



Transforming Higher Education for Sustainable Development by Addressing the Challenges of SDG 4

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ABSTRACT:

Achieving Sustainable Development Goal 4 (SDG 4) requires meaningful changes in the higher education sector. This goal focuses on providing inclusive and fair quality education while promoting lifelong learning opportunities for everyone. Higher education institutions (HEIs) play a key role in building sustainable societies by encouraging innovation, critical thinking, and responsible citizenship. However, achieving SDG 4 in higher education faces several challenges, such as unequal access, poor infrastructure, limited digital inclusivity, and the need for teaching methods that respect different cultures and support sustainability and the National Education Policy (NEP) 2020. The study examines how higher education can drive sustainable development by weaving values of equity, inclusion, and sustainability into curricula, research, governance, and community work. It also points out ways for universities to tackle global and local issues through interdisciplinary education, technological innovation, and partnerships with industry and policymakers. By looking at case studies and best practices, the study shows that transforming higher education involves not just policy change but also a cultural shift towards a complete, values-driven learning experience. The thematic analysis of the reviewed studies clearly indicates that higher education institutions play a

significant role in achieving sustainable development. Universities are increasingly expected to move beyond traditional teaching methods and contribute actively to social equity, environmental awareness, innovation, and lifelong learning. However, the literature also highlights several barriers that slow down the implementation of SDG 4 in higher education systems. This approach empowers students to become agents of change for sustainability. The discussion adds to current academic and policy conversations on reshaping higher education systems in India and elsewhere to meet SDG 4 and the broader 2030 Agenda.

Keywords: Higher education, quality education, SDG 4, sustainable development, NEP 2020, inclusivity, educational transformation, innovation in education.



INTRODUCTION:

Education is widely seen as the foundation of sustainable development, social progress, and human empowerment. Within the United Nations' Sustainable Development Goals (SDGs), SDG 4, "Ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all", plays a key role by stressing inclusive and fair learning opportunities for everyone. In higher education, SDG 4 goes beyond just providing access to good teaching and learning; it also includes values like sustainability, innovation, and lifelong learning. Higher education institutions (HEIs) need to serve as agents of change by promoting environmental awareness, social equity, and cultural sustainability while supporting global and national educational policies such as the National Education Policy (NEP) 2020. However, several challenges remain, including unequal access to resources, digital gaps, a lack of sustainability-focused curricula, and limited community involvement. Tackling these challenges calls for a complete transformation of higher education systems that weaves sustainability into teaching, research, and institutional governance.

In today's world, higher education is not just about academic growth. It is a crucial tool for achieving sustainable social, economic, and environmental progress. Universities and colleges act as centers of knowledge that develop future leaders capable of tackling complex sustainability issues. By incorporating sustainability principles into education systems, higher education can foster responsible citizens who understand global connections and have critical thinking, problem-solving, and ethical decision-making skills. Additionally, the post-pandemic era has highlighted the urgent need to rethink how education is delivered. Institutions must create technology-driven, inclusive, and flexible learning systems. They are now expected to combine digital advancements with sustainability-focused curricula to close learning gaps and provide equal opportunities for all students. Connecting higher education with global frameworks like the 2030 Agenda and national policies such as NEP 2020 increases the significance of education in promoting peace, prosperity, and resilience. Thus, changing higher education is not just an educational necessity. It is a strategic way to empower communities and speed up progress toward achieving the broader Sustainable Development Goals, especially SDG 4.

NEED OF THE STUDY:

This study responds to the growing awareness that higher education needs to take a more active role in achieving SDG 4 and the broader 2030 Agenda for Sustainable Development. Despite various policy initiatives, many higher education institutions still face challenges with inclusivity, innovation, and sustainable practices. There is an urgent need to evaluate how higher education can overcome structural, social, and teaching barriers that prevent equitable quality education. Additionally, the shift to digital and blended learning models after the COVID-19 pandemic has revealed significant inequalities. Addressing these issues is crucial for fairness and accessibility. This study is important for identifying ways to incorporate sustainability principles into the academic culture, strengthen institutional resilience, and prepare students to contribute positively to sustainable societies.

