



# Integration of Education for Sustainable Development in higher education curricula in Botswana: an empirical analysis

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## ***Abstract***

The integration of Education for Sustainable Development (ESD) into the curricula of higher education institutions (HEIs) is critical for advancing global sustainability objectives. This study assessed the extent of ESD integration in the curricula of HEIs in Botswana, examined current practices and challenges, and identified areas for improvement. Guided by constructivist, and transformative learning theories, the study was conducted on a sample of four out of ten registered HEIs in Botswana. A stratified random sampling method was used to select academic staff from various faculties, and data were collected through a structured and semi-structured survey. The quantitative data were analysed using descriptive statistics, while the qualitative data underwent thematic analysis. The findings revealed that ESD integration in Botswana's HEIs is inconsistent and limited. While most of the respondents indicated that their institutions have sustainability related initiatives, only a few of them reported that their HEIs offer specialised ESD courses, highlighting a limited integration of ESD across the sampled HEIs. Key challenges identified include limited resources, insufficient institutional policies, and a lack of ongoing professional development for staff. The absence of a unified ESD policy framework and low student engagement in sustainability initiatives further hinder integration efforts. This study recommends the development of a comprehensive, institution-wide ESD policy, the integration of sustainability principles across all curricula, and strengthened faculty

development programmes to support this transition. Due to the use of a survey-based research approach, there is potential for alternative interpretations and limited generalisability of the findings of the study.

**Keywords:** curriculum development; faculty development; higher education; policy development; sustainable development.

## ***Introduction***

The integration of Education for Sustainable Development (ESD) in higher education curricula is increasingly recognised as a fundamental strategy for fostering learning and development to realise sustainable societies worldwide (Rieckmann, 2017). ESD enhances learning development by equipping students with critical thinking, problem-solving, and systems-thinking skills to tackle various sustainability related issues.

UNESCO (2019) defines ESD as an educational approach that incorporates sustainability-related content and pedagogy into curricula, empowering learners to make informed decisions and take responsible actions that promote environmental integrity, economic viability, and social equity. This integration is crucial in equipping students with the necessary knowledge and competencies to address pressing global sustainability challenges while respecting cultural diversity and ethical considerations.

The United Nations' Sustainable Development Goals (SDGs) further reinforce the role of education in sustainability, with Goal 4 emphasising the need for inclusive, equitable, and high-quality education that fosters lifelong learning opportunities (United Nations, 2015). This global commitment aligns closely with Botswana's Vision 2036, which envisages an education system that nurtures skills and knowledge essential for sustainable economic and social development (Botswana Government, 2016). Furthermore, Agenda 2063, the African Union's blueprint for socio-economic transformation, underscores the need for educational reforms that support Africa's long-term sustainability objectives (African Union, 2014; Addaney, 2018). As a result, integrating ESD into higher education curricula is viewed as essential for preparing a workforce that is adept at contributing to a sustainable and knowledge-driven economy.

Incorporating ESD in higher education curricula is not merely an educational reform but a strategic alignment with international, regional, and national sustainability goals. By embedding sustainability principles into teaching and learning processes, HEIs can nurture a generation of graduates who are not only academically proficient but also equipped with the skills and mindset to drive sustainable development in their communities and beyond. This approach yields numerous benefits, including heightened environmental awareness, increased engagement in sustainable practices, and the development of problem-solving skills critical for addressing sustainability challenges (Hauschild, Kara and Røpke, 2020; Arabi, Taljaard and Weerts, 2022).

Long-term goals of learning and development such as strengthening problem-solving and systems-thinking skills can be more effectively achieved through project-based learning on sustainability related initiatives. This can be better realised by improved awareness of ESD and best cascaded through the education system. Despite the recognised importance of ESD, its integration within Botswana's HEIs remains fragmented and insufficient. Current efforts are often limited to sporadic sustainability awareness seminars facilitated by United Nations agencies, with no sustained institutional commitment to embedding ESD into curricula. Consequently, many graduates lack foundational knowledge in sustainability practices, limiting their ability to contribute meaningfully to national and global sustainability efforts.

