's effectiveness. A number of recent studies have called for a move towards a Transformative Educational (TE) approach to ESD, noting its potential to 'carry the torch' for societal change (Boström, et al, 2018; Collazo and Granados, 2020; Collay, 2017; Wamsler 2020). TE has been paired with ESD in several international projects and programs (Wals, 2011; FEE, 2019; Rodríguez et al., 2020; Gough & Gough, 2019; Copsey, 2018). In their study Varela-Losada et al., (2022) posit that "transformative learning is a key element when it comes to making progress toward sustainable development" and has "become an element of growing interest in the quest for sustainability," (pp.1-2). Their bibliometric analysis of TL and sustainability learning demonstrates the ever-strengthening connection between the two. The number of articles published on the topics has increased steadily over the last two decades with a peak in 2020, as climate change concerns peaked on the international scale during the pandemic.

a. Transformative Sustainability Learning (TSL)

Sipos et al. (2008) use the term **Transformative Sustainability Learning (TSL)** to describe the intersection of the field of sustainability education and transformative education. TSL is used by the authors to describe a method to, "enable explicit transitions to sustainability-oriented higher education" (p. 68). TSL is achieved through a combination of community-based learning, problem-based learning, and action research coupled with a cyclical model of innovation, implementation and reflection. Such a blending transformative learning and education for sustainability forms a natural partnership because both sustainability and transformative learning require a change in perception and values coupled with active engagement (Sipos et al., 2008).

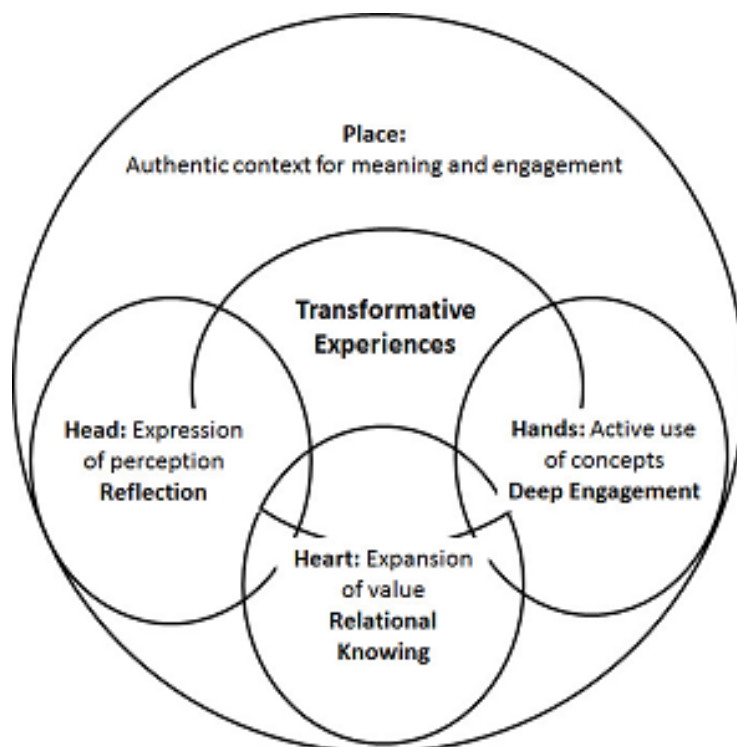
b. 3H: Head, Heart, Hands

Sipos et al. (2008) take organizing principles from Orr's (1992) recommendations on how to approach ESD to explicitly link sustainability education with transformative learning through the organizing principle of **head, hands and heart (3H)**. See Figure 2 for the 3H model. Their model shows the holistic nature of transformative experience and relates the

cognitive, reflective, and affective domains (Singleton, 2015). In the 3H framework: head, refers to engaging the cognitive domain through academic study, inquiry and understanding of ecological and sustainability concepts; hands is the enactment of the psychomotor domain for learning practical skill development and physical work such as building, planting, painting etc.; and heart includes the forming of values and attitudes that are translated into behaviours (Sipos et al., 2008).