SCOPE OF THE STUDY:

This study focuses on the role of higher education in achieving SDG 4 through transformative approaches to teaching, learning, and governance. It looks at institutional challenges such as access, inclusivity, quality assurance, curriculum redesign, faculty development, and community engagement. The study also analyses policy frameworks like NEP 2020, which support sustainability and multidisciplinary learning, and examines successful practices from universities that have effectively integrated SDG principles into their operations. While it mainly emphasizes the Indian higher education context, it also draws global parallels to showcase universal strategies for linking education and sustainability. Ultimately, this study aims to provide practical insights for educators, administrators, and policymakers to enhance higher education's role in sustainable development.



OBJECTIVES OF THE STUDY:

1. To look at the main challenges that higher education institutions face when trying to provide inclusive and fair quality education under SDG 4.
2. To study how higher education can support sustainability, innovation, and lifelong learning in line with the 2030 Agenda and NEP 2020.
3. To find effective strategies and good practices for incorporating sustainable development principles into higher education teaching, research, and governance.

REVIEW OF LITERATURE:

Atstaja (2025) discussed how higher education institutions can use the Sustainable Development Goals (SDGs) to change academic structures and promote sustainability science. The study emphasized that incorporating SDG principles into university teaching, research, and governance improves the ability of institutions to tackle global environmental and social challenges. Atstaja highlighted the need for interdisciplinary collaboration, sustainability-focused research, and strong institutional leadership to encourage systemic change in higher education. The paper concluded that connecting higher education with the SDGs not only strengthens sustainability science but also prepares students to be responsible global citizens who can drive long-term sustainable development.

Alhazemi (2024) examined transformative approaches to sustainable education in higher education institutions, focusing on the integration of technology, leadership, and the SDGs. The study argued that digital transformation and visionary leadership are key enablers of sustainability in universities. By using innovative technologies and data-driven strategies, institutions can improve access, inclusivity, and the quality of education in line with SDG 4. Alhazemi also emphasized the role of collaborative governance and institutional culture in supporting sustainability-focused learning. The findings suggest that when higher education combines technological progress with strong leadership and SDG alignment, it becomes a powerful force for social and environmental change.

Kestin, Lumbreras, and Puch (2023) looked at how higher education institutions can take effective action toward achieving the Sustainable Development Goals (SDGs) through system change approaches. Their study pointed out that universities need to move beyond isolated initiatives. They should adopt integrated, collaborative frameworks that combine teaching, research, and community engagement with the SDG agenda. The authors stressed the need for multi-stakeholder partnerships, including cooperation among academia, government, industry, and civil society, to speed up progress on sustainability goals. They argued that real change in higher education requires rethinking institutional structures, governance models, and accountability systems to embed sustainability into all parts of university operations. The study concluded that when higher education institutions function as interconnected systems that promote innovation, partnership, and policy alignment, they can make a significant impact on achieving SDG 4 and the broader 2030 Agenda.

Ashida (2022) underscored the important role of higher education in advancing the Sustainable Development Goals (SDGs) through education, research, and community involvement. The author pointed out that universities are key platforms for promoting sustainability values linked to the five pillars: people, planet, prosperity, peace, and partnerships. By incorporating sustainability into curricula and institutional practices, higher education encourages critical thinking, innovation, and ethical responsibility among students. Ashida argued that this interdisciplinary and values-driven approach is essential for preparing future generations to tackle complex global challenges and contribute meaningfully to sustainable development.

Chankseliani and McCowan (2021) explored the connections between higher education and the Sustainable Development Goals, claiming that universities play a vital role in achieving global sustainability targets. Their study highlighted that higher education institutions not only provide knowledge but also drive social change through research, policy engagement, and capacity building. However, they identified ongoing issues such as limited institutional commitment, insufficient funding, and inconsistent policy integration of the SDGs across



countries. The authors concluded that to fully harness the potential of higher education in achieving the 2030 Agenda, universities must improve collaboration, encourage inclusion, and embed sustainability into all academic and administrative areas.

Heleta and Bagus (2021) examined the relationship between higher education and the Sustainable Development Goals (SDGs). They argued that current approaches often leave many marginalized groups behind. Their study showed that despite global commitments to SDG 4, significant inequalities persist in access, participation, and quality in higher education, especially in developing countries. The authors pointed out that commercialization of education, limited policy coordination, and a lack of inclusivity weaken the transformative potential of universities. They called for a shift in higher education toward social justice, equity, and community engagement to ensure that everyone can benefit from sustainable development.