This gap indicates a critical need for systematic and sustained integration of ESD into educational programmes. Accordingly, this study explores the extent of ESD integration in Botswana's HEIs, analyses existing practices, identifies challenges, and proposes actionable recommendations. By focusing on academic staff, the primary drivers of curriculum implementation, the research provides insights into effective strategies for embedding sustainability within HEIs.

The significance of this study lies in its comprehensive approach to evaluating ESD integration across multiple institutions, rather than limiting its scope to individual case studies or specific faculties. Unlike previous research on ESD in Botswana, which often provides a limited perspective that focuses on a single institution or faculty in an institution, this study aims to present a holistic reality of ESD implementation across Botswana's HEI landscape, illustrating how it drives the concept of learning and development in societies.

Ultimately, the study seeks to foster a sustainability-oriented educational culture, ensuring that graduates are well-versed in addressing sustainability challenges in an evolving global landscape.

To this end, the study is guided by the following research objectives (RO):

- **RO1:** to examine the current extent of ESD integration within HEI curricula, as well as the broader practices and initiatives related to ESD within institutions.
- **RO2:** to identify the challenges hindering ESD integration in HEI curricula and highlight potential areas for improvement.

The remainder of the paper is organised as follows: review of relevant literature, methodology, results and discussion of findings, and finally, conclusions and recommendations.

## ***Literature review***

### **Definition of sustainability**

The concept of sustainability encompasses a broad range of applications and systems, reflecting its significance as a defining feature of the twenty-first century. Scholars such as Kara et al. (2022) and Andersson et al. (2021) emphasise that sustainability is intrinsically linked to progress and often invoked to provoke an emotional response. Traditionally associated with environmental issues, sustainability is frequently used interchangeably with 'green' concerns and conservation efforts (Ruggiero, 2022; Hariram et al., 2023; Hoffmann et al., 2024; Obadire et al., 2025).

A general definition of sustainability is the ability to maintain or improve standards of living without damaging or depleting natural resources for present and future generations. This notion provides a holistic framework for individuals and societies to pursue their goals while ensuring environmental protection. As García-Sánchez et al. (2022), Torelli (2021), and Ahmad et al. (2021) argue, sustainability demands values and ethics that can be articulated through specific policies.

The United Nations Brundtland Commission defined sustainability development as development that ‘meet[s] the needs of the present without compromising the ability of future generations to meet their own needs’ (United Nations Brundtland Commission 1987, cited United Nations, 2023). As such, developments associated with economic growth, industrial expansion, and urbanisation should continue but must be balanced with the imperative to meet essential human needs such as food, shelter, education, and income (Kirkby, O’Keefe and Timberlake, 1995; Hajian and Kashani, 2021; Sakalasoorya, 2021).

In the context of higher education, the Quality Assurance Agency for Higher Education (QAA) and Advance HE defines sustainable development as ‘an aspirational ongoing process of addressing social, environmental, and economic concerns to create a better world’ (2021). This definition underscores the importance of integrating sustainability into educational practices, ensuring that curricula not only address but also actively support the broader goals of sustainable development. The definitions of sustainability suggest that HEIs can teach students ESD as it equips them with the values for development for now and the future. Tilbury (2011) posits that integrating ESD in higher education curricula is a crucial step in fostering a generation that is not only knowledgeable, but also proactive in addressing the challenges of learning and development.

Strategies for integrating sustainability into curricula can be chosen based on the availability of resources and magnitude of curricula adjustments to be done. For instance, ESD can be embedded into the existing curricula (Botswana Qualifications Authority (BQA), 2023) or setting up co-curricular clubs to teach learners ESD concepts and practices (Abo-Khalil, 2024). In Botswana, the regulatory body BQA, allows adjustments of up to 30% of the content into running approved programmes before the normal programme review cycle. Advantages of embedding new changes into existing programmes and modules include immediate implementation of new content and mobilisation of supporting resources to support new changes. However, if changes are not embedded, there is a time lag in implementing new curricula which retards progress towards achieving the SDGs (Abo-Khalil, 2024). Due to the importance of ESD in solving the world’s rising ecological, social, and economic issues, several countries opt to embed the ESD content in existing modules to produce informed citizens and professionals (Addaney, 2018).

