

Linking Citizenship to Education for Sustainability, a Theory of Change Conceptual Framework

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Abstract. Planetary-level anthropogenic pressure is attributable to both large-scale industry and modern lifestyle. However, the prevailing concept of sustainability education primarily focuses on people's responsibilities, neglecting to educate students about the roles and responsibilities of government and industry in effecting systemic changes for sustainability. This paper proposes a conceptual framework utilizing the Theory of Change as a foundational model for effective sustainability education. By integrating the Theory of Change, this framework aims to introduce citizenship to balanced responsibilities between education institution, governmental bodies, and industries within the context of sustainability education.

1 Introduction

Education for Sustainability faces inherent challenges rooted in the inadequacies of traditional knowledge-based approaches to instigate transformative action. This includes a pressing need for adaptive and participatory leadership models and the acknowledgement of country-specific factors shaping students' awareness and accountability concerning sustainability issues [1]. These complexities underscore the necessity for holistic, action-oriented methodologies in sustainability education. Implementing the Theory of Change within education for sustainability offers a strategic framework to enhance students' citizenship by fostering active engagement and responsibility toward sustainable practices.

2 Revisiting the Evolution of Education for Sustainability

The transition from environmental education to sustainability education has been a response to evolving environmental concerns and changing pedagogical paradigms [2]. Historical narratives underscore the intricate interplay between political, social, and educational factors [3]. However, persistent tensions between transformative aspirations in environmental education and entrenched schooling structures remain [4]. To address this, a holistic approach

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encompassing knowledge, awareness, skills, attitudes, and participation is advocated. These perspectives collectively underscore the need for a critical and comprehensive approach to environmental education that addresses both individual and societal change.

Debates surrounding the transition to education for sustainability underscore concerns regarding anthropocentric biases overshadowing environmental consideration [5, 6]. Scholars advocate for an integrative approach, merging environmental education and sustainability education [2]. However, inherent challenges persist due to the lack of clear definitions and guiding principles for this evolving educational focus.

While the significance of education for sustainability is increasingly acknowledged [7], substantial impediments hinder its effective implementation. These encompass the imperative for a comprehensive approach engendering personal transformation [8], and the demand for strategic curriculum changes [9]. For further study, there is a resounding call for more effective and comprehensive sustainability education driving tangible changes in individuals and society.

3 Integrating Citizenship in Education for Sustainability

The link between citizenship and education for sustainability consisted of intricate commensuration of many aspects. Scholars emphasize education's role in nurturing environmental citizenship. The integration of citizenship in education for sustainability underscores the development of environmental citizenship, a construct emphasizing a robust connection between environmental stewardship and active civic participation. It emphasizes the cultivation of values, knowledge, and skills that empower individuals to comprehend the interdependencies between human actions and environmental impacts. This facet encourages learners to perceive themselves as responsible global citizens, acknowledging their role in preserving the environment and contributing to societal well-being. Parra [10] emphasizes the role of education in developing environmental citizenship, which involves a strong emphasis on the environmental dimension of sustainability and active civic engagement.

Further to the pedagogical aspects, the integration of citizenship within sustainability education promotes experiential learning methodologies, encouraging students to engage in real-world sustainability projects and community initiatives. This participatory approach instills a sense of agency, enabling learners to apply theoretical knowledge to practical contexts, thereby fostering a deeper understanding of their roles as agents of positive change within their communities. Wellington [11] further underscores the importance of science education in citizenship, particularly in the context of a sustainable future.

Incorporating ethical dimensions into education for sustainability and citizenship integration involves discussions around equity, justice, and responsibility in addressing environmental challenges. This facet prompts critical reflections on ethical dilemmas related to sustainability, fostering a sense of moral responsibility and ethical decision-making among learners. Sarid [12] builds on these ideas by proposing a value-based framework that connects environmental citizenship to change agents for sustainability, suggesting that education should focus on developing change agency at different levels. Huckle [13] highlights the need for a more comprehensive approach to education for sustainable citizenship, suggesting that current efforts have not yet led to a breakthrough in sustainability. These studies collectively underscore the importance of education in fostering a sense of environmental responsibility and active participation in creating a sustainable society.

3.1 Concept of Citizenship in the Context of Education for Sustainability

Traditionally citizenship embodies intricate legal and sociological dimensions, signifying a lasting and relational personal status within a self-governing polity [14]. In the context of

education for sustainability, the concept of citizenship transcends the traditional notion of legal and political membership in a nation-state. It encompasses a broader and more inclusive understanding that emphasizes an individual's responsibilities, values, and active engagement towards fostering sustainable societies and environments on a global scale.

