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Navigating the "Knowing-Doing Gap": Integrating Education for Sustainable Development in Pakistani Higher Education

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ABSTRACT

Education for Sustainable Development (ESD) is globally recognized as a transformative approach to education. This equips learners with the knowledge, skills, and values necessary to address pressing economic, environmental, and social challenges. The policy commitments aligning with Sustainable Development Goal 4.7, particularly in the implementation of higher education in Pakistan, remain limited. This study examines faculty perceptions and identifies institutional and pedagogical challenges related to the integration of ESD in Pakistani universities, employing an interpretivist paradigm and a hermeneutic phenomenological research design. The data were collected through semi-structured interviews with twelve purposively selected university faculty members from different institutions. Thematic analysis was employed to capture the lived experiences and insights of the participants. The results revealed five critical challenges: strategic implementation gaps, curriculum fragmentation, lack of faculty capacity, limited student engagement, and weak institutional leadership. Despite awareness of ESD's importance, systemic barriers inhibit meaningful pedagogical and institutional transformation. The study highlights the urgent need for curriculum reforms, teacher training, leadership commitment, and policy alignment. It calls for multi-stakeholder collaboration to transform ESD from rhetoric into practice, enabling universities to make meaningful contributions to sustainability.

Keywords: *Education for Sustainable Development, Higher Education, SDG 4.7, Pakistan, Curriculum Reform, Faculty Development, Institutional Leadership, Sustainability Education*

Introduction

Education for Sustainable Development (ESD) has emerged as a key global strategy for addressing the planet's intertwined environmental, social, and economic challenges (Fatima et al., 2020). UNESCO defines ESD as an approach that "empowers people with the knowledge, skills, values, attitudes and behaviors to live in a way that is good for the environment, economy, and society," encouraging learners to make informed, responsible choices for a better future (UNESCO, 2020). In this view, ESD is "education as the key to unlocking progress in all the global development goals," teaching individuals to take action to transform society and protect the planet. The 2030 Agenda for Sustainable Development explicitly links education and sustainability (Hinduja et al., 2023). SDG Target 4.7 aims for all learners to acquire the knowledge and skills necessary to promote sustainable development, encompassing citizenship, peace, human rights, and global issues (Ahtesham, 2024). UNESCO serves as the lead UN agency on ESD and has developed an "ESD for 2030" framework to support countries in mainstreaming sustainability across curricula, teacher training, and institutional practice. In short, international bodies now view education – especially higher education as critical for equipping

citizens to meet climate change, biodiversity loss, inequality, and other urgent challenges (Fiselier et al., 2018).

In Pakistan, the need for ESD is especially acute. The country ranks among the world's most climate-vulnerable nations, experiencing severe floods, heatwaves, and resource pressures in recent years. At the same time, rapid population and economic growth place demands on energy, water, and social services. Pakistan's national development plans emphasize pillars such as "energy, water, and food security" and building a "knowledge economy", but implementation gaps remain (Habib et al., 2021). There is growing recognition that higher education should contribute to sustainable development by training graduates to innovate in renewable energy, conservation, social equity, and other fields. For example, recent UNESCO-led initiatives in Pakistan have affirmed that climate change poses a significant challenge to classrooms and curricula. Officials note that Pakistan has "embedded climate education into its curriculum," yet still needs stronger teacher training, infrastructure, and policy reforms to make education climate-resilient (Gorana & Kanaujia, 2016). Moreover, persistent social and economic issues – high youth unemployment (over 30% of graduates) and systemic inequalities underscore that education must become more inclusive and action-oriented. In addition, while the rhetoric of sustainable development is now woven into Pakistan's policies and SDG commitments, the practical integration of ESD in higher education deserves careful study.

