INTEGRATING SUSTAINABILITY IN PEDAGOGY AND CURRICULUM DESIGN

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RESEARCH ARTICLE

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Abstract

In an ever-changing world, where environmental changes and challenges are constant in the media and in our daily lives, it is essential to provide future generations with the knowledge and skills needed to manage sustainability challenges. Sustainability serves as an educational framework worldwide. The term sustainability is understood and communicated as a set of principles, which affect content and pedagogy, the individual, the community, and the global society. Since resources are limited, they must be used conservatively and prudently to ensure that there will be sufficient resources for future generations, without reducing the quality of life of the present. Integrating sustainability into education is important because it helps students develop the skills and values needed to live in a way that is good for the environment, the economy and society. It also helps students develop essential 21st century skills such as creativity, critical thinking and problem solving. On the other hand, teaching focused on sustainability reminds us that pedagogy is a civic project. By instilling a sense of environmental responsibility, we can enable students to become aware global citizens, thereby contributing to a sustainable future. In the present study entitled "Integrating sustainability in pedagogy and curriculum design", the researcher addresses the following objectives: (a) to define and explore sustainability in the context of education, focusing on its environmental, social and economic dimensions, (b) to implement the teaching methodologies that promotes sustainability and (c) to encourage teamwork between educators, students and external stakeholders to enhance education and sustainability outcomes.

Keywords: *Pedagogy, curriculum, sustainability, education*

Introduction

UNESCO has emphasized education as an essential tool for ameliorating the effects of unsustainable human actions and for implementing a productive plan for the future of society (Kuzich, 2010). Sustainability is essential in the 21st century because it helps protect the planet and ensures the well-being of people and future generations. Sustainability is considered a multidisciplinary field composed of scientific, statistical, and humanistic dimensions. To promote sustainability in the 21st century, education is considered important because it helps people develop essential skills and knowledge to make responsible choices for the environment, the economy, and society. Education helps people develop a sustainable mindset where they can understand the importance of a healthy and balanced ecosystem and a prosperous society. It also helps individuals make responsible decisions in all their actions and develop creativity, critical thinking and adaptability. This will help prepare individuals for their future. Curriculum design and pedagogical approach are the two most important ways to integrate sustainability into education. Education, curriculum and pedagogy are closely linked to each other in the sense that curriculum determines content, pedagogy determines methods, and education includes both. Curriculum is seen as a guide for teaching and learning that can connect the dots between what to teach, how to teach and when to teach. Thus, curriculum can be defined as the totality of students' experiences in the educational process. The design of activities and learning sequences is called pedagogy or it can be defined as the methods and materials used to teach the content. The central point of pedagogy is to reinforce students' previous learning and to develop their skills and attitudes. It helps students understand the topic and apply these lessons to their daily lives. The educational system includes several pedagogies, each of which arises from different teaching philosophies. Curriculum design can help implement sustainability principles into the educational experience, and active, participatory, and experiential learning methods can help students understand and act on sustainability issues. Integrating sustainability into pedagogy and curriculum design can truly offer an opportunity to enhance the value of education that is relevant and responsive to new systemic conditions of uncertainty and complexity.

Objective of the study

The research paper addresses the following primary objectives.

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- To define and explore sustainability in the context of education, focusing on its environmental, social and economic dimensions.
- To implement the teaching methodologies that promotes sustainability
- To encourage teamwork between educators, students and external stakeholders to enhance education and sustainability outcomes.

Research Methodology

It is a descriptive study with the requisite secondary data collected from various sources, like articles, journals, blogs, and publications. The data collected were finally analysed and reviewed systematically to arrive at conclusion.

Literature Review

Sharma (2023) conducted a study on the topic "Towards sustainable education: Integrating environmental and social responsibility into the school curriculum". The current study focuses on the integration between curriculum development and the importance of sustainability in education. The researcher found that integrating sustainability principles into the school curriculum represents a key step in providing the rising generation with the knowledge, skills and values needed to meet the complex challenges of a rapidly changing world. Leifler & Dallin (2019) described in their study titled "Integrating sustainability into the Engineering curriculum – A National study of program director perspectives", how program directors approach sustainability in the Engineering curriculum. Based on this study, program directors are convinced that learning for sustainable development is crucial. Woo et al., (2012) highlighted in their research the importance of ESD for national development. One of the essential steps to achieve ESD is the integration of ESD into the school curriculum. Bacon et al., (2010) conducted a study on "Creating an integrated practical project curriculum for students". This study revealed the need to integrate sustainability-oriented skills courses into engineering and social science departments. In their study, Sharpe & Breunig (2009) emphasized the need to work to encourage environmental education by supporting alternative teaching practices. To define and explore sustainability in the context of education, with emphasis on its environmental, social and economic dimensions.

