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Teaching Sustainability in Higher Education in the United Arab Emirates: Faculty Perspectives on Challenges and Practice

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Abstract

As sustainability becomes an increasingly urgent global concern, higher education institutions play a vital role in preparing graduates to respond to environmental, social, and economic challenges. In places like the United Arab Emirates, this is especially crucial because it ties directly into the country's national plans and goals for sustainable education. This study dives into how teachers at a government university in the UAE currently think about, teach, and put sustainability into practice, specifically looking at what helps them and what the barriers are to meaningful integration. Using a mixed-methods design, data were collected from 144 faculty members across a range of disciplines through surveys and follow-up focus groups. The findings reveal faculty members personally care a lot about sustainability and are committed to weaving it into their courses. However, there are real-world obstacles like not enough training, limited time, ambiguity in guidance and a disconnect between official sustainability policies and what actually happens in the classroom. Qualitative insights highlight the importance of experiential and applied learning, with faculty emphasizing the value of "learning by doing" to help students move from awareness to action. The study also identified that sustainability is often seen mostly as an environmental issue, and there is limited collaboration between different departments. In addition, there seems to be a perceived gap between what students learn about sustainability and how it prepares them for jobs. Overall, the findings suggest that while momentum for sustainability integration exists,

greater institutional support, professional development, and coordinated leadership are needed to bridge the gap between intention and practice. The study offers practical insights for higher education leaders seeking to strengthen sustainability education in rapidly developing contexts such as the UAE.

Keywords: Education for Sustainable Development (ESD), experiential learning, faculty perspectives, higher education, sustainability education, sustainability integration, United Arab Emirates (UAE).

Introduction

Sustainability has become a critical global issue, prompting higher education institutions to incorporate sustainability education into their curricula. In the United Arab Emirates (UAE), this shift aligns with national objectives supporting Education for Sustainable Development (ESD) (Al-Naqbi & Alshannag, 2018; Alshuwaikhat & Abubakar, 2008). The UAE's Vision 2021 and Vision 2030 highlight the need to integrate sustainability principles across educational levels, especially within tertiary institutions. Embedding these principles into academic programs is now deemed essential (UAE and the 2030 Agenda for Sustainable Development, 2016). Policy documents emphasize integrating sustainable development concepts into both secondary and higher education curricula (Baroudi, 2023). However, achieving this integration poses challenges as institutions balance traditional educational objectives with the growing demand for sustainability-related skills and knowledge. Singh and Blessinger (2023) highlight that in the UAE, "the concept of sustainability has only become part of rhetoric, without concrete integration and implementation on the ground, leaving no substantial impact" (p. 3). This paper explores implementing these skills and knowledge through understanding faculty perceptions, challenges faced, and suggestions for moving forward.

The need for sustainable development in education is pressing in the Gulf region. Rapid urbanization and economic expansion in the UAE present sustainability challenges such as environmental degradation, growing population, and severe water scarcity. The country's high energy consumption underscores the urgent need for sustainable solutions (Al-Maamary et al., 2017). Additionally, the UAE's economic diversification plans require a shift toward a knowledge-based economy, demanding a workforce adept in sustainability practices. Higher education in the UAE plays a crucial role in preparing students to tackle these challenges. By integrating sustainability across various academic disciplines, universities can develop graduates with the interdisciplinary skills necessary to promote and implement sustainable practices (Barth & Rieckmann, 2016; Tilbury, 2011). This approach fosters a culture of environmental and social responsibility and prepares students to contribute to the nation's long-term sustainable development goals.

Literature Review

The need for sustainable practices is increasingly recognized, with educational institutions in the UAE playing a pivotal role in fostering sustainability (Alshuwaikhat

& Abubakar, 2008). These strategies align with global movements where organizations like the United Nations advocate for education as a key driver of sustainable practices (Rieckmann, 2018). Some UAE higher education institutions (HEIs) have begun integrating Sustainable Development (SD) into their frameworks. However, challenges remain (Singh & Blessinger, 2023). Universities in the Gulf region, particularly in the UAE, are uniquely positioned to lead this transformation due to their rapid development and strategic focus on sustainability (Abo-Khalil, 2024).

Public HEIs in the UAE also shape the Emirates by instilling national loyalty and identity, which influences their commitment to sustainability initiatives (Bridi & Al Hosani, 2022). This cultural factor can affect the integration of sustainability practices. HEIs play a critical role in promoting sustainable development. Levesque (2019) argues that universities are crucial in advancing sustainable ways of life. Emanuel and Adams (2011) emphasize universities' moral responsibility to prepare graduates for future societal challenges. In the UAE, this responsibility aligns with the nation's vision of global sustainability leadership (Krzyszowski, 2020). Leal Filho et al. (2021) argue that universities must equip students with knowledge on climate change mitigation and adaptation. However, there are concerns that HEIs are not adapting quickly enough to meet these needs (Hurth & Stewart, 2022).