## ***Theoretical review***

Numerous theoretical postulations have been argued regarding ESD in HEIs. This study is underpinned by three key theoretical frameworks: systems theory, constructivist theory, and transformative learning theory.

Von Bertalanffys' (1972) systems theory provides a holistic framework for understanding how different components of a system interact. In higher education, this theory examines how curriculum design, pedagogical approaches, institutional policies, and stakeholder engagement collectively promote ESD (Ujeyo, 2019). Adams and Lanford (2021) argue that systems theory aids in embedding ESD into curricula by analysing interconnections between educational objectives, content delivery, and institutional support. It also highlights feedback loops and the dynamic nature of curriculum development, demonstrating how changes in one component can influence others (Schramm, 2023). The theory suggests that by integrating ESD into HEIs, both development and sustainability goals can be effectively achieved.

Constructivist theory emphasises that learners actively build their understanding of sustainability concepts through interaction with their environment and real-world experiences (Vygotsky, 1978; Jaramillo, 1996). Khadidja (2020) asserts that this theory underscores experiential learning, critical thinking, and problem-solving as essential to ESD. It supports student-centred learning through hands-on projects, case studies, and collaborative activities (Asif et al., 2020).

Jack Mezirow's (1997) transformative learning theory focuses on how individuals change their perspectives through critical reflection and experiential learning. Mezirow (2018) posits that education can lead to shifts in attitudes and behaviours towards sustainability by fostering deep, reflective engagement with sustainability challenges. The relevance of the three theories lies in their complementary approaches to integrating sustainability into curricula. Together, they offer a comprehensive framework for developing curricula that effectively address ESD and prepare students to contribute to a more sustainable future.

## ***Methodology***

Mouton (2012) defines research methodology as the structured process guiding a study from problem identification and assessment to data analysis, interpretation, and conclusion. He further argues that research methodologies reflect the principles that shape the researcher's approach to conducting a study. More so, Neuman (2011) describes research design as an overarching plan for obtaining answers to research questions while addressing potential challenges. Various research designs exist, including extended literature reviews, comparative analysis, content analysis, survey-based research, case studies, action research, and hypothesis development (Hofstee, 2006).

Given the exploratory nature of this study and research question, a survey-based research design was adopted. The study employed a well-structured online questionnaire with a total of 42 questions across five sections. Of these, 34 were closed-ended, three were open-ended, and five captured socio-demographic information. Each section included at least one open-ended question to validate and probe responses to the closed-ended items, thereby combining quantitative and qualitative methods to gain deeper insights into ESD integration.

The survey targeted academic staff across various HEIs in Botswana, incorporating closed and open-ended questions to assess the extent of ESD integration, existing practices, and demographic data and to explore participants' experiences, challenges, and successes regarding ESD integration. The study obtained relevant data from 52 key respondents.

In designing the survey, the questions were structured to examine the extent to which ESD is promoted through curriculum design, pedagogical approaches, institutional policies, and stakeholder engagement. The instrument also explored the interconnections between educational objectives, content delivery, and institutional support, guided by the principles of systems theory (Ujeyo, 2019; Adams and Lanford, 2021). To assess the prevalence and effectiveness of sustainability initiatives, elements of constructivist theory were embedded in the design (Asif et al., 2020). Furthermore, Mezirow's (1997) transformative learning theory informed questions aimed at probing participants' current attitudes and perspectives of ESD.

The study population included all registered HEIs in Botswana. However, due to logistical and bureaucratic challenges, a purposive sampling method was used to select four HEIs out of ten as a representative sample of the country's HEI landscape. Within these institutions, a stratified random sampling method was applied to select academic staff from different faculties and departments, ensuring a diverse range of perspectives on ESD integration.

Quantitative survey data were analysed using descriptive statistics to summarise the extent of ESD integration, existing practices, and staff perceptions. Qualitative data from the open-ended questions underwent thematic analysis, involving transcription and coding to identify key themes, patterns, and opportunities for improving ESD integration.

To uphold research ethics, permits were obtained from institutional review boards, and informed consent was secured from all participants. Confidentiality and anonymity were maintained, with data securely stored in a password-protected folder. To enhance reliability and validity, the survey was pre-tested with five academic staff members, leading to minor refinements in wording and structure. Data analysis was conducted using SPSS 29 and Power BI for a comprehensive statistical and thematic examination.