Education is the most vital and powerful tool used to change the world and achieve self-empowerment (Thangeda et al., 2016). Humans are depleting the planet's resources, which means we are not living sustainably. Climate change is affecting humans and species, destroying ecosystems and leading to unprecedented environmental degradation. Thus, learning is seen as the key to finding solutions and creating a new sustainable world. UNESCO's response to the critical challenges facing our planet is Education for Sustainable Development (ESD). This is the lesson needed to preserve and improve the quality of our lives and that of future generations. ESD enables individuals to make decisions about how we do things individually and collectively, both locally and globally, that help improve the quality of life without damaging the planet for the future (Report of the Sustainable Development Panel, 1988).

Sustainability in Education, also known as Education for Sustainable Development (ESD), is a comprehensive approach to education. It is an essential concept for forward-looking energy policy, for achieving social justice, and for understanding our responsibilities for the life chances of future generations (Michelsen & Fischer, 2017). ESD helps people understand how to live sustainably. It aims to equip people with the knowledge and skills that allow them to make responsible decisions that will truly benefit the environment, society, and economy. Education for sustainable development trains people to develop values such as social justice, cultural diversity, and sensitivity, to have the ability to make informed decisions and act responsibly, to have attitudes that encourage them to live sustainably, and to engage in behaviours that involve a sustainable future. In 2010, the Council of the European Union declared that the SDGs were essential for achieving a sustainable society. Therefore, ESD is recommended at all levels of formal education and training, as well as in non-formal and informal learning.

Building a sustainable future requires more than just being environmentally aware. It is important to have a holistic approach that integrates all aspects of our lives. Five Cs of sustainability, which includes cleanliness, community, culture, care and corporate governance, presents a comprehensive framework to guide us towards a more sustainable 2030 and beyond.

- Cleanliness – recognizing our responsibility to preserve and protect our planet. This requires promoting clean energy, reducing waste and minimizing carbon footprint.
- Community – a sustainable and resilient community promotes shared values and mutual support. Community can provide local solutions to global challenges such as climate change, insecurity and working collaboratively.
- Culture – it is about embracing diversity and promoting a culture of sustainability. It also involves transition from consumption to conservation, from exploitation to appreciation.
- Care – it is at the heart of sustainability. It includes caring for the environment, caring for others and caring for future generations.
- Corporate governance – emphasizes the crucial role that businesses play in sustainability. Businesses should embrace sustainable practices in their operations, such as reducing energy consumption, reducing waste and promoting fair labour practices.

The main benefits of sustainability in education are to develop a sense of global citizenship, to help people make smart and responsible choices, and to enable them to act towards sustainability in their lives, in their communities, and in the world.

UNESCO's Action in the Field of Education

Education systems are not equipped to address today's challenges, from global warming and biodiversity loss to the acceleration of the digital revolution that widens inequalities and democratic regression, conflicts and crises. UNESCO's education programme has been completed in response to new global challenges posed by the existential threat to global warming, conflicts, protracted crises and the acceleration of digital revolution. UNESCO's education sector provides global and regional leadership to ensure that every child, young person and adult has access to quality education throughout their lives. Experts help countries develop education system that provide quality, lifelong learning and learning opportunities for all, and enable learners to be creative and responsible global citizens. Thus, UNESCO's main task is to rethink and reimagine education for a sustainable future.

Pillars of Sustainability

Sustainable development is based on three fundamental pillars - environmental protection, social equity and economic development. Each of these pillars are interconnected and closely linked to the others and plays a distinct role in helping to achieve long-term sustainability. These three pillars are essential because they provide a framework for addressing the challenges of sustainable development. Each pillar addresses different aspect of the problem and together they provide a comprehensive approach to the problem.

- Environmental protection – focuses primarily on taking into account our limited resources, to protect natural resources such as air and water and thus preserve biodiversity, use natural resources to minimize waste and pollution, and reduce environmental stressors such as greenhouse gas emissions.
- Social equity – the critical issue related to social equity is poverty. Economic growth must be inclusive and benefit all members of society to lift individuals out of poverty. Another key issue related to social equity is discrimination. It can take many forms, including race, gender, ethnicity or religion. Therefore, the creation of a just and equal society where all individuals have equal rights and opportunities is very essential. Values that promote equality and respect for individual rights should be encouraged.
- Economic development – it is related to the creation of an economy that provides a high standard of living for all and offers everyone the opportunity to participate fully in the labour market. Economic development can be achieved by promoting innovation and entrepreneurship, which increases productivity and expands access to education and training opportunities.

