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# EDUCATION FOR SUSTAINABLE DEVELOPMENT: THE ROLE OF TEACHERS

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## ABSTRACT

Education for Sustainable Development (ESD) incorporates sustainability into curricula, equipping students with essential knowledge, skills, values, and attitudes to tackle societal challenges. Teachers are pivotal in this process, acting as key agents for ESD implementation. Examining teachers' access to professional development that enhances sustainability-oriented competencies is crucial. This study explored ESD implementation globally, focusing on teachers' experiences and the competencies required. A literature review identified seven broad competencies for educators: knowledge and understanding, critical thinking, pedagogy and assessment, curriculum, school leadership, collaboration, and advocacy. Additionally, the study analyzed barriers and enablers affecting teachers' transformative roles. Insights revealed the significance of supportive pedagogical frameworks, clear policy directions, and continuous professional collaboration across educational sectors. (Catherine Jaspar, 2009)

**Keywords:** Education for Sustainable Development (ESD), knowledge, skills, values, professional development.

## 1. INTRODUCTION

Education for Sustainable Development (ESD) is guided by three pillars: the ethical pillar, the cognitive pillar, and the action pillar. Education enables understanding of ourselves, others, and our environment, fostering respect, justice, responsibility, and dialogue. Teaching about sustainable development is motivated by personal values such as a love of nature, concern for children, and influence from educators and parents. Teachers' beliefs, motivations, and experiences shape their practice of environmental education. Education as a transformative tool aims to change attitudes, beliefs, and behaviours, fostering personal and social transformation. A major obstacle to implementing ESD is the challenge of planning and facilitating unstructured projects, which require relinquishing control, something some teachers may find difficult (Catherine Jaspar, 2009).

## 2. CONCEPTUAL FOUNDATIONS OF EDUCATION FOR SUSTAINABLE DEVELOPMENT

Education for sustainable development (ESD) is the next step in the evolution of integrated education. The ESD paradigm encourages a multidisciplinary, teaching competence-focused approach, with teaching viewed as the articulation of a deliberate, outcome-based, change-oriented action. It maintains that

enduring shifts in attitudes and behaviour emerge only through engagement—not exertion or directive. Education for sustainable development is constructed as the learning by which responsible individuals thrive well together on a planet governed by equitable sharing of resources, guarantees of freedom and comprehension, active participation in mass-choice systems, and an ecology capable of naturally renewing humanity's life-supporting base. Consequently, teachers are viewed as custodians and facilitators of the integration of such learning into individual inquiry (Catherine Jaspar, 2009).

The learning included in sustainable-development-oriented curricula comes from sustainability science, not school textbooks. Sustainability science seeks solutions to anthropogenic stresses on the earth-system that threaten humanity's prospects for continuance (Peter Ifegbesan et al., 2017). It aims to understand current conditions and respond through lofty governance, citizenry, natural phenomena, and energetic awareness of humanity's life-supporting foundations. Knowledge about underlying democratic, social-justice, political-economy, and gender-justice dimensions is especially conducive to effective response and active participation in decision-making global.

### **3. THE TEACHER AS AGENT OF TRANSFORMATION**

Teachers play a key role in transforming Education for Sustainable Development (ESD). Merely requesting societies to transition to sustainable development is insufficient; influencing consciousness, attitudes, and behaviors towards the environment, social equity, and the economy is crucial. Teachers can enhance students' knowledge, skills, attitudes, and practices for ESD. Beyond knowledge and skills, whole systems thinking, which transcends disciplinary boundaries and connects different areas, is essential. Such thinking involves integrating scientific and technological competences from various disciplines and understanding complex social, economic, political, environmental, and technological phenomena. When respect for society and the environment is lacking, barriers to sustainable development arise. This often stems from insufficient ethical considerations, making the cultivation of ethical attitudes vital for ESD. Fostering respect for local communities and the Earth can lead to more sustainable societies. Reflective teaching practices encourage educators to adopt innovative approaches and reconsider their roles. Teachers who frequently engage in self-reflection can promote ESD more effectively. Reflective practitioners assess their teaching compatibly and independently, distinguishing them as transformative educators. Interdisciplinary comprehension is crucial for ESD and effective guidance, as it highlights the relevance of various disciplines in tackling sustainability challenges. External knowledge on themes like climate change enriches educational practices. While understanding systemic approaches is significant, leveraging teachers' existing skills and frameworks for global issues is also important. (Catherine Jaspar, 2009)