In the 3H model the affective domain includes the concept of love where a significant emotional event is often the impetus to change, to transform. Connection of emotion to self-knowledge is an empowering resource for willingness and acceptance of the need for critical reflection and changing behaviors (Zembylas, 2003). Ives et al. (2020) argue that the inner worlds of students have been vastly overlooked when designing content and approaches to ESD. Pedagogical change must account for the values, beliefs, and worldviews of students while building upon their self-awareness, compassion, and critical consciousness (Avsec and Savec, 2021). In this way, love of place and a sense of connection or belonging are foundational toward development of sustainability values. Critical ecological educators have claimed that love of place is the key to fostering sustainable behaviors (Meyers & Frantz, 2004).

i. Figure 2: The Head, Heart, and Hands Model for TL (Sipos et al., 2008)



Shpak & Vasques (2023) link the principles of martial arts with TE to inspire ESD pedagogy through the development of “self-discipline, self-efficacy, mental resilience, and perseverance” needed for sustainable change (p.2). Kruger (2020) outlines the implementation of TP in a rural low socio-economic area in two Eco-school initiatives. The author deems the initiatives transformative because they aim to, “achieve major structural or systemic changes for sustainability” (p. 3). A study by Copey (2018) takes a look at transformative change in an Eco-Schools Indian Ocean programme. TL for ESD is observed in this study through the successful role the program played in uniting students, schools, and their local communities and building of collective competences leading to signs of social transformation. Because TL for ESD is considered to have a “robust transformative approach” (Rodriquez et al., 2020) it has the necessary capacity to, “empower individuals by encouraging them to critique status-quo values and social norms and to adopt sustainable principles and ethics by addressing unsustainable practices,” (p. 996).

8 Examples of TE for ESD

There is variation in the ways of understanding and implementing TL for ESD in the research (Rodriguez et al. 2019 and Varela-Losada et al., 2022). According to Rodriguez et al. (2019) TL is employed in research in several different ways: a) a buzzword: a vague unprecise use of TL as a term without fully defining it or citing key references to TL b) a supportive framework: TL is identified in the context of explicit articles, but is used as a piece or foundation of broader models or theories, c) alternative approach: the concept of transformative education is conceptualized as an approach opposite that of a transmissive approach in ESD, d) central framework: where TL is the central theory in the thesis or framework of an article in which to bring about or observe transformative change (pp.999-1000).

The diversity of ways that TL is used makes it somewhat challenging to isolate examples of TL for ESD, however I will briefly describe three example programs that use TL as a guiding principle or essential part of their framework. These include one program that I personally interned in, Eco-Schools, and two others that I discovered in my research on the topic. All three programs interestingly overlap networks and are connected to UN programs (FEE, 2022; UNESCO, 2021a; CoDesignS.org, 2023).

a. Eco-Schools and TL

Eco-Schools, the largest global ESD-certification program, aims to respond to sustainability education needs by supporting schools through a global network to deliver ESD by incorporating it into the schools' daily operations (Foundation for Environmental Education [FEE], 2019, p. 11). The program has become highly popular around the world and is endorsed by many governments as a best practice for ESD (Andreou, 2020, p. 40 and Nieminen, 2022). The Eco-Schools program was developed in 1992 in response to these needs identified at the United Nations Conference on Environment and Development. Later in 1994 it became a private non-profit NGO operated under the Foundation for Environmental Education. Now after 25 years, Eco-Schools has developed from a European educational program into a global model for environmental education (EE) and education for sustainable development (ESD) at the international level. There are programs with offices in over 70 countries with more than 350 schools participating in Finland alone. The program is implemented in early childhood education, primary, middle, high school, and university environments.

The Eco-Schools program claims that it uses TL at its core to develop learners' abilities to realistically assess their environmental footprint and make informed decisions about

their behavior (Andreou 2020, p. 32). The methodology of the Eco-Schools program includes TL for ESD using the methods of Project Based Learning (PBL), student-centered learning, and the whole school approach (Andreou 2020, p. 36). The whole school approach reaches beyond the school grounds to engage the whole school community, including students, teachers, and the local community, and embed ESD into every aspect of the curriculum. At the same time, the program aims to improve the school environment by teaching a sustainable lifestyle and enhancing learning by doing. The Eco-Schools program aims to encourage students to develop sustainable projects that are meaningful to them by observing their living environments and innovating solutions to local problems with and for the community (Gouch et al., 2020, p. 2). The goal is to provide students with deep problem-solving skills, critical thinking, reflection, and teamwork skills (PBL), while at the same time educating and inspiring other members of the community (Andreou 2020, p. 36). The program is meant to help the schools to connect with the local communities, improve their finances through increased efficiency, promote multi-stakeholder collaboration and encourage student leadership in order to transform behaviors and relationships (Andreou 2020, p. 40). When a school in the Eco-School program achieves the criteria they are awarded a Green Flag (Eco-Schools, 2022).