Despite strong support for sustainability, integrating SD concepts into UAE HEIs faces challenges. A significant issue is the gap between the desire for change and the ability to implement it effectively and, although teachers acknowledge the importance of teaching sustainability, they struggle to translate international policies into practice (Parry & Metzger, 2023; Will, 2023). This gap is exacerbated by limitations in faculty expertise and resources in the rapidly modernizing UAE educational system (Muysken & Nour, 2006).

Popescu (2018) identifies key areas where universities need to focus: Teaching and Learning, Research and Innovation, Public/Community Service, and Campus Operations. In the UAE, there is increasing recognition that sustainability should be embedded not only in the curriculum but also in campus operations and community engagement (GEMS Education, 2020). The Sustainable Development Goals (SDGs) and ESD frameworks guide the integration of sustainability into HEIs (United Nations Educational, Scientific and Cultural Organization [UNESCO], 2022). ESD is becoming central to the National Education Policy Framework, aligning with SDG 4 on Quality Education (National Committee on SDGs, 2017).

Institutional research is crucial for identifying and overcoming barriers to sustainability integration. In the UAE, these barriers include a lack of resources, insufficiently trained staff, limited institutional support, and inadequate planning (Disterheft et al., 2015). The temporary nature of many faculty positions also impacts the sustainability of these initiatives (Al Mahameed, et al., 2023). Contextual factors such as cultural attitudes and rapid development pace further shape the effectiveness of sustainability integration (Radwan & Khalil, 2021). Faculty knowledge and attitudes are critical, as the successful implementation of ESD depends on educators' skills and beliefs, which vary widely (Brandt et al., 2019). Many UAE faculty members come from diverse educational backgrounds, which can affect their engagement with sustainability

concepts (Cotton et al., 2007; Serafini et al., 2022).

Despite challenges, there is growing momentum toward sustainability in UAE higher education. With increasing regulatory requirements and institutional commitments, universities are exploring new ways to integrate sustainability into teaching, research, and operations. HEI leaders must harness their institutions' potential to drive change, focusing on developing new curricula and fostering a sustainability culture throughout university life (Hurth & Stewart, 2022). Success in integrating sustainability will depend on overcoming barriers, leveraging institutional research, and engaging all stakeholders in the sustainability journey. This paper aims to explore these dynamics, providing insights to guide future efforts in enhancing sustainability in UAE higher education.

Theoretical Underpinnings

Theoretical Paradigm

This study is grounded in the interpretivist paradigm, emphasizing the socially constructed and subjective nature of reality. This approach is crucial in educational research for understanding participants' perceptions, attitudes, and experiences, particularly regarding sustainability integration in higher education. Interpretivism highlights how individuals interpret experiences based on cultural, social, and historical contexts (Pervin & Mokhtar, 2022). This perspective aligns with the study's focus on faculty perceptions of sustainability at the Higher Colleges of Technology (HCT) in the UAE, considering factors such as institutional culture and educational policies. Recognizing that participants may hold varying interpretations of survey concepts relating to sustainability, a definitional overview of some key concepts was provided prior to the relevant survey question to establish a common frame of reference. This was intended to reduce interpretive ambiguity while still allowing participants to draw on their own experiences in responding.

Theoretical Framework

The theoretical framework is based on the Transformative Learning Theory by Jack Mezirow, which posits that learning involves a fundamental change in perspective through critical reflection on existing beliefs (Mezirow, 1997). This theory is relevant to sustainability integration, emphasizing a transformative shift in faculty understanding and teaching methods. The framework also addresses barriers such as the lack of resources and insufficient professional development, guiding the analysis of the study and strategy development (Disterheft et al., 2015).

Methodology

Research Approach

The study employs an interdisciplinary mixed-methods approach, combining surveys and focus groups for a comprehensive analysis. This approach integrates quantitative and qualitative data, offering a nuanced understanding of the research topic (Creswell & Clark, 2017). Quantitative data were initially collected through surveys, followed by

qualitative data from focus groups to elaborate on and interpret survey findings and emerging themes (Toyon, 2021).

Participants and Sampling

The study involved 144 faculty members from a UAE public tertiary institution, including disciplines such as Business, Information Technology, Engineering, Health Science, and Applied Media. Participants volunteered, using a non-probability sampling method that provided diverse perspectives on sustainability (Gill, 2020; Omona, 2013). While familiarity with sustainability varied, participants generally supported its integration into teaching.

Reliability and Instrument Design

The survey instrument was designed to capture faculty perceptions and practices related to sustainability integration in higher education teaching. The questionnaire was divided into four distinct sections to explore: the personal level, the campus level, the course level, and graduate employability. These reflect the key tenets of sustainability integration in teaching, from belief to context to practice. The survey was intentionally kept concise, with only 18 questions, to improve the response rate and reduce respondent fatigue, therefore producing more reliable results (Kost & da Rosa, 2018).