International studies have documented a range of strategies for incorporating ESD in universities. Curricular initiatives include the development of new sustainability courses and the integration of cross-cutting content into existing subjects. Faculty development and research programs aim to raise educators' capacity for teaching sustainability. Campuses implement "green" operations (energy, waste, transport) and community outreach to model sustainable practices. For example, global literature highlights the "greening" of campuses and enrichment of curricula to strengthen sustainability knowledge and awareness (Chasokela, 2025). ESD transforms what is taught, how it is taught (pedagogy), and the learning environment. Recent systematic reviews in higher education have noted that integrating the SDGs has primarily focused on the educational (teaching-learning) dimension, with less attention given to public outreach and institutional change (Alcántara-Rubio et al., 2022). Nevertheless, innovative pedagogies (project-based, problem-based learning) and networks are being used to connect HEIs with society. The international consensus is that universities should play a multifaceted role in achieving sustainability goals, educating knowledgeable graduates, conducting relevant research, and serving communities (Khan et al., 2021).

National policies in Pakistan have acknowledged the role of education in sustainable development, although implementation

remains uneven. The Higher Education Commission's (HEC) draft Vision 2025 aligns with national development priorities and explicitly connects higher education to achieving certain SDGs. For instance, "energy, water, and food security" are priority areas that reflect environmental concerns. At the same time, Vision 2025's emphasis is primarily on the growth of a knowledge economy and technological capacity, and it does not provide detailed guidance on curricular Environmental, Social, and Governance (ESG) education. A key innovation has been the creation of the National Academy of Higher Education (NAHE) for faculty development. At the same time, NAHE's programs address pedagogical skills; they have only recently begun to incorporate sustainability topics (Khan et al., 2021).

Objectives of the Study

1. To explore the perceptions of university faculty on Education for Sustainable Development (ESD) in Pakistan.
2. To identify the institutional and pedagogical challenges in integrating ESD into university curricula and practices.

Literature Review

The UNESCO-led framework for ESD (often referred to as "ESD for 2030") and related international agreements define the goals and scope of sustainable education. ESD goes beyond traditional environmental education by embracing a holistic, lifelong learning approach that encompasses cognitive, socio-emotional, and behavioral change. It emphasizes interconnections among social, economic, and environmental issues and empowers learners to contribute to "environmentally sound, economically viable and socially inclusive futures" (Leicht & Byun, 2021). Crucially, ESD is identified as a "key pillar" of SDG Target 4.7 and is central to implementing the 2030 Agenda. UNESCO's ESD 2030 Roadmap (adopted in 2021) explicitly situates education as an "integral element of Agenda 2030" and a "key enabler of all the other SDGs (Rieckmann, 2017). The global framework calls on countries to develop "whole-institution" approaches integrating sustainability into curriculum content, teacher development, campus operations, community engagement and more to fulfil this mandate (Kanyimba et al., 2014).

Other government actions include the National Education Policy (NEP) 2017, which explicitly recognizes the importance of ESD. It states that Pakistan "recognizes the significance of ESD in promoting the quality of human life" and calls for related curriculum reforms. The National Conservation Strategy and other policy documents encourage embedding environmental and social issues in education (PES, 2018). In practice, some public and private universities have introduced sustainability courses and extra-curricular initiatives. There are also partnership projects, such as the Climate Smart Education Systems Initiative, launched by UNESCO and Save the Children in Pakistan, aimed at making schools and colleges more climate-resilient. Notably, Pakistani

officials claim climate change education has already been woven into the national school and college curriculum. However, they emphasize this must be matched by teacher training and infrastructure upgrades (Khan et al., 2022).

At the higher-education level, research indicates mixed progress. A study surveying students and faculty in Punjab found that actual ESD content and awareness in Pakistani universities remain limited: "the occurrence of ESD in Pakistani HEIs is low and teachers have inadequate knowledge of sustainability," with students noting only partial attention to social, environmental, and economic dimensions (Khan & Khan, 2018). Similarly, a 2023 systematic review of ESD in Pakistani HEIs observed that institutions had begun holding seminars and discussions on SDGs, but that substantive curricular change was still lacking. These analyses suggest a gap between policy rhetoric and classroom reality: universities may pay lip service to sustainability, but the learning outcomes and campus practices lag behind international benchmarks (Sain, et al., 2024). In the view of Bukhari et al. (2022), poor governance is the primary issue contributing to the decline of sustainability. In another study by Jumani and Abbasi (2015), sustainability education is less practiced and understood by college teacher educators.