## ***Results and discussion of findings***

This section presents the study's findings based on responses from 52 key participants across four HEIs. Data from experienced respondents enhanced the study. Findings are presented in two parts: demographic representation and background, followed by results aligned with the study's aim.

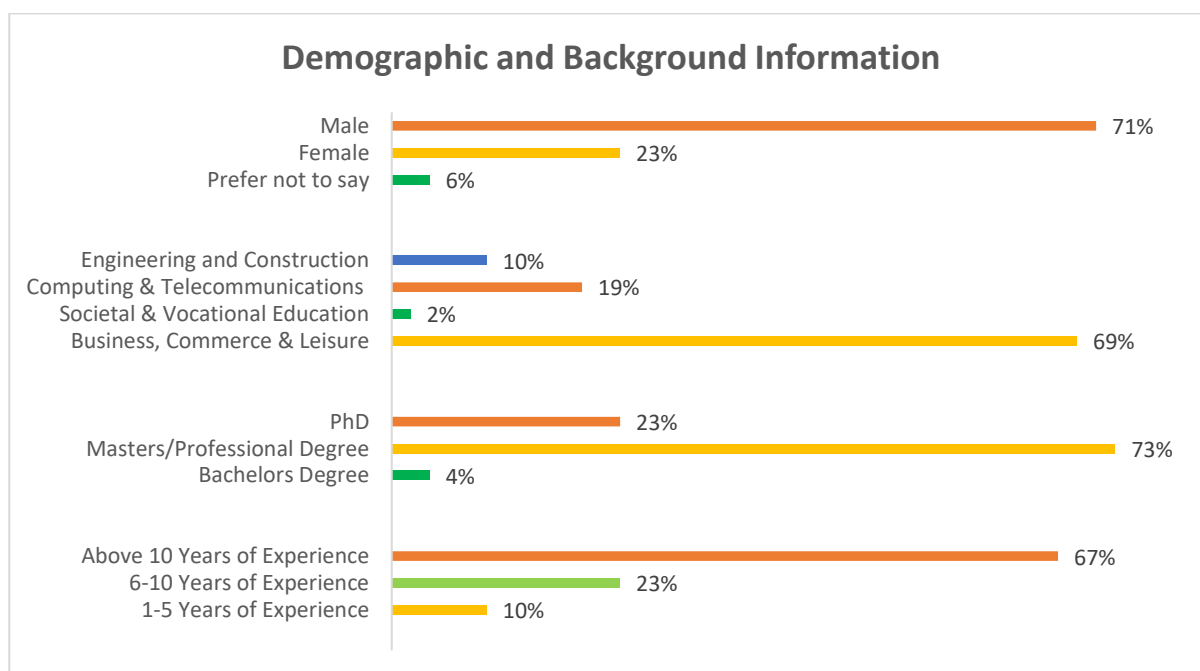
### **Demographic representation and background information**

Figure 1 presents a demographic and professional breakdown of respondents, detailing gender, faculty affiliation, educational qualifications, and years of experience. The gender distribution is notably imbalanced, with 71% male, 23% female, and 4% preferring not to disclose their gender, reflecting potential trends within the surveyed field. Faculty representation is dominated by 'Business, Commerce and Leisure' (69%), followed by

‘Computing and Telecommunications’ (19%) and ‘Engineering and Construction’ (10%), while ‘Societal and Vocational Education’ accounts for only 2%. No respondents represent Agriculture, Medicine, Sciences, or Arts, suggesting a focus on Business and Technology disciplines.

The sample reflects a highly qualified cohort, with 73% of respondents holding a master’s or professional degree, 23% a PhD, and 4% a bachelor’s degree. In terms of professional experience, 67% reported over ten years, 23% between six and ten years, and 10% between one and five years. This profile suggests a well-experienced group capable of providing informed perspectives on ESD integration within Botswana’s HEIs. Given that successful curriculum implementation is often contingent upon adequately qualified staff (Abo-Khalil, 2024), these findings indicate that HEIs in Botswana are well positioned to integrate ESD into their curricula.

