



### Education for Sustainable Development (ESD): Pedagogical Approaches that Make a Difference

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**Abstract:** A developing trend and problem in the global community at large, and in the field of education specifically, is education for sustainable development. The three components of ESD are environmental, social, and economic. A tool for achieving the Sustainable Development Goals (SDGs) is education for sustainable development, or ESD. It has the power to bring about the social change required for the nation to become sustainable. Promoting and putting into practice sustainable development principles can be done in large part through education. Furthermore, education can help people become more resilient to development and environmental challenges and pave the way for a sustainable future. ESD is a multidisciplinary idea that examines development from the perspectives of the social, economic, and environmental spheres. Therefore, it is crucial that educators employ powerful pedagogical strategies that will aid in advancing the idea of sustainability in education. In order to investigate the most efficient tactics and approaches for teaching ESD in an educational setting, this study examined a variety of earlier publications. The analysis of several studies from journals, research papers, and textbooks has led to the conclusion that a paradigm change - from transmissive to transformative learning—is required. This type of learning requires transformative pedagogies. It is only via such educational techniques that the development of the essential competences required to advance sustainable development can be achieved. Additionally, it is shown that some of the most successful pedagogical strategies for fostering and maintaining ESD in the field of education include lifelong learning, social learning, problem-based learning, active and experiential learning, critical pedagogy, dialogue education, transformative or transformational learning, and constructivist approaches. To sum up, in order to accomplish the goal of ESD, instructors must be equipped with the appropriate pedagogies.

**Keywords:** education for sustainable development (ESD), sustainable development goals (SDGs), pedagogical approach, competencies

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#### 1. Introduction

The goal of Education for Sustainable Development (ESD) is to equip all generations, regardless of age, with the knowledge and skills necessary to take charge of building a sustainable future (UNESCO, 2003). ESD is a crucial part of education that works towards the following goals:

(1) Encouraging and developing development that can meet the needs of the current generation without

endangering the ability of future generations to meet their needs.

(2) Raising community awareness of the importance of living within the ecosystem's carrying capacity.

(3) Being valuable to all living things both now and in the future (Suprastowo, 2010).

ESD is a strategy that integrates behaviour modification, knowledge sustainability, and educational pedagogy; the combination of these three elements produces a learning experience that is both successful and transformative (Frisk & Larson, 2011). With respect for cultural and global variety, ESD equips students to make responsible decisions and act responsibly for the sake of economic sustainability, environmental integrity, and a cohesive society for both the present and future generations (Taimur & Sattar, 2020). The goal of ESD is to empower people and enable them to reflect on their own behaviours while considering the social, cultural, economic, and environmental effects that they will have in the future from both local and global viewpoints (United Nations Educational Scientific and Cultural Organisation, 2018). It necessitates that both individuals and groups respond sustainably in challenging circumstances. Students may participate in and be accountable for building a sustainable society through ESD. According to Nousheen et al. (2020), ESD can help kids acquire the values, abilities, and attitudes necessary to lead healthy lives and effectively address both local and global concerns. The goal of SE is to promote educational reform that can successfully aid in the societal shift towards sustainability or sustainable development. We might also characterise SE as education for sustainable development, to put it simply. Thus, in order to advance ESD A key component of the teaching and learning process is pedagogy. Pedagogy is the term used to describe the learning processes and learning environment that are typically supported by teachers in the classroom setting. Teachers can employ a range of instructional strategies to convey knowledge, values, and skills to their pupils. Thus, ensuring that appropriate teaching methodologies are used for appropriate content is a difficult task for the educational community (Schina, 2020). In particular, SE calls for a learning process that can delve deeply into subjects and effect a pragmatic shift—that is, a move from transmissive to transformative learning, where transformative pedagogies are required. The development of the essential competences and skills required to support sustainable development is only achievable through such pedagogical techniques. Teachers must possess both content and pedagogical knowledge in order to implement SE and select effective pedagogical techniques. As such, it is critical to provide teachers with the necessary pedagogies through training (Taimur, 2020). A teacher may be able to take the appropriate steps for ESD if they encourage in their students a feeling of lifelong learning, recognition of diversity, teamwork and cooperation, personal introspection and ideals, responsibility and faith in others, and integrated understanding. It may require a curriculum that includes knowledge that is inclusive, useful, practical, and critical of oneself. Self-generated indicators, critical comments and encouragement from others, as well as both quantitative and qualitative assessment, are the foundations of evaluation (UNESCO, 2020).