The Pakistani context poses particular obstacles to ESD implementation. Resource constraints are chronic: a 2023 review notes Pakistan's "high illiteracy rate and slow economic growth" limit public funding for education, making it hard to support ESD initiatives (Hinduja et al., 2023). Inadequate infrastructure and shortage of trained faculty are cited as major problems, alongside a general lack of awareness and commitment to sustainability concepts. For example, insufficient budgets hinder the procurement of sustainable technologies and staff development, and many universities report difficulty hiring or retaining faculty with expertise in ESD. Institutional inertia is also an issue: curricula are often rigidly set, providing teachers with little freedom to modify courses to incorporate ESD. Surveyed educators note that without incentives (e.g., career rewards for teaching sustainability) and administrative support, student motivation for ESD-related activities remains weak (Shah, 2024). Different studies have been conducted regarding sustainability education through content analysis of English textbook grade IX (Jamil, Anwar, & Sohail, 2024); Pakistan Studies 10th grade textbook (Jamil, Mehmood, & Aslam, 2024); and 8th grade English textbook based on SNC 2022 (Jamil, Rasool, & Moin, 2024). These studies, based on textbook analysis using 's (2010) sustainability framework, reveal an inconsistent and partial integration of sustainability aspects in Pakistani textbooks, with moderate representation of social, cultural, environmental, and value-based aspects. Institutional and economic dimensions are limited in promoting holistic sustainable development.

Other cultural and systemic factors further constrain progress.

Higher education in Pakistan tends to be exam-driven and specialized, with limited cross-disciplinary learning. Some literature notes that the "holistic" and "pluralistic" pedagogies needed for ESD (which encourage open-ended problem-solving and civic engagement) are challenging to integrate in the current exam-centric environment (Sinakou, 2022). There are also gender and urban–rural disparities: many faculty and students in smaller or rural universities have fewer opportunities for professional development in sustainability. In short, analysis of ESD in Pakistani Higher Education highlights a complex mix of funding shortages, infrastructure limitations, limited faculty training, and socio-political constraints as key barriers.

Several studies suggest that other developing countries face similar challenges to those of Pakistan. For instance, in India, sustainability education has often been limited to "environmental education" modules without broader curricular integration (Bhatia, 2020). One review notes that environmental awareness components in Indian schools and colleges became compulsory only after court mandates (as per NCERT guidelines). ESD, encompassing social and economic dimensions, "has not taken a severe form in the curriculum." Similarly, in Bangladesh, there is growing policy support (through national curricula and new university programs), but implementation suffers from limited resources and capacity. Research centers, such as the University of Liberal Arts Bangladesh's Center for Sustainable Development, exemplify a growing academic interest, but most universities still regard sustainability as a peripheral topic.

Indonesia provides another valid comparison. Indonesian law gives universities a "Tridharma" responsibility of teaching, research, and community service, which can be leveraged for ESD. Studies indicate that some Indonesian institutions have adopted green campus practices and sustainability clubs; however, the official emphasis on ESD remains low. A review of Indonesian universities found that while specific campuses pledge "green" visions, most do not thoroughly prioritize Environmental, Social, and Governance (ESG) in their core mission. The country's autonomous university system offers flexibility for innovation, but sustainable development often remains outside the main accreditation standards (UNESCO, 2020).

Across these contexts, similar themes emerge like limited faculty training in sustainability, curricula that are still oriented toward traditional disciplines, and a need for systemic support. For example, the Pakistani review parallels Malaysia, where a lack of infrastructure and incentives was noted as barriers, and China and India, where rapid educational growth outpaces quality improvements. The experiences of India, Bangladesh, and Indonesia show that ESD tends to remain an aspiration more than a practice without targeted policy mandates, budgetary support, and institutional leadership. This underscores the relevance of

comparing Pakistan's situation with that of other countries in the Global South: all grapple with reconciling development goals with equity and environmental limits, and all look to higher education to cultivate the next generation of leaders in sustainable development (UNESCO, 2020).