#### **3.1. PEDAGOGICAL APPROACHES FOR SUSTAINABILITY**

Education for sustainable development aims to enhance the abilities of individuals, societies, and organizations to contribute to sustainability by acquiring essential knowledge, skills, values, and perspectives. This education is pivotal in preventing environmental degradation and promoting social responsibility, economic equity, and good governance. It empowers stakeholders to make informed

decisions and positively reshape possibilities. Teachers play a crucial role in nurturing responsible citizens who make sound ecological and social choices. Education for sustainable development is integral to the broader educational renewal movement, equipping youth with the necessary competencies and attitudes for a rapidly changing global landscape. It focuses on holistic person development through four pedagogical approaches: constructivist pedagogy, transformative pedagogy, place-based education, and inquiry-based learning. The constructivist approach encourages students to build their understanding from fragmented information, enhances sustainability awareness, and values emotional aspects in learning. The transformative approach emphasizes personal and social empowerment, exploring values, ethical considerations, and reflection. Place-based education connects local experiences with broader global issues and fosters a sense of belonging while addressing social injustices. Inquiry-based learning engages students in exploring controversial issues, promoting discussion and critical analysis of information, while focusing on real-world problems that matter. (Catherine Jaspar, 2009)

### **3.2. CURRICULUM DESIGN AND INTEGRATION OF SUSTAINABLE DEVELOPMENT**

To advance sustainability in education, teachers must consciously integrate sustainable development (SD) into curricula aligned with education for sustainable development (ESD) principles. This goal can be attained through reform of existing curricula or design of new curricula. To facilitate SD curriculum integration, teachers can identify curriculum elements directly related to broader sustainable-affairs learning outcomes, such as the UN Sustainable Development Goals and the associated global citizenship education framework. These curriculum elements can then be tagged to regional or national standards and competencies, including large-scale assessments such as Programme for International Student Assessment or Trends in International Mathematics and Science Study (Catherine Jaspar, 2009).

Curricula can also be designed, adapted, or selected to engage learners with the environment and the global community at all levels. In addition to discrete subject areas—such as climate education, global citizenship, social entrepreneurship, and sustainable finance—SD themes, topics, and concerns can be integrated across subjects and offered at multiple levels. Continuous. Mapping curricular elements to these standards and competencies helps teachers communicate the relevance of SD to key curriculum documents. ESD advocates diverse approaches to learning alongside those from national or regional curricula and assessment systems. Integrated or holistic ESD, education for global citizenship or sustainable development, and education based on sustainability principles can complement approaches advocated by governments or regional entities.

### **3.3. ASSESSMENT AND EVALUATION IN SUSTAINABILITY EDUCATION**

Sustainability education utilizes both formative and summative evaluation strategies. A central focus of Sustainability Education is to involve students in an active process in which they identify their learning-problems, develop their own solutions, design and initiate their learning activities and share what they learned with their peers. Keeping the evidence of the Learning Outcomes Development demonstrates the essential precondition for successfully moving forward from one Phase to another. Rubrics produce clear

and shared expectations concerning the quality of students' Work-in-Progress materials, and subsequently, for the Quality of their Final Production. The Portfolio itself visualizes the whole Process of Work along with the achieved Learning Outcomes, which, in turn, helps students to clarify their own learning-issues in the future. (Catherine Jaspar, 2009)

#### **4. COMPETENCIES AND PROFESSIONAL DEVELOPMENT FOR TEACHERS**

Education for Sustainable Development (ESD) is a lifelong learning approach that seeks to empower everyone, everywhere to seek solutions to pressing global challenges, such as climate change, loss of biodiversity, pollution, urbanization, and digitalization, the education approach is strongly linked to the Sustainable Development Goal 4 of the 2030 Agenda (the Agenda) and the Global Action Programme on Education for Sustainable Development (GAP). ESD aims to provide people—regardless of age, background or location—with the knowledge, skills, values and attitudes to address a variety of sustainable development issues and contribute to a sustainable future. Education policies geared towards implementing Quality Education as defined by SDG4 and the ESD approach are recognised to be pivotal to the successful implementation of the 2030 Agenda (Cebrián & Junyent, 2015).