b. 7 Step Framework

The program includes a 7-step cyclical framework for active, student led and student-centered guided by TL principles: 1) Form an Eco-Committee: should be a nominated group of representatives that act as a representation of the entire school community. They meet regularly and discuss environmental and social next steps for the school. 2) Carry out a Sustainability Audit: sustainability theme and focus areas are determined based on the priority areas in the school and next steps are made to inform the action plan. 3) Make an Action Plan: plan is made to improve sustainability problems in the school environment with measurable goals and a timeline. 4) Monitor and Evaluate: students use determined monitoring methods to assess whether efforts have been successful or whether an approach must be changed. 5) Curriculum Work: This is the only part of the framework that relies heavily on the teacher linking and integrating ESD efforts to the curriculum. 6) Inform and Involve: This step involves outreach to the community beyond the school environment to inform and involve others in ESD activities. 7) Produce an Eco-Code: A slogan is democratically chosen to represent the new collective image of the school community post-sustainability efforts (Andreou, 2020; Boevende Pauw & van Petegem, 2013).

- i. Figure 3: Seven-step change framework; Schools enrolled in the Eco-Schools program to implement sustainability transformation within the school and later community. (Andreou, 2020, p. 37; Nieminen, 2022; p.13).



c. 8 Principles

The TE elements of Active Participation and Critical Reflection are guided by the following 8 principles:

1. Ensure that participants are engaged in the learning/teaching process
2. Empower participants to take informed decisions and actions on real life sustainability issues
3. Encourage participants to work together actively and involve their communities in collaborative solutions
4. Support participants to examine their assumptions, knowledge, and experiences, in order to develop critical thinking, and to be open to change
5. Encourage participants to be aware of cultural practices as an integral part of sustainability issues
6. Encourage participants to share inspirational stories of their achievements, failures, and values, to learn from them, and to support each other

7. Continuously explore, test, and share innovative approaches, methodologies, and techniques
8. Ensure that continuous improvements through monitoring and evaluation are central to the programs

(Eco-Schools, 2022)

d. Challenges

The program is implemented in environments with a wide range of learners from early childhood to university and adult education (Eco-Schools, 2022). However, there is little information or resources on how the methodologies and theories that make up the Eco-Schools framework should be adapted to the different needs and abilities of a wide range of learners and at different developmental stages. The TE approach in Eco-Schools does not always result in a holistic 3H change. In a study of two Kenyan Eco-Schools, Nieminen (2022) found that a successful change in environmental attitudes through the Eco-Schools approach did not always result in a sustainable change in behaviors among the pupils. She recommends that more emphasis should be put into improving the school's pro-environmental social culture and offering students support in dealing with feelings of eco-anxiety or climate related hopelessness. There are several studies done on Eco-Schools, but they focus mainly on the effectiveness of the program with little mention of adaptation of the general framework to a range of learners ages and abilities in relation to TL (Boeve-de Pauw & van Petegem, 2013; 2011; 2017; Andreou, 2020; Eco-Schools, 2022; FEE, 2019; Schröder, 2020; Nieminen; 2022).

9 Transformative Education for ESD in Teacher Training

Wolff et al. (2022) argue that pressing issues that are central to the global discourse on sustainability are neglected in teacher education. When describing the broad, contemporary changes and challenges which affect schools, teachers, and teacher education, the Finnish Ministry of Education and Culture (2016, p. 8) lists: “flexibility of learning environments, digitalization, internationalization, cultural diversity, diverse learners, learning at work, multi-professional teams, and personalization of learning.” However, the upheaval in the broader societal surrounding of schools, caused by sustainability challenges are not addressed. The need for teacher education to be further developed to promote teachers’ agency in such realities is a critical step in sustainable transition of society. Niemi et al. (2018) describe a significant lack of focus in Finnish teacher education on current and future long-term global sustainability issues. Challenges such as, “changes in people’s living conditions, work and economy, climate change, increased inequality and radicalization, technological changes and artificial intelligence,” (p.48) and other issues stated in the UN agenda 2030 are not discussed.