In summary, the literature portrays a well-developed global ESD framework and a strong policy ethos surrounding education for sustainability; however, a persistent implementation gap remains in practice. Pakistani studies confirm that universities have begun to respond to SDG and UNESCO directives, but significant barriers (financial, structural, cultural) inhibit full integration of ESD in curricula, pedagogy, and planning. This gap between rhetoric and reality, evident in Pakistan and echoed elsewhere in the Global South, motivates the present research inquiry: How can higher education fulfil its promise for sustainable development, and where does it still fall short?

Research Methodology

The adopted method was a qualitative study under an interpretivist paradigm. The design employed hermeneutic phenomenology (Vagle, 2018), as cited by Farooq et al. (2023). In this paradigm, theory arises from the data rather than preceding it, and the researcher "enters into the head" of each subject to grasp their lived meanings. Twelve participants were selected purposively to represent diverse roles within Pakistani higher education. Data were gathered through semi-structured interviews (Brinkmann & Kvale, 2018). Semi-structured interviews were chosen because they provide a flexible but guided dialogue, enabling open-ended exploration of participants' thoughts and feelings. To describe their experiences and attitudes toward sustainable development education in their own words, probing for depth and clarification. These interviews were audio-recorded and transcribed verbatim for analysis and review. Reflexive thematic analysis was used for data analysis. Transcripts were read repeatedly to familiarize the data, and meaning units were identified and coded. Codes were clustered into emerging themes that reflected participants' meanings, rather than imposing preconceived categories. This iterative coding was guided by interpretive phenomenology. Reflexivity was maintained through memoing and peer debriefing) to enhance the trustworthiness of the findings.

Findings of the Study

The findings of the study are narrated under the following themes.

Theme 1: Strategic Implementation Gaps

Interview analysis revealed that while universities often repeat national policies on sustainable development, most lack concrete mechanisms to translate these strategies into everyday practice. The participants described a disconnect between documents and the reality of the classroom. For instance, the following quotations from the participants illustrate these findings.

Our strategic plan is full of sustainability buzzwords, but day-to-day

decisions rarely reflect those ambitions. We still focus our funding on traditional priorities, such as exam pass rates and infrastructure that impresses visitors. Sustainability is often featured in brochures, yet assignments seldom require students to address real environmental or social problems. I often feel the policy language is more a branding exercise than a guiding framework. Until budgeting and evaluation criteria change, the rhetoric will stay miles ahead of reality. (Participant A)

Yes, we updated our vision to include the SDGs, but nobody revised the course outlines. Faculty still use lecture notes prepared a decade ago, so students continue to memorize facts instead of tackling local sustainability challenges. Management proudly cites our alignment with SDG 4 at meetings, yet classroom practice remains textbook-centric and disengaged from community issues. The gap frustrates both teachers and students who genuinely want action. Unless we bridge the gap between vision and implementation, ESD will remain aspirational. (Participant B)

We have the slogans—'green campus', 'climate-smart graduates'—but not the systems to back them up. Procurement policies still favor the cheapest equipment with little regard for energy efficiency, and research funds rarely prioritize sustainability topics. Lecturers willing to integrate ESD often struggle to find institutional support or micro-grants. As a result, students hear that sustainability matters but seldom experience it being modeled on campus. That inconsistency sends a confusing message about our true priorities. (Participant C)

Theme 2: Curriculum Fragmentation

The participants of the study described curricula that isolate sustainability content within elective courses, limiting students' ability to see interconnections across disciplines. Following are a few quotations from the participants:

We teach environmental science as an elective, but engineers, economists, and sociologists seldom share a classroom. Each discipline guards its territory, so students graduate without understanding how environmental, social, and economic issues intersect and interact with one another. When I propose interdisciplinary modules, colleagues worry about losing credit hours. The silo mentality hampers our collective capacity to solve complex problems. We need integrated courses that span multiple departments, rather than isolated sustainability 'add-ons'. (Participant D)