##### **4.1. KNOWLEDGE, SKILLS, AND ATTITUDES FOR SUSTAINABILITY**

Education for Sustainable Development (ESD) has been defined as a holistic and transformative education within the Agenda 2030 framework (UNESCO, 2014). ESD aims to empower everyone to assume a critical, reflective, and active role in addressing the interlinked global challenges of environment, economy and society. Teachers have been considered the 'agents of transformation' for the educational curriculum (UNESCO, 2017). ESD educators are encouraged to step beyond the traditional paradigm of instruction and embark on a whole-institution approach for curriculum re-design (Catherine Jaspar, 2009). Pedagogical frameworks focused on learning empowerment such as constructivism, inquiry learning, action research, place-based education, and transformative pedagogy are acknowledged as keys for re-orienting the educational systems towards sustainability either in formal or non-formal settings (Cebrián & Junyent, 2015). ESD through such pedagogical approaches empowers learners to position themselves as 'agent of change' who make decisions and take actions for sustainability and equity in their sphere of life.

Sustainability education for the learner requires educators to be equipped with competency, capability, and confidence to perform as 'agents of sustainability education' with active leadership in the transformation of pedagogy, practice, culture, and future (Cebrián & Junyent, 2015; Kemmis, 2010). Commonly required competencies and capabilities of educators for ESD consist of: 1. interdisciplinary sustainability education knowledge and practice, 2. critical thinking and reflection on one's ESD practice, 3. understanding ethical issues and values connected to sustainable development, and 4. ability to continuously improving on ESD through professional learning and community of practices (Cebrián & Junyent, 2015).

Educators are also expected to embrace a teacher as leader identity and leadership mindset for the next generation development (Cebrián & Junyent, 2015; Gronn, 2010). The old interpretation of educational leadership contained authority and top-down control, while the new version is increasingly innovating

towards enabling and empowering for further public value creation. The new educational leadership is profoundly anchored on learning, subgroup-based evolving, and widespread collaboration (Cebrián & Junyent, 2015). Therefore, common principles and frameworks for ESD re-orientation approach across different educational systems as well as the mindset notion for educator leadership identity have become a priority for sustainable education toward the 2030 Agenda.

The summary of indications from teachers' or educators' perspective regarding sustainability education indicates three major directions as a priority for further educational systems, curriculum and ESD goals reform—pan-education, turn the moral obligation into actionable culture and character construction towards the next generation and the future, and a thorough engagement with non-formal educators or community stakeholders. However, little research focus on complementary educators' voices still remain in this field and area enter into co-creation times. The transformational curriculum cannot be completed without deeply opening towards external community concerning educational leadership and provision for learner participation and engagement. Teacher notion and grading on space and temporal are also in urgent need of more intense explorations toward ESD under wider definition boundaries either.

#### **4.2. CONTINUOUS PROFESSIONAL DEVELOPMENT AND COLLABORATION**

Governments worldwide are recognizing the importance of Education for Sustainable Development (ESD) and integrating it into teacher education policy to provide adequate support for educators. This encompasses competence-based definitions of ESD aligned with teachers' professional development (Bourn et al., 2017). Approaches include government programs, networks, published reports to policymakers, and regional cooperation linked to international accords (UNESCO, 2018; UN General Assembly, 2015). Global monitoring highlights gaps between expectations and substantive systemic changes, emphasizing the need for a paradigm shift (UNESCO, 2019). Proposals for systematic, sustainable, and outside-the-classroom change in basic education teacher preparation stress that short-duration, in-service, and training programs alone cannot achieve significant transformation (Gilbert & McKnight, 2018).

Teachers report the necessity of continuous professional development (CPD) and collaboration to develop sustainable education strategies and materials for diverse contexts. Transformational CPD involves professional learning communities, mentoring, collaborative design, subject-specific meetings, sharing resources, peer observation, and communities of practice. International projects facilitate voluntary community of practice creation among educators and stakeholders to promote ESD (UNESCO, 2017). Collaboration with peer teachers, community practitioners, and students broadens dissemination channels and fosters cross-sectoral ties. Mentoring or coaching programs connecting less-experienced with more-experienced educators at various levels enhance professional dialogue on sustainable development issues. Involvement in collaborative curriculum or materials design with institutional colleagues, out-of-school organizations, or community stakeholders contributes to collective engagement and network-building crucial for advancing sustainability.