The first section collects demographic information (discipline, campus, teaching experience, and age group) alongside faculty awareness, attitudes, and personal engagement with sustainability. Section 2 explores how sustainability is perceived at the campus level, in relation to ESD. Section 3 focuses on integrating sustainability into courses taught by faculty, including environmental and economic sustainability practices. The final section explores faculty perceptions around the connection between graduates' understanding of sustainability and employability, highlighting the relevance of sustainability competencies in the UAE job market. The survey addressed two of Popescu's (2018) areas: teaching and learning, and campus operations, with additional exploration of sustainability and employability.

A five-point Likert scale was used as it provides a balance between ease of use for participants with the ability to depict more nuanced data, making it an appropriate and effective fit for measuring faculty perceptions and practices (Sullivan, & Artino, 2013). As an exploratory study, a neutral midpoint gives participants the option to express uncertainty or ambiguity to capture the varying levels of awareness around sustainability issues. The use of this format consistently across items enhances comparability and supports the reliability and validity of the findings (Chyung et al., 2017). Following the Likert scale items in the survey, there are open-ended items titled *Further Comments* that are included to capture qualitative data related to the Likert scale themes.

Reliability was ensured through a combination of closed, open, and ranking questions, and a pilot survey to resolve ambiguities. Minor wording adjustments were made based on feedback from the pilot phase. Consistency in data collection and analysis was maintained, with standardized focus group questions. Inter-rater reliability was addressed by two coders with experience in sustainability education and higher education pedagogy, who independently analyzed and compared qualitative data to ensure that the items

adequately reflected the constructs of sustainability awareness, sustainability teaching practices, and institutional support for ESD (Johnson & Onwuegbuzie, 2004). The convergence of quantitative and qualitative results validated the findings (Plano Clark, 2017).

Internal reliability of the Likert-scale items was assessed using Cronbach's alpha. The overall reliability coefficient for the attitudinal scale items was acceptable $\alpha = 0.84$, indicating satisfactory internal consistency for exploratory educational research. This indicates that the Likert-scale items show a strong degree of internal consistency and are effectively measuring a consistent concept related to how faculty perceive and implement sustainability practices. Negatively worded items were reversed before analysis to maintain consistency in the scale's direction. In general, the findings confirm the instrument's reliability for use in exploratory research within higher education settings.

Ethics

Ethical protocols were followed, with institutional approval and full disclosure to participants about the research aims, respondents' rights, and voluntary participation. Informed consent was obtained, and pseudonyms were used to ensure confidentiality.

Quantitative Findings: A Survey

The survey aimed to gather insights into faculty experiences and attitudes toward incorporating sustainability in teaching, campus operations, and employability. Its primary goal was to understand faculty perceptions of factors that facilitate or hinder sustainability integration. Analysis revealed widespread agreement on the critical role of sustainability education across disciplines. Faculty from Engineering, IT, Business, and Health Sciences expressed strong support for embedding sustainability in curricula, reflecting high awareness of sustainability issues. Thematic analysis highlighted key themes, such as the need to enhance institutional sustainability practices and the relevance of sustainability to future careers, aligning with the research questions of the study:

1. The extent to which sustainability education is integrated into curricula at a public tertiary institution in the UAE.
2. The obstacles and drivers to implementing sustainability education within the same institution.

Faculty Views on Sustainability

The survey results highlight the faculty's strong awareness of sustainability, with many respondents actively incorporating sustainable practices in their personal lives.

Figure 1
Faculty Beliefs Regarding Sustainability

5. Please read the statements and rate your level of agreement.

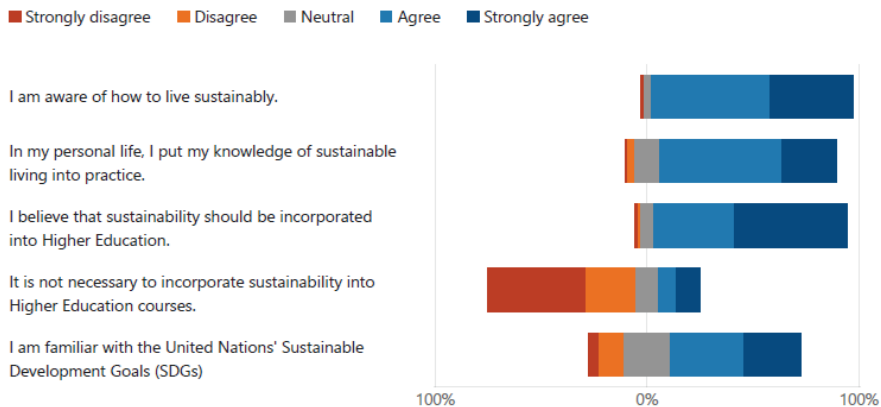


Figure 1 shows a high level of participant awareness of sustainability (95.7%) and support for incorporating sustainability (91.5%). However, 61% of faculty reported familiarity with the SDGs, and 39% remained neutral or negative, reflecting lesser awareness of this specific sustainability framework. Our analysis of the survey results suggests that the negative wording in the fourth statement (*It is not necessary to incorporate...*) may have caused some respondent confusion, and the figure of 31% respondents who do *not* reject the statement that sustainability integration is unnecessary may or may not be wholly reliable and could deserve further investigation. Overall, the data in Figure 1 suggest that positive views are not always matched by clear knowledge or confidence.