**Figure 1. Percentage representation of the demographic and background information.**



Source: Authors’ compilation (2024)

**RO1: The current extent of ESD integration within HEI curricula and the existing broader practices and initiatives related to ESD within HEIs.**

The findings indicate that while HEIs in Botswana acknowledge the importance of ESD integration, its implementation remains limited and inconsistent. As shown in Table 1,

44.2% of respondents agree that sustainable development content is present in curricula, yet only 21.2% report the inclusion of specialised sustainability courses, suggesting a lack of depth in ESD offerings. Additionally, 55.8% state that ESD topics are not integrated across disciplines, reinforcing the inference that most HEIs lag in comprehensive ESD incorporation.

Resource allocation and professional development for ESD are also insufficient, with only 21–26% of respondents affirming institutional support and training. This indicates that resource constraints hinder ESD integration. Staff development programmes are rarely offered, and when conducted they are often limited to occasional UN agency-led seminars, leaving HEIs responsible for ongoing implementation, an approach proving inadequate (African Union, 2014). Despite these challenges, Table 1 highlights positive initiatives: 73.1% report sustainable campus operations, 50% note dedicated ESD committees, and 51.9% cite awareness campaigns.

Despite some progress, the presence of formal ESD policies (25%) and sustainability-related recognition mechanisms (9.6%) remains limited. Furthermore, although 42.3% of respondents indicated that ESD is reflected in extracurricular and research activities, only 30.8% reported its integration into assessment methods. These findings highlight persistent gaps in embedding sustainability across institutional practices. As Addaney (2018) argues, policy synergies are essential in driving and sustaining curriculum transformation.

**Table 1. Key questions focusing on the current extent of ESD integration within HEI curricula and the existing broader practices and initiatives related to ESD within HEIs.**

<b>Key questions on the current extent of ESD integration in the curricula in HEI</b>	<b>Frequency (%)</b>
The curricula at my institution include comprehensive content on sustainable development.	23 (44.2)
ESD topics are integrated into courses across various disciplines.	23 (44.2)
My institution offers specialised courses focused solely on sustainability and sustainable development.	11 (21.2)
There are sufficient resources allocated for the integration of ESD in the curriculum.	11 (21.2)

My institution provides professional development opportunities focused on ESD for staff.	13 (26.0)
There is a clear policy or framework guiding the integration of ESD in the curricula at my institution.	11 (21.2)
ESD is a common theme in the extracurricular activities offered by my institution.	22 (42.3)
There is evidence of ESD integration in the institution's research activities.	22 (42.3)
Students have opportunities to participate in sustainability projects or initiatives on campus as part of their core academic activities.	18 (34.6)
Assessment methods at my institution reflect the integration of ESD concepts.	16 (30.8)
<b>Key questions on the existing wider practices and initiatives related to ESD within HEI.</b>	Frequency (%)
My institution has established a formal policy dedicated to integrating ESD principles across all departments.	13 (25.0)
There is active awareness and sensitisation of sustainability and sustainable development among students in my institution.	19 (36.5)
Faculty members receive regular training sessions and workshops on incorporating ESD into their teaching practices.	7 (13.5)
There are active student-led projects aimed at promoting sustainability on campus and in the community.	14 (26.9)
Research initiatives at my institution focus on addressing sustainability challenges and promoting interdisciplinary studies in ESD.	22 (42.3)
My institution partners with local communities and organisations to advance sustainability and ESD initiatives.	22 (42.3)
The institution regularly publishes reports on its sustainability practices, initiatives, and progress.	19 (36.5)
Sustainable practices are implemented in campus operations, such as energy efficiency, waste reduction, and water conservation.	38 (73.1)
A dedicated committee or task force oversees and promotes ESD initiatives within the institution.	26 (50.0)

Contributions to sustainability are recognised and rewarded through awards or other forms of recognition at my institution.	5 (9.6)
My institution forms collaborative partnerships with other HEIs, NGOs, and industry to advance ESD and share best practices.	16 (30.8)
Campus projects are developed to make the institution more environmentally friendly, such as tree planting and recycling programmes.	23 (44.2)
Awareness campaigns are conducted to educate and engage the campus community about sustainability issues and ESD principles.	27 (51.9)
Sustainability goals and ESD principles are incorporated into the institution's strategic planning and decision-making processes.	23 (44.2)

Source: Authors' compilation (2024)

To validate the feedback in Table 1, the respondents were further probed to provide other existing wider practices and initiatives related to ESD in their institutions of higher learning. The responses that emerged with similar occurrences as shown in Figure 2 are summarised into four themes and discussed below.