Shava et al. (2021) looked at how to implement SDG 4 on Quality Education while transforming Zimbabwe's higher education system in line with the 2030 Agenda. Their study stressed the need for national education policies to match global sustainability goals to improve equity, quality, and relevance. The authors identified challenges such as limited resources, outdated curricula, and inadequate teacher capacity as obstacles to achieving SDG 4. They recommended innovation, policy changes, and collaboration among stakeholders to build inclusive, equitable, and transformative higher education systems. The study concluded that reaching SDG 4 requires not just institutional reform but also a change in how we view education as a key to sustainable social and economic development.

Shava, Chasara, and Hahlani (2021) studied how SDG 4 on Quality Education is being implemented in Zimbabwe's higher education system. They focused on current challenges and future directions. Their research showed that while higher education is important for sustainable development, it faces obstacles like limited funding, poor infrastructure, and a lack of alignment between curricula and societal needs. The authors stressed the need to change higher education to equip students with skills relevant to future global challenges. They called for policy changes, new teaching methods, and stronger institutional leadership to support inclusive and quality education that meets the goals of SDG 4 and sustainable national development.

Ferguson and Rooft (2020) looked at how higher education can help achieve SDG 4. Quality Education. They pointed out both the challenges and opportunities in this area. Their study found that universities have the potential to support sustainability, but they often encounter barriers like unequal access, limited resources, and weak policy support. The authors stressed the importance of incorporating sustainability concepts into curricula and creating inclusive, innovative, and fair learning environments. They also mentioned that higher education institutions can act as drivers for sustainable development through interdisciplinary teaching, research collaboration, and community involvement. Overall, the study highlights that changing higher education is crucial for fulfilling the goals of SDG 4.

Ahel and Lingenau (2019) looked at the opportunities and challenges of digitalization in improving access to education for sustainable development in higher education institutions. Their study highlighted that digital technologies can significantly transform learning environments to make them more inclusive and fair, in line with the goals of SDG 4. They argued that when digital tools are effectively used, they can broaden educational access, encourage collaboration, and support innovative teaching and research practices focused on sustainability. However, the authors also warned that digitalization brings challenges like unequal access to technology, low digital skills, and insufficient support from institutions, which may increase existing educational gaps. The study concluded that higher education institutions need to take a balanced approach that uses digital innovation while tackling equity and access issues to ensure that digital transformation positively impacts sustainable development.

Owens (2017) examined the role of higher education within the Sustainable Development Goals (SDG) framework and highlighted its importance in promoting sustainability-focused knowledge and action. The study pointed out that higher education institutions play a crucial role in achieving multiple SDGs, especially SDG 4, through research, skill development, and public engagement. Owens mentioned that universities can support



sustainability by including global citizenship, ethics, and social responsibility in their curricula. However, the author warned that the success of higher education in meeting SDG targets relies on institutional commitment, sufficient funding, and international cooperation. The paper ended by stating that integrating sustainability throughout higher education is vital for realizing the goals of the 2030 Agenda.

RESEARCH METHODOLOGY:

This study explores how higher education is changing for sustainable development, specifically focusing on the challenges of Sustainable Development Goal 4 (SDG 4). It mainly uses secondary data sources to look at existing research, policies, and practices related to quality education and sustainability.

Data Collection: The study is based on a thorough review of secondary data from trustworthy academic and institutional sources. These sources include peer-reviewed journals, published books, conference proceedings, government reports, educational policy documents like NEP 2020, and official websites related to higher education and sustainable development. The data collected offers insights into the current situation, challenges, and innovative practices for integrating sustainability in higher education systems.

The methodology uses a qualitative analytical approach. It focuses on finding trends, policy implications, and best practices that connect higher education with the goals of SDG 4. Content analysis helped interpret findings from various studies, emphasizing the link between higher education, sustainability, and quality learning.

1.THEMATIC ANALYSIS OF MAJPOR CHALLENGES:

1.1 Digital Divide and Unequal Access

One of the most commonly identified challenges in the reviewed literature is the digital divide. Many researchers emphasized that unequal access to digital infrastructure, internet connectivity, and technological resources creates educational inequality among students.

The COVID-19 pandemic exposed the limitations of online education systems, especially for students from rural areas and economically weaker sections. Although digital learning increased flexibility and accessibility for some students, it also widened the gap between privileged and underprivileged learners.