Education for Sustainable Development at the Institution

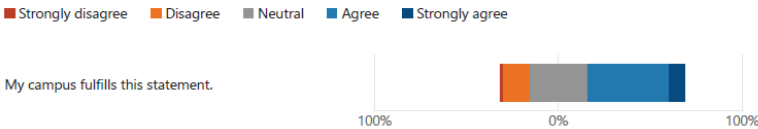
Approximately 54% of respondents believe that their institution is achieving its ESD mission, as depicted in Figure 2. However, additional comments indicated areas requiring improvement, particularly in waste management and reducing unsustainable behaviors like excessive energy consumption. This suggests a potential gap between the perceived fulfillment of ESD and the actual implementation of sustainable practices on campus.

Figure 2
Education for Sustainable Development at the Institution

7. Statement 1: Education for Sustainable Development (ESD) at your campus

Please read the statement considering your **campus** and then share your rating:

The mission of Education for Sustainable Development (ESD) for universities is to provide a holistic approach to sustainability education and to promote sustainability as a core value of the institution. Through ESD, universities can contribute to the development of a sustainable society and prepare the next generation of leaders and professionals to address global sustainability challenges.



Incorporating Economic Sustainability in Courses

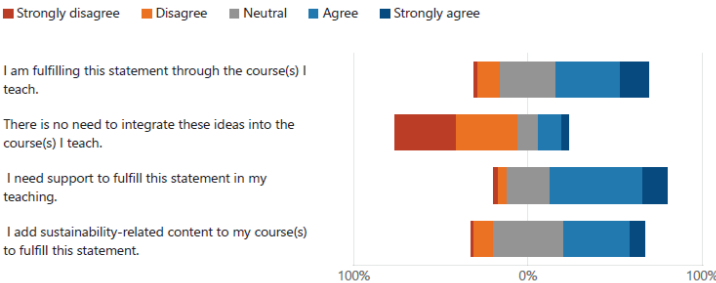
A majority of respondents, approximately 53%, reported fulfilling the statement through the courses they taught (see Figure 3). While a sizeable number of respondents (approx. 47%) have begun adding sustainability-related content into their courses, there is a recognized need for more institutional support and resources to effectively embed sustainability into course content with 56% agreeing and 12.9% of respondents strongly agreeing that additional support is needed. This highlights an opportunity for further development and support to enhance the integration of economic sustainability in the curriculum and close the gap between faculty intention and capacity.

Figure 3
Economic Sustainability in Courses

13. Statement 4: Economic sustainability in the courses you teach

Please read the statement and consider how it applies to **your teaching**. Then please share your ratings:

Educational institutions can promote economic sustainability by providing students with knowledge and skills in sustainable business practices, entrepreneurship, and innovation.

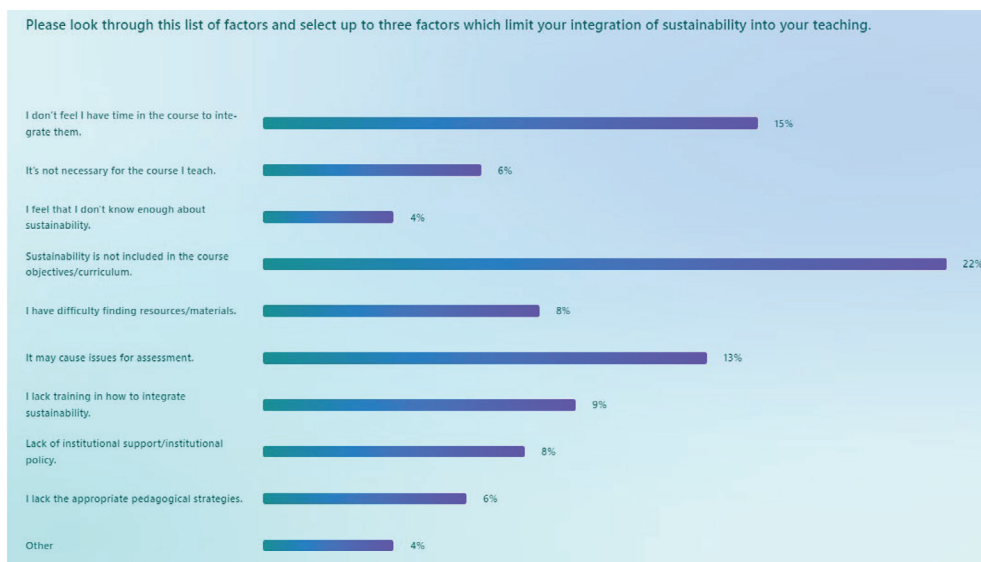


Challenges in Integrating Sustainability into Teaching

The survey identified several challenges in incorporating sustainability into teaching, as outlined in Figure 4. These include the absence of sustainability in course objectives, resource limitations (such as time, institutional backing, and training), and difficulties in aligning assessments with sustainability learning outcomes. These challenges reflect the complexity of integrating sustainability into higher education and suggest the need for a comprehensive approach that addresses these various barriers.