### ***Theme 1: community awareness and engagement***

HEIs engage their community through initiatives like Green Tuesday and weekly Green Tips to foster a 'green' culture. These efforts include campaigns and email reminders that encourage sustainable behaviours. However, while impactful, these sporadic initiatives may fall short of ingraining a long-term sustainability culture, as noted by respondents.

### ***Theme 2: institutional structures for sustainability***

The establishment of co-curricular dedicated groups such as Sustainability Committees and Sustainability Clubs demonstrates HEIs' commitment to ESD through structured internal teams. These bodies play an essential role in promoting sustainable practices and are pivotal in leading and maintaining ESD-related policies and initiatives.



initiatives. This underscores the need for dedicated budget allocations and sustained investment in ESD activities coupled with institutional ESD policies which are linked to national policies and support mechanisms (African Union, 2014; Addaney, 2018).

Faculty development also remains insufficient, as 69.2% of respondents report that faculty members lack the necessary training to incorporate ESD into their teaching. This finding resonates with recommendations by Abo-Khalil (2024) who argues that ESD is best achieved if there are adequately trained staff to effectively implement the curricula. Existing training is often dependent on short-term external programmes, primarily facilitated by United Nations agencies. Without sustained institutional support, long-term ESD implementation remains weak. Furthermore, the absence of a national ESD policy framework exacerbates fragmentation, with 36.5% of respondents indicating no guiding framework for HEIs. Additionally, 42.3% of staff are unaware of any formal ESD policies, and only 25% report institutionalised policies across departments. While Botswana Vision 2036 advocates for educational transformation (Botswana Government, 2016), achieving this vision requires a coordinated ESD approach.

Student engagement is another critical gap, with only 26.9% reporting active student-led sustainability projects and 34.6% indicating participation in campus sustainability initiatives. The African Union's Agenda 2063 emphasises sustainability-focused education, yet ESD remains largely staff-driven. Additionally, employer expectations (40.4%) and disciplinary integration challenges (51.9%) further complicate ESD adoption across HEIs.

**Table 2. Key questions focusing on the challenges faced in integrating ESD in the curricula of HEIs.**

<b>Key questions focusing on the challenges faced in integrating ESD in the curricula of HEI</b>	Frequency (%)
There is no national policy or framework for integrating ESD into academic curricula.	19 (36.5)
There is insufficient institutional support for integrating ESD into the curriculum, and ESD is not adequately emphasised in the institution's strategic planning and decision-making processes.	21 (40.5)
Faculty members lack the necessary training to effectively incorporate ESD into their courses.	36 (69.2)

Diversity in subject specialisations and disciplines presents a challenge for integrating ESD into the curriculum.	27 (51.9)
Employers' expectations and definitions of a market-ready graduate are not aligned with ESD principles.	21 (40.4)
There is a lack of resources and materials to support ESD integration, and the associated costs and time are major concerns.	23 (44.2)
There is resistance from faculty or staff towards incorporating ESD principles into their teaching.	6 (11.5)
The current curriculum structure makes it difficult to include ESD topics effectively.	13 (25.0)
There is limited student interest or engagement in sustainability-related courses and activities.	11 (21.2)
Assessment methods and criteria do not reflect the integration of ESD principles.	17 (32.7)

Source: Authors' compilation (2024)

To validate the feedback in Table 2, the respondents were further probed to provide other possible challenges encountered in integrating ESD in their respective HEIs. The responses that emerged with similar occurrences as shown in Figure 3 are summarised into five themes and discussed below.