Teachers who must be ever more creative and innovative professionals who have the skills to address, “challenges of the future and rapid changes in society,” (Ministry of Education and Culture; p. 6). A blog on the Finnish Ministry of Education (Opetushallitus, 2020) states: “Transformative learning emphasizes future-oriented, networked activities and holistic understanding,” that underlines the potential benefits of the transformative pedagogical approach. Approaching sustainability education through TL experiences can have a ideological and pragmatic impacts on the learner, the community and the environment (Singleton, 2015). However, TE in teacher education for sustainability is an emerging area and it is still theoretically weak on both theoretical and empirical levels (Evans et al., 2017; Wolff et al., 2022).

Below I will discuss two initiatives, the reoccurring UNESCO Forum for Transformative ESD and CoDesignS ESD Research Framework , that are geared to offer training and tools to teachers and other education stakeholders on TE for promoting ESD.

a. UNESCO Forum on Transformative ESD

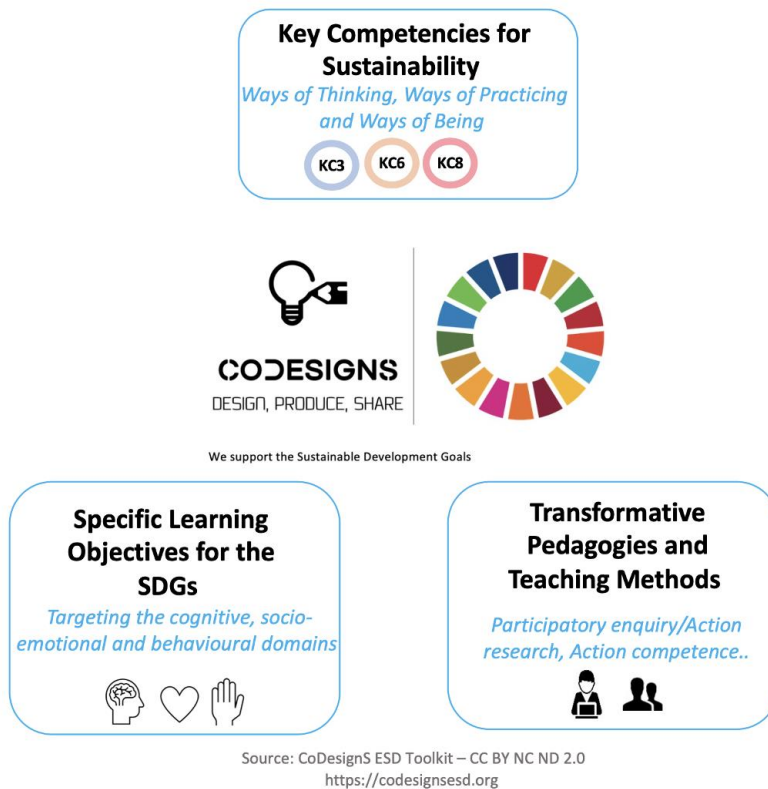
A recent UNESCO study including data from ten countries shows that ESD is mostly implemented as scientific knowledge, which is not enough to promote transformation (UNESCO, 2021a). For that reason, the UNESCO report states that education must start to transform itself starting with teacher education. Teachers are expected to support learners to acquire the knowledge and skills needed to promote sustainable development by 2030 (Wolff

et al., 2022). Initiatives like the UNESCO Forum on Transformative Education for Sustainable Development, Global Citizenship, Health and Well-being offer training to teachers and other education stakeholders to discuss good practices, progress, monitoring and mainstreaming transformative education towards Sustainable Development Goal target 4.7 (UNESCO, 2021a). The overarching objective of the 5th Forum on Transformative Education for Sustainable Development is stated as, “identifying what progress in transformative education looks like and how it can best be captured”. This is supposed to be achieved by: sharing and reflecting on good practices, specifically those that show TE impact on “policy, curriculum, teacher development, assessment, learning environments, pedagogy” and to establish, “benchmarks and success indicators for progress towards transformative education,” (UNESCO, 2021b, p.1).