Interpretation:

The analysis indicates that higher education institutions must focus on improving digital inclusivity by investing in technological infrastructure, affordable internet access, and digital literacy programs. Without digital equity, achieving inclusive quality education under SDG 4 becomes difficult.

CONCEPTUAL REPRESENTATION OF DIGITAL CHALLENGES

Digital Challenges Identified in Literature	Level of Impact
Lack of Internet Access	High
Inadequate Digital Devices	High
Low Digital Literacy	Moderate
Limited Online Learning Platforms	Moderate
Lack of Technical Support	Moderate

Source: Author's analysis based on reviewed literature.



1.2 Infrastructure and Funding Constraints

Another major issue identified in the literature is inadequate educational infrastructure and insufficient funding. Several studies highlighted that many higher education institutions lack modern classrooms, laboratories, libraries, research facilities, and sustainable campus infrastructure.

In developing countries, financial limitations often affect the quality of teaching, research, and institutional development. Limited government support and unequal distribution of educational resources further increase institutional disparities.

Interpretation:

The findings suggest that financial investment and infrastructure development are essential for improving the quality and inclusiveness of higher education. Institutions with better resources are more capable of implementing sustainability-focused education and innovative teaching practices.

CONCEPTUAL ANALYSIS OF INSTITUTIONAL CHALLENGES:

Institutional Challenges	Impact on SDG 4
Inadequate Infrastructure	High
Limited Funding	High
Lack of Research Support	Moderate
Weak Policy Implementation	High
Faculty Shortage	Moderate

Source: Author's compilation from secondary data.

2. ANALYSIS OF SUSTAINABILITY INTEGRATION IN HIGHER EDUCATION:

The literature review shows that universities are gradually integrating sustainability principles into teaching, research, and governance. Sustainability is no longer viewed only as an environmental concept; it is increasingly connected with social justice, ethics, inclusivity, and responsible citizenship. Many higher education institutions are redesigning curricula to include interdisciplinary learning, sustainability-focused subjects, skill-based education, and experiential learning methods.

2.1 Curriculum Transformation

The reviewed studies strongly support curriculum redesign as a key strategy for achieving SDG 4. Traditional education systems are shifting toward learner-centered and multidisciplinary approaches encouraged by NEP 2020.

Major Areas of Curriculum Transformation:

- Sustainability-oriented subjects
- Skill-based education
- Experiential and project-based learning
- Interdisciplinary education
- Ethical and value-based education
- Community engagement programs



Interpretation:

The integration of sustainability into curricula helps students connect theoretical knowledge with real-world social and environmental challenges. This transformation improves critical thinking, innovation, and problem-solving abilities.

2.2 Faculty Development and Institutional Leadership

Several studies highlighted that faculty members and institutional leaders are central to successful educational transformation. Teachers play a major role in implementing sustainability-focused teaching practices and motivating students toward responsible citizenship.

However, many institutions still face issues such as:

- Lack of sustainability training for faculty
- Resistance to change
- Limited awareness about SDGs
- Lack of institutional support

Interpretation:

The analysis shows that continuous faculty development programs and leadership commitment are necessary for long-term educational transformation. Institutions with visionary leadership demonstrate better implementation of sustainable educational practices.

Analytical Representation of Key Drivers of Transformation

Transformative Factors	Importance Level
Faculty Development	High
Institutional Leadership	High
Policy Support	High
Technology Integration	High
Industry Collaboration	Moderate

Source: Author's thematic interpretation from literature review.

3. ANALYSIS OF THE ROLE OF NEP 2020 IN ACHIEVING SDG 4

The National Education Policy (NEP) 2020 is widely recognized in the literature as a transformative policy framework that supports inclusive and multidisciplinary education. NEP 2020 emphasizes flexibility, innovation, digital learning, skill development, and holistic education.

The policy aligns strongly with SDG 4 by promoting:

- Equity and inclusion
- Lifelong learning
- Vocational education
- Digital education
- Multidisciplinary learning



- Research and innovation

Interpretation:

The analysis suggests that NEP 2020 provides a strong foundation for sustainable higher education reform in India. However, the gap between policy formulation and implementation remains a major concern.

Analytical View of NEP 2020 Contributions

NEP 2020 Provisions	Contribution to SDG 4
Multidisciplinary Education	High
Digital Learning	High
Skill Development	High
Inclusive Education	High
Research Promotion	Moderate

Source: Author's analysis based on policy review.