In EFS context, citizenship seek to ensure equality and universal rights within a political and stratified community. Citizenship in sustainability education acknowledges the interconnectedness of global challenges and the need for a global perspective. It cultivates an understanding of the interdependence between societies, economies, and the environment on a global scale. Learners are encouraged to recognize their roles as global citizens, understanding the implications of their actions locally and globally.

Citizenship also means emphasizing the ethical dimensions of sustainability. This dimension prompts individuals to critically examine values, ethical principles, and social responsibilities concerning environmental justice, equity, and fairness in addressing sustainability challenges. The fluid, socially constructed nature of citizenship, especially among marginalized groups, accentuates its complexities [15].

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4 Utilizing the Theory of Change in Education for Sustainability Context

The Theory of Change in education, as discussed by Reinholz [16], is a complex and multidimensional concept. The Theory of Change operates as a roadmap, emphasizing iterative planning, implementation, and evaluation to drive systemic shifts. When applied to education for sustainability, this framework can effectively cultivate students' citizenship by intertwining environmental consciousness, civic participation, and a sense of responsibility toward sustainable actions. It involves the continual renewal of an organization's direction, structure, and capabilities to meet the evolving needs of both internal and external stakeholders [17]. This process is influenced by philosophical and social aspects, such as the concepts of change, development, process, and innovation. The application of change theory in education can be guided by various theoretical frameworks, including continuous improvement, organizational learning, and appreciative inquiry. However, there is a need for greater coherence and integration of these theories, particularly in the context of STEM higher education, to achieve meaningful and sustainable change [18]. Education for sustainability effort follow the same line of rationale due to the highly interdisciplinary nature of the problem involved.

4.1 Enhancing Student Citizenship in Education for Sustainability Using Theory of Change Framework

The implementation of the theory of change in education for sustainability is a complex process that requires careful planning and execution. To implement the Theory of Change within sustainability education and bolster students' citizenship, a multifaceted approach is imperative. Firstly, the incorporation of interdisciplinary modules focusing on environmental science, social studies, and civic engagement instills a comprehensive understanding of

sustainability challenges. This holistic knowledge base empowers students to comprehend the intricate interdependencies between human actions, environmental impacts, and societal welfare. Fia et al. [19] emphasizes the importance of a gradual and structured approach, with committed leadership and staff. In education sector, it often entails the active discretion of visionary academic leaders and competent faculty members to carry out the sustainability vision.

Practical experiences such as community-based projects, participatory action research, or service-learning initiatives provide tangible opportunities for students to apply theoretical concepts in real-world contexts. By engaging actively with local communities or environmental organizations, students not only contribute meaningfully to sustainability efforts but also develop critical citizenship skills such as collaboration, empathy, and problem-solving. Problems and challenges typically rise from the practical area. One notable study by Findlers [20] highlights the challenges and tensions in implementing student-centered pedagogies in higher education.

In addition, the integration of ethical frameworks and values within the curriculum is pivotal. Encouraging discussions on environmental justice, equity, and the ethical responsibilities of individuals within broader societal contexts fosters a deeper understanding of citizenship intertwined with sustainability. This approach prompts students to critically assess their roles and responsibilities as global citizens, emphasizing the importance of ethical decision-making and social responsibility in addressing sustainability challenges. Thomas [21] underscores the need for a strategic approach, including change management and staff development, to overcome barriers to sustainability education in tertiary curricula.

Furthermore, fostering a culture of dialogue, reflection, and deliberation within educational settings encourages students to engage in informed discussions on complex sustainability issues. Encouraging critical thinking and reflection allows students to navigate diverse perspectives, enhancing their capacity to analyze multifaceted problems and devise innovative solutions. Reverting back to the systemic change nature of ToC, Grano [22] proposes a systems approach and a mutual learning model for the transformation of education for sustainable development. These studies collectively suggest that successful implementation of the theory of change in education for sustainability requires a combination of strategic planning, committed leadership, and innovative pedagogical approaches.