Figure 4

Factors Limiting Integration of Sustainability into Teaching



Support for Faculty in Integrating Sustainability

The findings in Figure 4 indicate that the main challenge to integrating sustainability in teaching is institutional rather than individual. The most chosen reason is that sustainability is *not included in course objectives or curriculum* (22%), suggesting that the integration of sustainability is perceived as being limited by top-down driven curriculum design, rather than a lack of willingness by faculty.

Time constraints is another significant factor that limits the integration of sustainability into teaching, with 15% of respondents indicating a lack of time. This suggests that even where there is interest competing teaching and administrative pressures limit exploration and implementation. Likewise, 13% highlight that sustainability could present difficulties in terms of assessment, which refers us back to the issue of curriculum design and course objectives.

Lack of knowledge (4%) or lack of pedagogical strategies (6%) were not identified as significant barriers to sustainability integrity, implying that capability was less of an issue than organizational conditions. This is corroborated by the moderate responses for lack of training (9%), resources (8%), and institutional support (8%). These suggestions

underscore the importance of a coordinated effort to support faculty in embedding sustainability into their teaching practices.

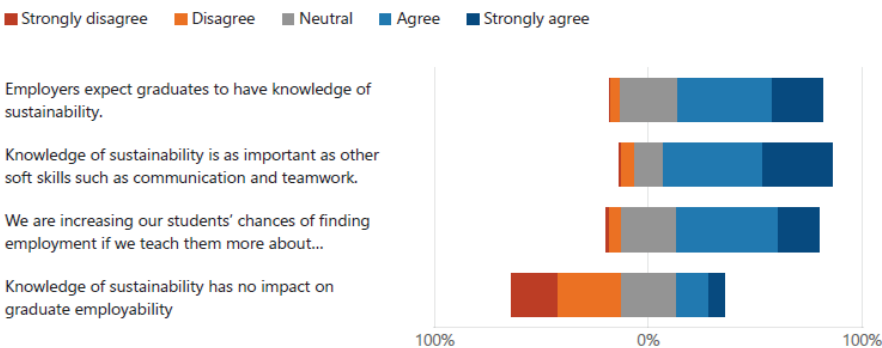
Notably, the findings show that resistance to integrating sustainability into teaching is very low (6%), suggesting that the key constraint lies in curriculum design and institutional support, rather than in faculty willingness or awareness.

Impact of Sustainability Knowledge on Graduate Employability

Figure 5 illustrates a general consensus that sustainability knowledge is highly valued by employers and is considered crucial as other soft skills. Most respondents agreed that equipping students with sustainability knowledge enhances their employability, emphasizing the need for sustainability education to be a core component of higher education curricula.

Figure 5
Impact of Sustainability Knowledge on Graduate Employability

17. Please read the statement and rate your level of agreement.



Summary of Quantitative Findings

Overall, the survey findings reflect a broad acknowledgment of the significance of sustainability in higher education, though the extent of integration varies among faculty members. The survey also highlighted a need for more comprehensive support for faculty incorporating sustainability into their teaching, with an emphasis on workshops, clear orientation materials, and flexibility in course design. Addressing the identified challenges, such as time constraints and insufficient institutional support, is critical to advancing sustainability education in higher education institutions.

Qualitative Findings: Focus Group Analysis

After the survey, focus groups were organized to explore the results in depth, providing qualitative insights to enrich the understanding of participants' perspectives. The focus

groups included volunteer faculty from departments such as Business, Health Sciences, Engineering, and Computer Information Science. The data were systematically analyzed using a coding process based on Carpendale et al. (2017).

Discussions were transcribed automatically, then verified for accuracy. An initial review identified patterns related to sustainability integration, followed by open coding to label emerging themes. The second round of coding, conducted by other researchers, ensured the consistency and robustness of the analysis. Discrepancies were resolved through discussion. This process helped extract key insights, illustrated by selected faculty quotes in the following section.

Prominent themes that emerged from the focus groups included perceptions of sustainability integration in education and faculty perceptions of sustainable knowledge and practice.

Focus Group Insights – Perceptions of Sustainability Integration within Education

Individual Commitment

A consistent theme throughout the focus groups was the strong personal commitment to environmental sustainability participants (P) demonstrated, noting:

Overall, I strive to raise awareness and promote understanding of sustainability across all my courses, not just those explicitly focused on the topic. (P1)

I try to raise awareness about sustainability by discussing current events like COP 28 and demonstrating sustainable practices in my own life and sharing them with my students. I share my own practices, like limiting my shower time and turning off the water when not needed, to encourage them to think about their impact on the environment. (P2)

Just awareness, from our part as teachers, you know to kind of look at the smaller things that make a big difference as well. Um, for example, even littering, you know. So we look at how we should be recycling stuff and look at the garbage, what's in there. Think about the packaging of the food that you have. So there are so many little things that I as a faculty do try my best to incorporate and make them more aware about their environment. (P3)