In my department, sustainability is often viewed as a secondary consideration, rather than a core learning outcome. Students still memorize chemical equations without linking them to pollution or waste management. Collaboration with other faculties is rare because timetables, assessment methods, and credit systems do not sync. Consequently, learners miss the chance to approach sustainability problems from multiple perspectives. A modular, interdisciplinary model could address this issue, but structural

barriers persist. (Participant E)

Our university launched a compulsory 'Introduction to Sustainability' course, yet most lecturers stick to their narrow slices of expertise. Assignments rarely require collaborative projects across disciplines. Without cross-faculty dialogue, students often internalize the notion that sustainability is someone else's responsibility. Interdisciplinary teamwork, case studies, and community-based projects would help them connect theory and practice. Breaking silos should be an institutional priority, not an afterthought. (Participant F)

Theme 3: Lack of Faculty Capacity

Most of the participants reported having limited training opportunities and few incentives to redesign their teaching around ESD principles. Following are few quotations from the participants:

I am genuinely interested in integrating sustainable development themes, but have never attended a dedicated workshop. Most professional development sessions focus on assessment compliance or digital tools, not holistic, values-driven pedagogy. Without institutional support or workload adjustments, redesigning my courses feels daunting. I rely on self-study and online resources, which are time-consuming and isolating. Structured training and peer-mentoring would boost both confidence and competence. (Participant G)

Our promotion criteria still prioritize research publications in impact-factor journals unrelated to sustainability. If I invest time crafting community-engaged projects or reworking curricula, it hardly counts toward career advancement. That misalignment discourages faculty from experimenting with ESD methods. We need recognition, grants, and teaching awards that value sustainability innovations. Otherwise, motivated teachers remain the exception, not the norm. (Participant H)

I attended one ESD seminar, but it was a one-off event with little follow-up. No mentoring, no repository of teaching materials, and no community of practice emerged afterward. Sustained professional learning should be embedded in our annual development plans. Peer observation cycles, interdisciplinary retreats, and seed funding could accelerate the integration of ESD. Currently, isolated champions carry the load with minimal institutional support. (Participant I)

Theme 4: Limited Student Engagement

The participants expressed strong passion for sustainability initiatives but felt underutilized as agents of change within the university. Following quotations from the participants illustrate this aspect.

We formed a 'Green Club' to organize tree-planting drives and recycling campaigns, yet administrative hurdles slow everything down. Permission letters require weeks, and budget approvals even longer. Despite these roadblocks, student passion remains high because we see the climate impacts around us. If universities

channeled this energy into credit-bearing projects, engagement would soar. Empowering students would transform campus culture and connect learning with real-world action. (Participant J)

Many classmates care deeply about environmental justice and social equity, but curriculum choices rarely tap into that passion. When teachers invite us to co-design assignments addressing local issues, participation skyrockets. Field visits, citizen-science projects, and service-learning create memorable experiences that theory alone cannot match. Sadly, such opportunities are irregular and depend on individual lecturers. Institutionalizing student-led projects would make learning more authentic and engaging. (Participant K)

I learned more about sustainability from volunteering with NGOs than from my university courses. Practical exposure taught me how policy, community behavior, and technology intersect. Universities should partner with local organizations to enable students to earn credits for addressing real-world sustainability challenges. Structured internships, hackathons, and community labs would bridge the gap between theory and practice. Students are ready to contribute if given clear pathways and institutional support. (Participant L)

Theme 5: Weak Institutional Leadership

The participants of the current study emphasized the pivotal role of senior leadership in establishing priorities, allocating resources, and exemplifying sustainable practices. The participants of the study described this aspect in the following words:

When our vice-chancellor publicly endorses sustainability and allocates funds for green infrastructure, momentum builds quickly. Solar panels, rainwater harvesting, and zero-waste events signal that ESD is more than a slogan. Visible leadership commitment motivates both staff and students. Conversely, leadership silence encourages complacency. Sustained executive advocacy is crucial for institutional change. (Participant G)