## **5. CONTEXTUAL FACTORS INFLUENCING SUSTAINABILITY EDUCATION**

Institutional frameworks, school ethos, and pedagogical approaches shape educational priorities in diverse contexts. Sustainability education focuses on local, global, and intergenerational challenges, combining awareness of environmental issues with engagement in sustainability initiatives. Teachers differ in how they design and implement related learning experiences. The national and local context governs educational reform processes; actors navigating multiple levels negotiate the eventual scope. Inappropriate levels of contextualization impede progress. A national policy framework can facilitate local implementation.

Extensive research explores the influence of socio-cultural, institutional, and resource dimensions on educational processes, systemically as input, interaction, or output. Community engagement and curriculum design intertwine; vernacular and global dimensions coalesce. Civic engagement seeks local cultural relevance, unity, pedagogical capacity, and knowledge for ESD implementation. Teachers adapt curriculum intentions to the situated teaching–learning nexus, mediating sustainability education through contextual engagement (Catherine Jaspar, 2009). Systemic analysis clarifies ESD parameters: thematic focus on education for and about sustainability; status as structure; connections to broader sustainability policy; transdisciplinarity; modelling; emergent properties; and anticipated outcomes.

### **5.1. INSTITUTIONAL AND POLICY CONTEXTS**

Education for Sustainable Development (ESD) enables the long-term survival of our planet, society and economies. ESD fosters skillful, conscious, deliberate and responsible interactions among individuals, societies and surroundings by cultivating knowledge, understanding, perspectives and attitudes towards the world. Characters of Sustainable Development and ESD identify teacher as fundamental contributor. These characteristics of ESD and Sustainable Development like long-term relations with environment, society and economy demand dedicated contribution from diverse disciplines and the content may vary from one school to another involve again the significant role of the teacher.

Provider of ESD is now the institutional framework of the country and the provision of ESD varies from country to country and institution to institution. By diversity of teaching methods the approach is personal knowledge or collective knowledge and collective effort. All the countries and regions have their own practices of Education for Sustainable Development and Education for Sustainable Development is also called Education about, in, through and towards Sustainable Development.

A teacher's role in ESD provision changes during preparation time. When the authoritative knowledge is provided by one teacher, teacher gives instruction about certain information. By sharing information and idea among teachers the teacher act as co-learners themselves, work against stereotypes and programme to serve the society. Ministry of Education tries to link the fellows for collective knowledge to strengthen the ESD implementation.

## **5.2. SOCIO-CULTURAL AND LOCAL COMMUNITY ENGAGEMENT**

Education for Sustainable Development (ESD) emphasizes the promotion of sustainable practices and behaviors, with teachers serving as facilitators of necessary knowledge, values, and associated agency (Catherine Jaspar, 2009). In the pursuit of sustainable development, teachers engage in practices across different contexts and educational settings. These practices have been characterized as place-based education (Isabel Estrada-Vidal et al., 2020). In this context, ESD objectives can be achieved through further engagement with local/global socio-cultural processes and practices that occur in schools and informal contexts. Sustainability education aims to promote reflective/critical attitudinal change, yet many community-oriented efforts, especially those participating in work-study positions, may overlook this target. Additionally, efforts to broaden educational participation must also consider the ways that involvement with local/global socio-cultural processes reinforces inequity.

Cultural values, local knowledge, and diverse views directly influence the sustainability of community practices at every level, including socio-ecological, economic, and cultural. Efforts to create and sustain a healthy human life-support and biosphere at various scales continue to be adapted, maintained, abandoned, or repurposed as community histories unfold. Community processes cultivate the change in knowledge, behavior, values, and action required for sustainability at every practice level — knowledge of practice details; awareness of diverse positions, concerns, and impacts on practices; insights for transforming practices; extra-systemic perspectives for aligning with broader ecological sustainability; and, ultimately, systemic co-creation of healthy, caring, equitable ways of life and living across interconnected communities.

## **5.3. RESOURCES, INFRASTRUCTURE, AND TECHNOLOGY**

Teachers need adequate resources, proper infrastructure, and access to appropriate technologies to implement Education for Sustainable Development (ESD) effectively. Both material and digital resources are crucial in educational processes. At the material level, plentiful resources and laboratories enable a wide range of hands-on learning experiences. Remote teachers, however, often lack such resources, forcing them to rely on more conventional, less effective means of instruction. Even in contexts with traditionally abundant resources, large class sizes still hamper the sustainability of the environment. In these circumstances, the bottleneck at the material level requires pedagogical approaches to be adjusted in order for ESD to take root and flourish.