For instance, I use case studies and stories to illustrate the impacts and implications of sustainability issues. I emphasize to students that they are change agents, but I often find that they lack insight into how their lifestyle choices impact the world around them. (P1)

These comments indicate that faculty in higher education increasingly support sustainability initiatives, and in particular, recognize their own vital role in fostering environmentally responsible practices and integrating sustainability into curricula (Lozano et al., 2013). This individual commitment extends beyond classroom activities to encompass personal lifestyle choices and behaviors (Corcoran et al., 2004). In this

capacity, educators can serve as role models for students by demonstrating sustainable practices in their daily lives empowering students to adopt eco-friendly practices and contribute to a more sustainable future (Vukelić & Rončević, 2021).

Experiential Learning

Participants also emphasized the role of experiential learning in promoting sustainability, noting:

Real eco hands on learning, more field trips where students could link into research so they're actually active within the research being found within the key areas. (P5)

I also think that there should be more application of sustainability, really learning by doing projects, not just writing a report and be limited to doing some research. (P3)

These observations align with research suggesting that experiential and participatory approaches can enhance students' engagement with sustainability topics (Gough, 2016). Supporting more hands-on learning and projects that involve real-world application encourages students to question their assumptions about sustainability, strongly aligning with Mezirow's Transformative Learning Theory (1997). This reflective and participatory approach moves students beyond theoretical knowledge to a deeper, more integrated understanding of its practical implications, which is at the core of transformative learning.

Institutional commitment

Participants also discussed the perceived commitment of educational institutions to sustainability and frequently highlighted the importance of incorporating sustainability into curricula and institutional policies.

But this is where I think in my country in XXXXXX [country deleted for confidentiality], all these things implemented not voluntarily so it's a compliance. So I think here in this country will be the same if it is a compliance issue, they will follow like with the plastic cups this year. So I think HCT should do something. (P6)

It has to be common practice within the whole institution, and they have to know that, and they have to be fully aware of that. (P7)

This feedback points to a disconnect between institutional policies and classroom practices, a finding that resonates with previous studies indicating that while institutions may adopt sustainability policies, translating these policies into actionable classroom strategies often presents a challenge (Wals, 2014).

Conversely, some focus group members praised the institution for their efforts in integrating sustainability.

The course [innovation] is known for its competency-based approach, and sustainability is incorporated into the assessment criteria, course content, and course practices. (P7)

Yes, we had two things. One was a sustainability-related project for accounting,

specifically for a course in accounting. It was related to stock management and waste management. (P6)

This positive feedback reflects a growing trend among institutions to incorporate sustainability into their core values and educational offerings (Sachs, 2015).

Lack of Training

Focus group participants identified several challenges related to sustainability integration. One common issue mentioned was the lack of training for educators.

With regard to the obstacle to integrating sustainability in the teaching, I would like to have few comments. I think we have to start with teachers. We need to involve teachers in different PDs, in different, in different training to understand. (P8)

So if we ensure that faculty they are having the same level of understanding, they have the same level of, let's say, valuing the importance of going towards the direction even in a very gradual and progressive way. (P6)

These observations highlight a significant barrier to effective integration, as professional development is crucial for equipping educators with the knowledge and skills to teach sustainability effectively (Huckle & Sterling, 2014).

Focus Group Insights – Faculty Perceptions of Sustainable Knowledge and Practice

Varying Faculty Knowledge and Framing of Sustainability

Faculty knowledge and experience of sustainability varies, as in the general population. This perception was also shared by the focus group participants. With a common way of framing the scope of sustainability through the Three Pillars: Social, Economic, and Environmental, the ideas in the focus groups converged around the environmental frame, with a focus on campus waste management and material use. Other research based in the region also reflected a focus on the environmental frame (Al Mahameed, 2023). Within this convergence, there was strong agreement on the perceived need for the college to adopt more sustainable practices in academics and campus operations.

Limited Awareness of Cross-Departmental Sustainability Efforts

Alongside the limited framing of sustainability, there were limitations in faculty awareness of other department's activities related to sustainability. Some focus group members shared details about projects related to their own departments but shared minimal knowledge of the actions of other academic departments, as well as the Facilities Department, which organizes sustainability related practice, such as energy and water saving. This is possibly an outcome of the silo mentality, which can constitute an obstacle to the collaboration needed to implement sustainability in universities (Shiel & Williams, 2015).

Stakeholder Awareness of Sustainability Issues

One prominent theme that emerged from the focus groups was frequently expressed

as stakeholders having a lack of awareness. The student body was described in several ways: 1) as generally lacking awareness of common sustainable practices; 2) as having some awareness of sustainability but without application (value-action gap); and 3) as indifferent to sustainable practices. Such descriptions appear to underpin the suggested need to raise stakeholder awareness (student, faculty, and staff) of sustainable practice on campus. However, to what extent the focus groups described a lack of awareness or a lack of opportunity to apply knowledge requires mention here but remains unresearched at this point. However, this perceived need to put existing knowledge (awareness) of sustainable practice into action was a clear theme in the focus groups. Clayton's words.