Complexities in Applying the Theory of Change to Education for Sustainability demands critical skills and reflexivity. Kearins [23] emphasizes the need for a critical skillset, including reflexivity, critique, and social action, to bridge weak and strong sustainability paradigms. On the other hand, institutional support and collaboration between educational stakeholders—such as educators, policymakers, community leaders, and industry professionals—are crucial in creating an enabling environment for implementing the Theory of Change in education for sustainability. Aligning institutional strategies, allocating resources, and providing professional development opportunities for educators contribute significantly to the effective integration of sustainability principles into the educational fabric. Ojedokun [24] suggests the use of the Diffusion of Innovation Theory to communicate the integrated understanding of environment, economy, and society in teacher education programs.

4.1.1 Key components to implementing ToC for better citizenship in Efs

ToC operationalize the concept of citizenship for a systemic change in educational culture to realize human potential and interdependence. To this effect, ToC can be utilized to catalyze systemic shifts in educational culture by offering a structured framework for initiating, guiding, and evaluating transformative processes. This approach emphasizes a strategic roadmap that identifies specific goals, processes, and outcomes, thereby fostering a culture

of adaptability, innovation, and continuous improvement within educational institutions. Borrowing concepts from ToC and integrating citizenships while deliberating on proven strategies in the literature [25] we come forward with the following proposition. We propose seven key points on implementing ToC to improve students' citizenship in the education for sustainability context:

1. **Vision and Goal Setting for Sustainable Education:** Within the Theory of Change framework, educational stakeholders collaboratively establish a vision for sustainability education, defining measurable goals aligned with sustainable learning outcomes. This inclusive process engages administrators, educators, students, and community members to articulate shared values and aspirations for fostering sustainability-driven educational practices.

2. **Inclusive Stakeholder Engagement:** Active involvement of diverse stakeholders is paramount in driving systemic change in education for sustainability. The Theory of Change encourages inclusive decision-making processes where stakeholders contribute insights, expertise, and experiences. This participatory approach fosters ownership and commitment to embedding sustainability principles within educational practices.

3. **Capacity Building for Sustainable Pedagogies:** Implementation of systemic change requires equipping educators with the skills and knowledge to integrate sustainability into the curriculum effectively. The Theory of Change advocates ongoing capacity-building initiatives and professional development programs aimed at empowering educators to adopt innovative pedagogies that promote environmental stewardship, social responsibility, and systems thinking.

4. **Iterative Implementation and Evaluation:** The Theory of Change promotes iterative cycles of planning, implementation, and evaluation. Educational institutions continually assess progress toward sustainability goals, adapt strategies based on feedback, and refine approaches to ensure the effectiveness and longevity of sustainability initiatives within the curriculum and institutional practices.

5. **Cultural Shift towards Sustainability:** Consistent communication and reinforcement of sustainability values contribute to cultivating a culture that embraces environmental consciousness and ethical responsibility. The Theory of Change facilitates a shift in mindset, encouraging educators and students alike to perceive sustainability as an integral part of educational practices and institutional identity.

6. **Resource Allocation and Institutional Support:** Adequate allocation of resources and institutional support are pivotal for sustaining changes in education for sustainability. The Theory of Change advocates aligning resources, policies, and structures to support sustainability initiatives, encompassing funding allocation, policy adjustments, and creating an environment conducive to innovation and sustainability-focused endeavors.

7. **Collaboration for Collective Impact:** Encouraging collaboration among educational institutions, community organizations, and industry partners enhances the impact of sustainability initiatives. The Theory of Change emphasizes building networks and partnerships to leverage collective expertise, share best practices, and drive broader systemic transformations toward a more sustainable educational ecosystem.

The proposed components are intended as a general guideline. However, for practical uses in each institution, policy maker and curriculum developer should make the necessary adjustments to accommodate the specific needs and situation. Stephens [26] highlights the importance of considering regional-specific challenges, financing, institutional organization, democratic processes, and communication in higher education as a change agent for sustainability. Notable example on citizen empowered EfS practice can be drawn from mangrove planting initiative by Irawan [27]. Finally, on personal aspect of teaching profession, Filho [28] underlined the importance of academics' reflections on their own values are crucial for developing the transformative potential of students as agents of a

sustainable future. Educators must consciously realize their significant and lasting effect on their students.

5 Conclusion

Utilizing the Theory of Change framework within education for sustainability presents a promising avenue for leveraging students' citizenship attributes as catalysts for positive, systemic transformation. This strategic framework, amalgamating the principles of systems thinking, participatory engagement, and iterative planning, offers a structured approach to harnessing students' civic responsibilities and ethical consciousness toward sustainable practices.

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