### **1.1 Education for Sustainable Development (ESD) Competencies**

Every person in today's globalized society needs to learn how to cope with risk, uncertainty, and global changes. They also need to grasp the complexity of their environment and be able to work together, communicate, act positively, and be unified (Wals, 2016). As a result, competencies are required to reach it. People must encourage those skills in order to improve sustainability in the actual world. This competency-based approach assists in determining which approaches are most effective in the actual world and how to support the appropriate teaching strategy. The eight essential ESD competences have been identified by the United Nations Educational, Scientific, and Cultural Organisation (2018):

Sustainability depends on their competencies (Pacis & Van, 2020). Every skill has unique attributes and domains of application. These skills are interdependent (Vilmala et al., 2022). Furthermore, fundamental proficiencies like communication are critical for dealing with sustainable development. Moreover, it is imperative to cultivate fundamental competencies in conjunction with these critical sustainability competencies (Wiek et al., 2011).

Moreover Taimur and Sattar (2020) have identified three broad domains into which the core ESD competences can be categorized:

(a) Cognitive domain (knowledge and reasoning ability)

(b) Socio-emotional domain (social abilities)

(c) Behavioural domain (action competence)

The eight ESD competencies are grouped into three domains as shown in the following table.

Table 1: Grouping of ESD Competencies in Three Domains

Cognitive Domain	Socio-Economic Domain	Behavioral Doman
Systematic thinking Anticipative Normative Critical Thinking problem solving	Collaboration  Self- Awareness	Strategic Integrated

Prioritizing the development of cognitive domain competencies over those of the socio- emotional and behavioural domains will increase effectiveness. The foundation for the other two domains is provided by the cognitive domain. Knowledge, critical thinking abilities, and social skills can all contribute to the foundation that attitudes and actions need (Vilmala et al., 2022). As a result, ESD is now seen as a necessary component of high-quality education. The development of sustainability competences can be supported by all educational settings, including non-formal and informal learning environments and preschools through higher education (Saqib et al., 2020). ESD is a comprehensive and transformative approach to education that takes into account the learning environment, pedagogy, and content. In order to support participation, self-directed learning, problem-orientation, collaboration, and the linking of formal and informal learning to the development of key sustainability competencies among learners, it should create learner-centered, interactive teaching and learning environments as well as action-oriented, transformative pedagogy (Cebrián et al., 2020). As a result, the foundation of this type of learning is strategic planning that supports lifelong learning, collaboration, diversity acceptance and recognition, individual reflection and values, integrative understanding, responsibility and faith in others, and the creation of learning communities dedicated to the common good. Medrick (2013). This entails creating a curriculum and pedagogical strategies that value transdisciplinary, acknowledge that knowledge is tentative and approximate, involve the student in choosing objectives and strategies, permit compromise and flexibility, and encourage first-hand, local, applied, and personal knowledge. Here, knowledge that is comprehensive, self-critical, applicable, and practical is valued highly. Self-evaluation, self-generated indicators, constructive criticism, encouragement from others, and both qualitative and quantitative assessment forms the basis of evaluation (Sterling, 2001). Learners' behaviour needs to be improved in terms of curiosity, openness, flexibility, critical thinking, and willingness to be influenced by others. Here, teachers must choose effective teaching strategies to support ESD in the classroom.

**1.2 Pedagogical Approaches to ESD**

As was previously mentioned, the curriculum, application of pedagogical approaches, assessment, and development of pertinent learning outcomes—all of which are thought of as methods of teaching the learning process—are what ensure ESD. As a result, as previously said, this study is literature-based, with the researchers extracting the conclusions and summaries by careful examination of earlier, updated studies. Thus, following an analysis of earlier research, the researcher attempted to list some of the key ESD educational strategies that are most frequently used.

**1.3 Lifetime Education**

According to the notion of lifelong learning, learning is a continuous process that does not end with formal schooling in early childhood, when children can receive factual knowledge. At all ages, in all kinds of settings (formal, casual, and nonformal), learners ought to be inquisitive (Marouli, 2021).

**1.4 Collaboration And Social Learning**

Social learning, also known as collaborative learning, is based on the notion that people learn best when they engage with other people. When people collaborate to study, their combined knowledge and abilities surpass what any one person could ever accomplish. Instead of being purely theoretical, participatory learning became more

beneficial. In order to explore, analyse, understand, and apply concepts and practices, learners actively collaborate with peers, classmates, community members, and others (Evans, 2019).

### **1.5 Problem Based Learning (PBL)**

Another pedagogical strategy that is predicated on the notion that learning happens when students encounter real-life situations is called problem-based learning (PBL). Real-world challenges enable students to apply their knowledge, exercise critical thinking, and recognise its applicability, which can lead to increased student engagement and improved learning outcomes (Martín-Garin, et al., 2021).