But I often find that they lack insight into how their lifestyle choices impact the world around them. Many students are unaware of their role, responsibilities, and commitment towards creating meaningful sustainability-related actions. (P2) when I ask students about their awareness and care for sustainability, most of them seem unaware and indifferent. (P2)

We have to open their eyes. We have to raise awareness from that perspective of showing what they are supposed to know to do in relation to this area of sustainability. (P7)

As introduced above, the perceived lack of awareness was not restricted to the student body. This focus group participant also stressed the need for faculty awareness to be raised:

I believe that we need to consider also raising awareness among faculty as well, not only students, because faculty, they are not all of them at the same level of awareness in relation to sustainability. (P7)

Lack of Awareness and the Importance of Green Careers

The perceived lack of awareness extended to the need and benefit of ESD for future careers. One participant shared how they felt that green jobs offered opportunity, but it was an underdeveloped theme in the university:

So I mean it, it is one of those biggest growth industries, isn't it, sustainability industry, so. For sure, it would benefit students. I think that there isn't much awareness of it at this level though, so if we could. Have something with our career development or work placement units just to educate our students on what is out there? Then that would be good. (P9)

The theme of awareness and implementation of sustainable practice also emerged when describing academic and operational activity. One focus group member described how an event showcasing student innovation projects produced a large amount of waste, which appeared to contradict their expectations of such an event:

I was shocked, really shocked with the level of waste we created with this event. Because students, I don't know, maybe from their experience, they started to print a lot of booklets, papers. They bought a lot of candies. Also they bought a lot of flowers which they throw away. (P6)

After the innovation workshop, everything was on trash. Like what? Is the faculty not doing anything about it? I think we shall do something. Maybe next innovation should be zero waste. So that's my comment. (P6)

One participant highlighted how campus furniture was managed in an unsustainable manner. They described how they perceived large amounts of underutilized, recyclable furniture which they expressed as 'graveyards of furniture'. They went on to describe:

A lot of classrooms here are closed off and just stuffed with old, old junk. But it's not old. You know this stuff could be used again. It could be sold that they could do something. But there's this culture of just buy and throw. (P2)

Opportunity for Action

Combined, the focus groups thus shared examples of unsustainable practice and its causes. When reflecting on the focus group's characterizations of stakeholders as lacking awareness, we may consider how the act of putting awareness into practice would require the opportunity to act. With this logic, the lack of application may not necessarily imply a lack of awareness, as stated above. A relevant theme that emerges here relates to the affordances of the context with respect to enabling sustainable activity. The Affordance Theory, which focuses on the relations between perceiving and acting in a given context (Kaaronen, 2017), prompts the question of whether awareness or knowledge is given opportunity to be expressed in action.

Leadership for Sustainability

One focus group described the *top-down* character of institutional management as a factor in facilitating change, and they highlighted the need for *buy in* at all levels for significant change to occur. The focus groups also highlighted the limits of individual initiatives that, although commendable, may not bring widespread and enduring change. In light of this a *whole institution* approach was recommended by two focus groups members, which would include collaboration among key stakeholders. The need for such collaboration is recognized, with Warburton (2003) stressing the need for an inter-disciplinary approach and the integration of all institutional activity to achieve sustainable development, which would include all stakeholders working towards shared goals.

Coordinating Stakeholder Actions

It may stand that such an approach could support coordinating activity and revealing and addressing blind spots within practice, such as the waste and underutilization of resources mentioned above. This vision perhaps returns us to the need for a shared understanding of what sustainability covers. As Sammalisto et al. describe, sustainable development "needs to be included in university management and all activities, which implies that management, faculty and staff need the perception of what sustainability means for their function and a willingness to apply it" (Sammalisto et al., 2015, p. 46). Bringing together multiple stakeholders to put knowledge into practice appears the main challenge in this context as it requires bridging the gap between knowledge/values and action. For Rieckmann (2012), the ability to convert knowledge about sustainability into action is one of the key competencies for forward-looking universities aiming to achieve sustainable development.

Discussion and Conclusion

The study on sustainability integration within higher education institutions in the UAE presents a multifaceted view of the challenges and opportunities inherent in integrating sustainability into academic curricula. This discussion synthesizes the quantitative survey results and qualitative focus group insights to provide an analysis of the current state of sustainability education within higher education in the UAE.

Integration of Sustainability: The Current State and Perceptions

The quantitative data show that faculty across disciplines, including Engineering, Business, and Health Sciences, recognize the importance of sustainability education and support its integration into teaching. This aligns with Popescu's (2018) framework, advocating for a holistic approach to sustainability across teaching and campus operations. Most faculty members are aware of sustainable practices and support their inclusion in curricula, indicating a positive environment for sustainability education.