Teachers with significant prior exposure to digital tools are much more likely to adopt them in their lessons. Access to high-quality digital content, technology, technical assistance, and reliable connectivity at home and in school all play an essential role. Studies have shown that these connections lead to better technology integration, while a lack of them acts as an impediment. There is also an emerging recognition of the importance of technology in strengthening Environmental Education and urging a more effective response to climate change. Not only can technology help in providing learners with information and knowledge, but it can also facilitate participation, collective action, and social change (Catherine Jaspar, 2009).

Sustainable school infrastructures that enable and promote environmentally friendly behavior among the whole educational community aid broader ESD objectives. Schools can lead by example and serve as laboratories for students to experiment with sustainability practices. Such infrastructures can include measures like greenery and vegetation, pedagogical gardens fostering biodiversity and natural cycles, and improved thermal performances such as natural ventilation, passive cooling, and dynamic envelope control (Peter Ifegbesan et al., 2017).

## **6. EQUITY, INCLUSION, AND CRITICAL CIVIC ENGAGEMENT IN SUSTAINABILITY EDUCATION**

Sustainability education—broadly conceived as preparing children to recognize and address social, economic, and environmental problems (Sund & Pashby, 2018) —must be both equitable and inclusive. Culturally responsive pedagogy that acknowledges students’ lived experiences and perspectives can motivate greater engagement in learning activities, especially when materials reflect an understanding of past and present inequalities and injustices (D. James et al., 2011). Engaging students as co-designers of their learning process and its environmental and community connections helps them see the relevance of sustainability concerns, authenticates their needs and responses, and invites civic engagement.

Equity and inclusion are foundational to sustainability education. Attending to accessibility and representation promotes equity in both topical choices and preferred languages. Giving students opportunities for voice, choice, and agency empowers thoughtful action and fosters the mindset needed to analyze systemic barriers to environmental and social health.

## **7. CHALLENGES, OPPORTUNITIES, AND FUTURE DIRECTIONS**

Over the past decades, countries, organizations, and individuals have generally responded actively, imaginatively, and positively to the existence and increasing seriousness of the global crises of sustainability. This promotes a collective urge to renew and adapt ideas, practices, and initiatives and take new, energetic actions (Catherine Jaspar, 2009). These circumstances foster the efforts of many agents at diverse levels to facilitate significant, impactful change. Educational organizations and institutions — particularly educational and learning programs for and among children and youth — are an integral part of this crucial effort; schooling essentially determines the capabilities, dispositions, and aspirations of the next generations. Consequently, Education for Sustainable Development (ESD) has emerged as a noteworthy and significant global movement and agenda, gaining increasing momentum, resonance, and support around the world.

Education for Sustainable Development (ESD) embodies a visionary and transformative movement to fulfil the acknowledged significance and urgency of sustainability. A worldwide reflection and trend analysis of existing sustainability-focused curricula revealed that the concept and notion of sustainability, as widely understood and implemented at present, remain too narrowly construed — something like a classic “education for good health”, “education for nutrition”, or “education for learning”. Schools continue to

attach much more weight and attention to communication, literacy, numeracy, and computer skills than sustainability matters, in spite of extensive evidence that air, water, land, climate, and biodiversity conditions, in contrast to population and pollution, have progressed for the better in most parts of the world. This suggests that the basic concept and conception of sustainability and sustainable development remain unfulfilled in most schooling systems.

## 8. CONCLUSION

The findings of this work underscore the necessity for teachers to assume the role of agents of social transformation for sustainable development within educational institutions and society at large. Furthermore, it is vital that ESD policies and practices be adapted to meet the specific needs and circumstances of different educational contexts in order to attain a truly sustainable future. Education for Sustainable Development encompasses training, public awareness, and educational activities that deepen the understanding of the connection between social justice and the environment while encouraging action to promote justice and respect for all people and the Earth. Teacher passion plays a vital role in making a difference in teaching sustainable development. Passion and enthusiasm are contagious, inspiring students and colleagues alike. The experience has reinforced teachers' commitment to teaching about sustainable development and transformed practice as middle years educators. Engaging with like-minded teachers and exploring new resources has renewed enthusiasm. Schools are ideal spaces to teach children about their responsibility toward the Earth, and experience confirms the importance of fostering this understanding from a young age (Catherine Jaspar, 2009).

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