### **1.6 Experiential and Active Learning**

The focus of experiential and active learning is on the learner's personal accountability for their own education. It may motivate the student to participate actively. According to Michel (2020), this method advances the growth of the critical thinking abilities required to address sustainability-related concerns. Because learning becomes a process of discovery and students are more actively involved in the process, it is also known as the approach of learning by doing (Cebrián et al., 2020). Additionally, it promotes students to actively participate in creating meaning, interpreting information, and applying it as opposed to passive learning, which assumes that students will internalize and recall the material in essentially its original form (Allen, 2018).

## **2. Critical Pedagogy**

Another strategy that can improve learning outcomes and move education towards sustainability is critical pedagogy. The goal of critical pedagogy's inception in Latin America was to enable marginalized groups to change the sociopolitical realities in which they found themselves. This method placed a strong emphasis on knowledge transformation, requiring students to think critically, carry out research, and produce new information. In order to help students acquire a critical consciousness and plan the pedagogical praxis for social transformation, Freire (1998) underlined the importance of enlightened educators as agents of social change. They are in charge of establishing engaging, dialogic, participative, and thought-provoking learning environments that inspire learning and get students ready for socially transformational action.

### **2.1 Dialogue Education**

Adult learning is the target audience for dialogue education. The underlying premise of this technique is that adults will learn best when it comes to their own life experiences, since they have had enough life to engage in meaningful discourse with anyone.

### **2.2 Transformative or Transformational Learning**

Transformational learning, another name for transformative learning, is an approach to education that focuses on how individuals interpret their experiences in life. This approach is a development of constructivism, which holds that each learner creates their own meaning by fusing new and prior information (Darling-Hammond L, 2007). Taimur (2020) states that learning is more than just memorization; it entails "becoming critically aware of one's own implicit assumptions and expectations and those of others and assessing their relevance for making an interpretation as the highest level of learning."

### **2.3 Design Thinking Methods and Learner-Centered Instruction**

Constructivist education clarifies that learning is a socially constructed process of knowledge development. According to Biggs et al. (2022), Learner's construct knowledge by building on what they already know through their own activities. Teaching is about involving students in active learning and expanding their knowledge based on what they already know, not about imparting information. Students learn in the context of their own experiences, and for them to be engaged in the material, it must be meaningful and relevant to them (either because it relates to what they already know or will be useful to them in the near future).

### **2.4 Empowerment**

This method aids in preparing students to act, make wise decisions, grow into responsible, independent individuals with an awareness of their local, national, and global surroundings.

### 2.5 Apprenticeships and Internships

Experiential learning takes place when students operate in real-world organisational settings outside of the classroom. Students can put their newly acquired information to use in this situation (Seatter & Ceulemans, 2017).

### 2.6 Research Based Learning

Learning that happens when students work in groups or alone to answer research topics and solve research problems by conducting primary or secondary research (Wamsler, 2020).

### 2.7 Writing Intensive Learning

Learning that takes place while creating a thorough essay. In order to gain insights and understandings, it may incorporate critical thinking, academic writing, and reflective activities (Marouli, 2021).

## 3. Conclusion

Developing leaders and future generations who can aid in the creation of a sustainable society is the goal of ESD. Another name for these influential people is "sustainability citizens." In order to develop these leaders, ESD must give students the chance to create, evaluate, and act with a great deal of autonomy and self-determination. Since sustainability involves self-control, imagination, tolerance, acceptance, and accepting responsibility, ESD plays a part in helping students develop their "dynamic qualities." The learning materials, pedagogy, learning environment, and learning outcomes are all addressed by the revolutionary and all-encompassing approach known as ESD. Therefore, ESD calls for effective pedagogical practices like learner-centered teaching, interactive classrooms, and critical evaluation in addition to integrating topics like poverty, climate change, and sustainable consumption into the curriculum. Therefore, learning that can uncover a subject's depth and effect a pragmatic shift—that is, a move from a transmissive learning method to a transformative learning environment—is necessary for ESD. A paradigm shifts results from transformative learning because it helps students comprehend who they are, how they relate to other people, and how the natural world works. Furthermore, in order for learners to improve their essential ESD abilities and be able to ensure and promote sustainability both now and in the future, competency-based approaches are required. These abilities include the following: 1) Systems Thinking Ability; 2) Anticipatory Ability; 3) Normative Ability; 4) Strategic Ability; 5) Collaborative Ability; 6) Critical Thinking Ability; 7) Self-Awareness Ability; and 8) Integrated Problem-Solving Ability. Therefore, in order to achieve the goals of ESD, some effective pedagogical approaches such as problem-based learning, social learning/collaborative learning, empowerment, internships and apprenticeships, research-based learning, active and experiential learning, dialogue education, transformative or transformational learning, constructivist approaches, and student-centered learning, are needed to enhance these competencies. In order for ESD to be implemented successfully, instructors must possess both pedagogical and content understanding about sustainability. As a result, providing teachers with the appropriate pedagogical techniques through training is crucial.

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