Policy directives alone are insufficient; leaders must embed sustainability into governance structures. Establishing dedicated committees, integrating ESD into quality assurance, and linking budgets to sustainability targets send powerful signals. Without these mechanisms, sustainability remains an extra-curricular pursuit. Leaders who model transparency and ethical decision-making cultivate a campus culture that fosters an environment where ESD can flourish. Transformational leadership is therefore foundational. (Participant C)

Our administration's support fluctuates in response to donor interests and political pressures. One year, we receive grants for green labs; the next year, priorities shift to new buildings, regardless of environmental impact. Consistency and long-term vision are lacking. Leaders must align strategic planning, resource allocation, and performance metrics with sustainability values. Stable, visionary leadership will determine whether ESD becomes embedded

or remains a missed opportunity. (Participant H)

Discussion

This study reveals that Pakistani faculty generally understand Education for Sustainable Development (ESD) primarily in environmental terms, though many recognize its broader social and economic dimensions. For example, one participant defined sustainability as *"our society's ability to exist and develop without depleting all of the natural resources needed to live in the future"*. Another used a memorable metaphor: *"It is like borrowing something from a friend – you want to return it in good condition, not broken or worn out"*. Such reflections indicate that interviewees perceive ESD in terms of conservation, intergenerational responsibility, and systemic thinking. Significantly, discussion often shifted beyond narrow ecological concerns. As noted in the results, interpretations *"varied widely from purely environmental views to encompassing multiple views tied to social and economic aspects of sustainability"*. These findings align with the literature on teacher perspectives: many educators initially frame ESD around ecological problems (Rieckmann, 2017), but they can appreciate its interdisciplinary scope with support. The participants' notions align with UNESCO's vision of ESD, which empowers learners "with the knowledge, skills, values, attitudes and behaviors" necessary for a sustainable society. Still, several participants acknowledged that integrating ESD concepts into practice is limited, often relegated to an "extra" element outside of core teaching. One noted that teachers assume ESD is "a supplement" and focus only on exam-related content. This suggests a need for deeper conceptual ownership: faculty development should thus emphasize the multifaceted nature of ESD (environmental, social, economic) and demonstrate how sustainability connects with each discipline. University leadership can support this by articulating a clear ESD vision (beyond "greenwashing") and modeling sustainability themselves, helping broaden stakeholders' perception of what ESD entails.

Institutional support and barriers emerged as a critical theme. Faculty repeatedly emphasized that resource constraints and institutional inertia severely hinder ESD efforts. A common lament was a lack of funding – one lecturer emphasized that *"the main challenge was lack of financial resources. We cannot implement ESD practices in traditional classrooms. We cannot do hands-on activities for integrating ESD knowledge*". Another pointed remark that *"finding financial resources for implementing ESD is difficult*". These reflections align with other studies in Pakistan, which identify "insufficient funding" as a key obstacle (Hinduja et al., 2023). In addition to finances, time pressure was repeatedly noted. The participants reported that heavy workloads and rigid syllabi left *"little time to investigate and address ESD issues*". Institutional priorities limit opportunities for innovative teaching. Significantly, leadership engagement was also weak. One participant observed

frankly that "*administration has not taken part or any interest in implementing ESD. They stuck to the traditional system and do not want to cope with ESD practices*". Another confirmed that "*administrators do not want to accept change and modify curriculum according to ESD*". In practice, this means universities often have no dedicated ESD funds, policies, or training programs for faculty. The broader literature harmonizes that teacher development experts find that Pakistani educators face "weak policy backing" and lack the "proper structures and resources" needed for SDG implementation. These institutional barriers imply that university leadership should prioritize ESD strategically. Policymakers should weave ESD targets into higher-education mandates and accreditation standards (by adopting UNESCO's whole-institution approach) so that resources and administrative support are allocated accordingly.