b. CoDesignS ESD Research Framework

Toro-Troconis et. al (2023) describe the CoDesginS ESD research framework conducted during a Learning Design and Education for Sustainable Development Bootcamp facilitated by the Association for Learning Design and Education for Sustainable Development (ADLESD) and delivered in collaboration with UNESCO International Institute for Higher Education in Latin America and the Caribbean (IESALC). The framework provides a pedagogic method for embedding Education for Sustainable Development (ESD) in curriculum design through a co-design and co-creation approach using the three pillars: sustainability competencies, SDG learning objectives, and transformative pedagogy. The study was conducted among university students and teaching staff from various faculties and was shown to significantly increase participants' willingness, confidence, and ability to integrate ESD into curriculum design effectively (Toro-Troconis et. al, 2023). In addition to being an example of a framework that implements TE for best practice in ESD, it offers an example of a potential tool for enhancing teacher training.

i. Figure 4: CoDesigns ESD Pillars



10 Discussion

There exists a good availability of studies connecting ESD and TE. The connection between the two theories in promoting education for sustainable development is represented as natural and even organic. It supports the recommendation that ESD must be transformative if we are to change the trajectory of society and build a better future. In fact, in many studies TE is indeed considered to be the most effective and positive approach to ESD (cite), however there are challenges in implementing it (Nieminen; 2022). TE theory has been around since the seventies and has roots that go back even further to great minds of transformative education and critical pedagogy. Further research is needed on TE theory among non-adult learners. However, much of TL theory research remains in adult educational contexts. This is especially true for TE in ESD. TL theory is recommended, promoted, and implemented by programs such as Eco-Schools with a target audience of non-adult learners from early childhood education, primary, secondary, and upper secondary (FEE; 2022 and Eco-Schools; 2019). Researchers have argued that TE theory must be adapted for difference in developmental levels among learners for example in maturity levels in dealing with grief, dilemmas, or anxiety (Shaler et al., 2023). This could be linked to the reason programs that use TE for ESD find success in changing thoughts about sustainability, but struggle to achieve sustainable behavior changes in participants (Nieminen, 2022).

Teacher training is seen as vital to the improvement of ESD and effectiveness of TE, supported by programs such as UNESCO Forum on Transformative Education for Sustainable Development (UNESCO, 2022) or recommendations by the Finnish Ministry of Education and Culture (2016). In discussing transformative learning in adult basic education King and Heuer (2009) describe three strategies that foster learning: learner centeredness, safety and trust, facilitation and modeling. These strategies are also key when creating learning environments for basic education students (Cornelius-White & Harbaugh, 2010).

11 Conclusion

Five decades ago, standing before a UN commission on the environment, the Senegalese forest engineer, Baba Dioum, proclaimed: “In the end, we will conserve only what we love; we will love only what we understand, and we will understand only what we are taught,” (Valenti and Tavana, 2005, p. 308). ESD is an absolute necessity if a planetary future for humans is to exist, and TE is one highly recommended way to go about it. Education is considered one of the strongest promoters of Sustainable Development (SD) and many studies show that TL is the best way to approach ESD (Rodriguez et al, 2019; Wolff et al., 2022). Transformative learning for ESD can be taken further when supported by self-directed learning action-oriented approaches (Avec and Savec, 2021).

a. Areas where TE for ESD intersect

TE for ESD intersect in the following areas:

1. transformative nature of Sustainability learning
2. need for new thoughts, feelings, and behaviors
3. importance of education for shaping society

b. Further research is needed to:

1. adapt TE to be developmentally appropriate for non-adult learners
2. address the discrepancy in translating sustainability knowledge into action
3. develop TP for ESD in teacher training

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List of Abbreviations

TE- Transformative Education

TL- Transformative Learning

TP-Transformative Pedagogy

ESD- Education for Sustainable Development

TSL- Transformative Sustainability Learning

3H- Head, Heart, and Hands

UNESCO- United Nations Educational, Scientific, and Cultural Organization

FEE- Foundation for Environmental Education

SDGs- Sustainable Development Goals

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