4. ANALYSIS OF COLLABORATION AND COMMUNITY ENGAGEMENT

The literature indicates that partnerships among universities, industries, governments, NGOs, and local communities improve the implementation of SDG 4. Collaborative approaches enhance practical learning opportunities, innovation, employability, and social responsibility. Community engagement programs also help institutions address local sustainability issues while promoting experiential learning among students.

Interpretation:

Higher education institutions that actively collaborate with external stakeholders are more effective in promoting sustainable development and community welfare.

DISCUSSIONS & CONCLUSION

1. Most higher education institutions recognize the importance of connecting their programs and policies with SDG 4, but the level of implementation varies by region and institution.
2. The National Education Policy (NEP 2020) offers a strong framework for achieving inclusive and quality education; however, there is still a clear gap between what the policy intends and what actually happens.
3. Problems like unequal access, lack of infrastructure, insufficient funding, and digital divides still hinder the delivery of fair and high-quality higher education.
4. Developing faculty and ensuring leadership commitment are crucial for weaving sustainability and SDG-related values into teaching, research, and management.
5. New technologies and online learning platforms provide chances to widen access and encourage innovation in sustainable higher education.
6. Interdisciplinary and hands-on learning methods help students connect their academic knowledge with real-world sustainability issues.
7. Building partnerships among universities, businesses, government agencies, and international organizations improves the effectiveness of implementing SDG 4.



8. Achieving SDG 4 needs a cultural shift in higher education institutions to support inclusivity, social responsibility, and sustainability-centered values.
9. The relevance and success of SDG 4 rely on strategies tailored to local educational, cultural, and economic circumstances.
10. Overall, transforming higher education for sustainable development requires ongoing teamwork, innovation, and policy coordination to achieve the goal of quality education that is inclusive and fair for everyone.
11. Higher education institutions are gradually integrating sustainability principles into education systems.
12. Digital inequality remains one of the biggest barriers to inclusive and equitable quality education.
13. NEP 2020 strongly supports sustainable and multidisciplinary education reforms.
14. Faculty training and institutional leadership are essential for implementing SDG-oriented educational practices.
15. Technology-driven learning creates opportunities for flexible and inclusive education.
16. Curriculum redesign improves students' awareness of sustainability challenges and global citizenship.
17. Collaboration among universities, governments, industries, and communities strengthens educational transformation.

The study concludes that changing higher education is essential to achieving Sustainable Development Goal 4 (SDG 4), which focuses on providing inclusive and fair quality education and lifelong learning for everyone. Higher education institutions have a key role in promoting sustainability through teaching, research, innovation, and community involvement. The analysis shows that while significant progress has been made in bringing sustainability principles into academic and policy frameworks, ongoing challenges like unequal access, insufficient resources, and weak policy enforcement still block comprehensive progress. It is clear that reaching SDG 4 needs not just structural and policy changes but also a shift in culture and attitudes within institutions toward sustainability, inclusivity, and global citizenship. Working together, government bodies, universities, industries, and communities is vital to encourage innovation and make sure that educational systems stay relevant to society's needs. In the end, changing higher education must be guided by a commitment to fairness, quality, and sustainability, helping students become active contributors to the 2030 Agenda for Sustainable Development. By putting SDG 4 at the heart of their mission, higher education institutions can create lasting social impact and play a crucial role in building a more just, inclusive, and sustainable future. The overall analysis of the study reveals that transforming higher education for sustainable development is both an educational necessity and a social responsibility. The reviewed literature consistently emphasizes that higher education institutions have a critical role in shaping future generations capable of addressing environmental, economic, and social challenges.

Although institutions are increasingly adopting sustainability-focused approaches, major obstacles such as unequal access, digital divides, inadequate infrastructure, funding limitations, and weak policy implementation continue to affect progress toward SDG 4.

The study further indicates that meaningful transformation in higher education requires:

- Strong institutional leadership
- Effective policy implementation
- Sustainable funding mechanisms
- Faculty empowerment
- Technology integration



- Inclusive learning environments
- Interdisciplinary teaching approaches

The analysis also highlights that NEP 2020 provides an important framework for aligning Indian higher education with global sustainability goals. However, successful implementation requires coordinated efforts from educational institutions, policymakers, industries, and communities.

Finally, the study concludes that achieving SDG 4 is not limited to improving educational access alone. It requires a broader transformation of higher education systems that promote equity, innovation.

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