Curriculum and pedagogical approaches were another primary concern. Almost all interviewees agreed that current curricula include little explicit ESD content. One teacher explained that "*in many subjects there is not a single aspect of ESD knowledge*" and urged that "*there is a need to reorient the curriculum and align it with ESD knowledge.*" This curriculum gap often forces instructors to improvise. Participants expressed a strong preference for active, student-centered methods: consistent with prior research, they emphasized project-based learning, case studies, and campus-community projects over traditional lectures. For instance, one educator argued that covering ten key sustainability topics through interactive lessons would help students become "*informed, engaged, and active leaders in creating a sustainable future.*" Most of the participants were of view to "simplify concepts" and use analogies or stories to make complex issues accessible. Such pedagogy aligns with international best practices, emphasizing systems thinking and participatory learning for ESD. However, rigid curricula in Pakistani universities leave little formal space for these methods. If ESD remains an optional add-on, instructors may only pay lip service to it. Universities could address this by embedding sustainability themes into core courses and encouraging interdisciplinary projects. Faculty, in turn, would benefit from training in ESD pedagogy to move beyond exams and inspire active learning.

The theme of capacity building and faculty training directly follows from these gaps. Most of the participants reported a lack of professional development opportunities around ESD. As one interviewee narrated as, "*Universities have not provided any training to teacher educators in this regard. No policy or framework is available that helps teacher educators in executing sustainability knowledge.*" Another participant noted that, "*even after six years of university teaching, there was no training related to ESD.*" Both pre-service and in-service faculty need targeted support. Universities and education ministries should develop ongoing capacity-building

programs, such as workshops on ESD curriculum design or micro-credential courses on sustainability competencies. Mentoring networks, also known as "communities of practice," could help less-experienced instructors learn from peers who utilize problem-based ESD activities. Strengthening faculty capacity is crucial because knowledgeable and confident teachers are the linchpin of educational reform. External partners (e.g. NGOs, UN agencies) might be enlisted to fund and deliver such training, which aligns with UNESCO's call for "practical, context-based" professional development.

Finally, interviewees highlighted gaps between policy and practice. Pakistan's higher-education system has official commitments to sustainability, but these rarely reach the classroom. The absence of an enabling policy environment was noted explicitly: one educator observed that no institutional framework existed *"to execute sustainability knowledge".* Each university remains left to its own devices without clear government guidelines or accountability mechanisms. Moreover, several participants perceived that even when policies exist, enforcement is often weak, and top administrators tend to cling to traditional models. This creates a significant policy-implementation gap: ambitious sustainability goals on paper do not translate into concrete campus initiatives. To close this gap, higher-level action is needed. National and provincial education authorities could issue strategic ESD roadmaps (as UNESCO advocates) and include ESD criteria in institutional audits and rankings. At the university level, leadership should ensure that curricular reforms and faculty incentives are aligned with policy directives. In sum, bridging these gaps requires both "an authoritative impulse" from government and local champions within universities.

Recommendations

1. University administrations should explicitly prioritize ESD. This can include adopting formal ESD policies or strategic plans, dedicating budgets for sustainability initiatives, and establishing an interdisciplinary ESD committee or office.
2. Academic councils should revise curricula to embed sustainability content in all programs. This may involve incorporating sustainability modules into science, engineering, and social science courses, and ensuring that each department covers relevant SDG topics.
3. Universities and education authorities should offer regular training in ESD pedagogy and content. This includes workshops, certificate programs, or online courses on sustainability education skills.
4. Policy-makers at the federal and provincial levels should develop clear ESD strategies with actionable roadmaps. This could involve updating higher-education regulations to require sustainability learning outcomes in degree programs and funding universities that demonstrate ESD integration.

5. Higher education institutions should "walk the talk" by making their campuses greener. Recommendations include developing recycling and energy-saving programs, integrating sustainability into campus operations, and supporting student-led environmental clubs.
6. Universities should collaborate regionally and internationally to share ESD curricula, research, and training resources, thereby enhancing the global exchange of knowledge and expertise. Engaging with local industry, NGOs, and community organizations can provide field sites for student projects and additional expertise.

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