Therefore, these three pillars of sustainability are essential for creating a healthy and sustainable society that offers opportunities and prosperity. By, promoting environmental protection, social equity and economic development, it is possible to achieve a truly equitable and sustainable future.

Identifying and Implementing Teaching Methodologies Promoting Sustainability

Aleksandr Georgievich Spirkin defined methodology as a system of principles and methods of organizing theoretical and practical activities. Changes in society, economy and health require a response from higher education, which leads to the training of professionals, especially future teachers. Therefore, active methodologies are part of 2030 Agenda for Sustainable Development, considered as a key element of teacher training (Valdivia et al., 2023, p.1). Sustainability education is essential to foster a sustainable future. It helps students develop various skills and values necessary to live in a way that is good for the environment and society. It also offers opportunities for students in career related to sustainable development.

Sustainable education methods are those that use multidisciplinary leading to development and use of communication, collaboration and empowerment skills, which are essential for sustainable social transformation. Successful implementation and practice of sustainable education methods link values, attitudes and behavioural intentions with cognitive learning outcomes. Teaching methodologies that encourage sustainability are experiential learning, project-based learning and problem-solving. These methods encourage critical thinking and active participation.

- Experiential learning – Students learn through hands-on activities.
- Project-based learning – Students work collaboratively on projects to understand sustainability.
- Problem-solving – Students learn to solve various problems related to sustainability.

Sustainable Practices

- Recycling – Students learn to recycle and teachers can model this behaviour.
- Waste reduction – Students can learn how to minimize waste by reusing.
- Composting – Students create compost in the classroom.
- Energy conservation – Students learn to save energy and organize days without energy or with light.
- Environmental literacy – Students learn about the environmental impact of their actions.

Sustainable learning includes the following

- Critical thinking – Students learn to think critically about various issues related to sustainability.
- Collaboration – Students work together on sustainability issues.

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- Research – Students conduct research on sustainability issues.
- Presentation skills – Students learn to present their findings on sustainability.

Integrating Sustainability into Curriculum Design

Ralph W. Tyler is known as the "grandfather of curriculum design". According to Tyler, a school curriculum is a set of learning that students undertake under the direction of the school. The process of organizing a school curriculum to help students learn is called curriculum design. Integrating sustainability into curriculum design involves incorporating sustainability principles into various areas of study. This allows students to understand the relationship between sustainability and its effects on society and environment.

Sustainability can be integrated into curriculum design in various ways. This includes:

- Research principles that can be applied to a variety of topics, such as resource management, environmental impact assessment, and governance.
- Integrate sustainability concepts into various subjects such as architecture, engineering, business, and economics.
- Implementation and initiation of sustainable practices in the school, including waste management, water management, water conservation, and energy efficiency.
- Use a broad perspective that integrates analytical approaches, contextual awareness, and mindfulness.
- Link curriculum to Sustainable Development Goals that help students understand how their actions contribute to sustainable development.
- Use a formula such as UNESCO's Codesigns Education for sustainable development.
- Collaboration among educators, students, and external stakeholders to improve education and sustainable outcomes
- Collaboration between teachers, students, and external stakeholders is essential for improving education and achieving sustainable outcomes. It helps build better programs, improve student outcomes, provide better professional development, build trust and transparency, create well-balanced policies, and create responsive solutions.

Conclusion

The education sector has a major role to play in promoting sustainable education and achieving the Sustainable Development Goals (SDG's). Thus, NEP 2020 emphasizes the importance of environmental education and sustainable development, thus requiring the creation of a holistic learning system. NEP 2020 aims to integrate sustainability into the curriculum and pedagogy of the education system in India. The program should integrate themes and objectives related to sustainable development. The school curriculum should be integrated with concepts that develop essential 21st century skills such as critical thinking, creativity, and problem solving, as well as character education. It should take into account the cultural and linguistic diversity of India. Pedagogy needs to move away from rote learning to a more experiential and research-based approach. It should focus on building character and creating balanced individuals, as well as developing cognitive, emotional and social skills. Therefore, achieving sustainability by 2030 is essential to protect the planet and ensure a better life for all.

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