However, challenges persist in implementing these practices. Faculty report obstacles such as misalignment between sustainability objectives and course goals, insufficient institutional support, and limited resources. These issues reflect gaps between institutional sustainability policies and their practical application in teaching, as noted by Wals (2014). While there is consensus on the importance of sustainability, effectively translating this into teaching strategies remains problematic.

Focus Group Insights: Deepening Understanding

The focus groups offer deeper insights into faculty experiences and attitudes towards sustainability integration, complementing the survey findings. The thematic analysis reveals that while faculty show strong personal commitment to sustainability, they perceive a disconnect between institutional policies and classroom practices. This recurring theme highlights that sustainability initiatives often stem from compliance rather than genuine commitment.

A key insight from the focus groups is the value placed on experiential learning to enhance sustainability education. Faculty members advocate for hands-on, project-based learning that connects theory with real-world applications. This approach aligns with Mezirow's Transformative Learning Theory (1997), which posits that experiential learning fosters deeper understanding and encourages critical reflection. The focus group feedback suggests that practical, participatory learning can significantly boost student engagement with sustainability topics (Gough, 2016).

Training and Institutional Support

Both the survey and focus group findings highlight the urgent need for enhanced training and institutional support to facilitate effective sustainability integration. Survey respondents and focus group participants alike identified a lack of training and resources, such as curriculum development support, as barriers to integrating sustainability. This underscores the need for comprehensive professional development programs to equip educators with the necessary knowledge and skills (Huckle & Sterling, 2014).

Additionally, focus group discussions stress the importance of institutional

commitment to sustainability. While some institutions are advancing in incorporating sustainability into curricula, a more systemic approach is needed to align institutional policies with classroom practices. This finding emphasizes that integrating sustainability requires not only curriculum changes but also a shift in institutional culture and practices (Tilbury, 2011).

Impact on Graduate Employability

The survey results reveal that there is a general consensus among faculty regarding the positive impact of sustainability knowledge on graduate employability. Respondents agree that employers increasingly value sustainability knowledge alongside traditional soft skills, suggesting that integrating sustainability into higher education curricula can enhance students' career prospects. This aligns with the broader literature on the importance of preparing students for the emerging job market, where sustainability competencies and awareness are becoming increasingly relevant (Nhamo, 2014).

Narrow Focus on Sustainability

Focus group discussions primarily centered on environmental sustainability, such as waste management, neglecting the social and economic pillars. This narrow framing, consistent with regional trends (Al Mahameed, 2023), shows the need for a broader, more integrated approach to sustainability in higher education.

Lack of Cross-Departmental Collaboration

Faculty members showed limited awareness of sustainability efforts in other departments, reflecting a silo mentality that hinders collaboration. To implement effective sustainability practices, universities must foster interdisciplinary efforts, as noted by Shiel and Williams (2015).

Gaps in Stakeholder Awareness

The "value-action gap" among students, highlighted by one of the participants underscores a lack of practical application of sustainability knowledge. Beyond raising awareness, institutions need to create more opportunities for students and faculty to engage in sustainable practices, including in career development.

Implications for Research and Practice

Further Exploration

Importantly, future research should explore the specific ways in which institutional policies can be better aligned with classroom practices to enhance sustainability integration. Investigating the effectiveness of different training models and support structures could provide valuable insights into overcoming the identified barriers. Educational institutions should consider financially investing in developing training programs for faculty to support the integration of sustainability into their teaching practices, such as providing practical resources for curriculum development.

Longitudinal Studies

Longitudinal studies could track the impact of sustainability education on student outcomes and employability over time, providing a more comprehensive understanding of the long-term benefits of integrating sustainability into curricula.

Experiential Learning

The study highlights the need to research various experiential learning models in sustainability education. Investigating effective hands-on projects and field trips may provide insights into how to better engage students with sustainability. Institutions should integrate more project-based learning to deepen students' understanding, aligning with transformative learning theories (Gough, 2016; Mezirow, 1997).

Bridging Faculty Knowledge Gaps Across Departments

The research highlights the need to explore how differing levels of faculty knowledge affect sustainability initiatives in higher education. To address these disparities, future studies should focus on identifying ways to foster cross-departmental collaboration. This would help create a unified approach to sustainability and promote a more inclusive understanding of the Three Pillars of Sustainability: social, economic, and environmental.

Enhancing Awareness and Application of Sustainability Practices

The practice-based implications emphasize the importance of expanding sustainability education to include more than environmental issues. Institutions should implement awareness campaigns that not only educate faculty and students but also provide practical opportunities to apply sustainability knowledge. Focusing on connecting these efforts to green career opportunities could bridge the gap between theory and practice, ensuring long-term engagement and institutional change.

This study highlighted the growing importance of sustainability in higher education and the need for both systemic and practical improvements in its integration. Institutions must go beyond just adopting sustainability policies and focus on implementing strategies that connect policy with practice, i.e., classroom agendas. This includes updating curricula and investing in targeted professional development for faculty to effectively incorporate sustainability into their teaching. Providing hands-on learning opportunities can also enhance students' engagement with sustainability, aligning with theories that emphasize the importance of real-world application in learning.

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