### ***Theme 1: curriculum and strategic integration***

Many respondents highlighted that curriculum updates do not occur frequently enough to include current sustainability practices, and ESD concepts are often absent or inadequately represented. ESD integration lacks a strategic drive, and respondents mentioned that ESD policy and strategy are not cascaded effectively within institutions. It is therefore important to link institutional ESD strategies and policies to the national and global transformation agendas so as to have benchmarked standards for evaluation (Tilbury, 2011). Professional departments such as professional accounting, also feel excluded from curriculum development in ESD, indicating a gap in interdisciplinary inclusion.

***Theme 2: awareness and understanding of ESD***

Figure 3 shows that there is a lack of awareness among both staff and students about ESD's significance and presence within the institution. Sustainability is perceived as a contemporary topic that many struggle to fully understand, reducing the perceived importance of ESD within the educational system. This limited understanding may lead to insufficient focus on ESD in academic discussions and lower prioritisation by faculty and administration.

***Theme 3: staff and institutional training***

As shown in Figure 3, respondents noted a lack of sufficient training for staff on sustainability topics, which impedes effective ESD integration. Without adequate training staff may resist or struggle with integrating ESD into their teaching methods. Additionally, there is no dedicated office or team specifically tasked with overseeing and driving ESD programmes, leading to inconsistencies and sporadic activities rather than a cohesive institutional approach.

***Theme 4: financial and resource constraints***

Funding is a significant challenge, with limited financial support available to incentivise ESD-related activities and curriculum integration, as represented in Figure 3. Resource limitations restrict the establishment of dedicated ESD initiatives, student involvement, and the development of infrastructure to support sustainable practices. Financial constraints also impact the institution's ability to conduct meaningful and continuous sustainability research.

***Theme 5: cultural and institutional resistance***

As shown in Figure 3, there is notable resistance to change within the institution, both culturally and structurally, which hinders ESD integration. Sustainability is not yet a well-embedded part of the institutional culture, and without strong advocacy, it remains undervalued. Students and staff alike may not fully recognise the value of ESD due to longstanding educational norms and a general lack of exposure to sustainability as a core component of the institution's mission.



measures. Additionally, a dedicated ESD office should be established to oversee these initiatives. Curricula should be redesigned to incorporate sustainability themes across all disciplines, not just in environmental sciences, and developed in collaboration with industry experts to ensure relevance. Student engagement through student-led sustainability projects should be prioritised to provide hands-on learning experiences.

In terms of policy and social implications, a national policy for ESD integration across all HEIs is crucial. The Ministry of Education should develop such a policy to provide coherence and consistency, in line with national strategies such as Botswana Vision 2036. This would also empower students to become sustainability leaders, ready to tackle global and local socio-economic and environmental challenges.

Moreover, HEIs should invest in faculty development programmes, offering training in integrating ESD into teaching, with an emphasis on experiential and project-based learning. Monitoring and evaluation systems must be implemented to track the effectiveness of these initiatives. Partnerships with local communities, NGOs, and industries should be fostered to provide real-world sustainability learning opportunities. Institutions could celebrate sustainability achievements through events like an 'ESD Day' and integrate sustainability into diverse assessment methods, ensuring ESD principles permeate throughout the student experience.

Lastly, given the curriculum structure's current challenges, it is essential to align curriculum updates with the next scheduled review. According to the Botswana Qualifications Authority (BQA) Quality Assurance Standard (QAS) 3 regulations, curricula are reviewed every five years (2023). However, institutions can adjust up to 30% of the content without notifying the BQA. This flexibility should be utilised to incorporate ESD principles into existing programmes before the next full review, to show commitment to continuous learning and development. In addition, HEIs can strengthen this process by introducing stand-alone sustainability modules, integrating sustainability-related learning outcomes across all courses, embedding case studies into teaching practice, and expanding co-curricular initiatives that reinforce experiential learning.

Despite the uniqueness of this study and its invaluable contributions, it is subject to certain limitations, including the potential for alternative interpretations of the findings and limited

generalisability due to the use of a survey-based research approach. To enhance the robustness and applicability of future research, it is recommended that mixed methods or longitudinal studies be employed across a broader range of higher education institutions in Botswana. In turn, future studies need to focus on the level of ESD implementation and practices in the higher education system of Botswana against the country's Vision 2036, African Union's Agenda 2063 and the SDG 4.

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