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ADVANCING SDGS IN ENTREPRENEURSHIP EDUCATION: THE ROLE OF EXPERIENTIAL LEARNING PEDAGOGY IN PROMOTING SUSTAINABILITY LITERACY

Introduction

Entrepreneurship education is increasingly recognized as a powerful catalyst for advancing the United Nations Sustainable Development Goals (SDGs), particularly by equipping students to develop innovative solutions to urgent global challenges (Brundiers et al., 2021). As societies grapple with climate change, social inequality, and environmental degradation, there is a growing need for entrepreneurial leaders who can embed sustainability principles into their ventures and decision-making processes (Shepherd & Patzelt, 2011). In response, educational institutions play a critical role in shaping such change-makers by adopting value-driven, action-oriented pedagogies that go beyond traditional business training (Ploum et al., 2018).

This study examines how experiential learning methodologies can deepen students' understanding of sustainability-driven entrepreneurship. By bridging theoretical frameworks with firsthand application, educators can empower future entrepreneurs to align business strategies with SDG priorities. In doing so, this research contributes to the expanding body of scholarship that advocates for integrated, practice-based education to localize and operationalize global sustainability frameworks within entrepreneurial contexts.

Integrating the SDGs meaningfully into entrepreneurship curricula demands a departure from conventional lecture-based models. Passive instruction often fails to catalyze the mindset shifts necessary for sustainable action. Theories alone are insufficient, students must actively engage in real-world problem-solving, critical reflection, and systems thinking to internalize sustainability values. This study argues that experiential learning offers a transformative pedagogical pathway for embedding SDG literacy into entrepreneurial education, fostering not only knowledge acquisition but also long-term ethical and strategic commitment.

The Imperative of SDG Integration in Entrepreneurship Education

The United Nations Sustainable Development Goals (SDGs) provide a comprehensive and globally endorsed framework for addressing complex, interrelated socio-environmental and economic challenges. However, their integration into entrepreneurship education remains fragmented and inconsistent, often limited to superficial or abstract treatment within curricula (Rieckmann, 2018). To prepare students for meaningful impact, entrepreneurship education must evolve beyond profit-maximization models and embrace a holistic paradigm that foregrounds ethical leadership, stakeholder engagement, and systems thinking (Lans et

al., 2014).

Effective integration of the SDGs requires a pedagogical shift toward interconnected, real-world learning that reflects the complex nature of sustainable development. This includes fostering students' capacity to understand the interdependence of economic, environmental, and social systems, and equipping them with the skills to make informed, ethical decisions that consider diverse stakeholder perspectives.

Pedagogical strategies such as sustainability-focused case studies, problem-based learning, and community-based entrepreneurship projects have been shown to enhance both cognitive understanding and emotional engagement with SDG principles (Stubbs & Cocklin, 2008). These approaches help translate abstract goals into tangible entrepreneurial actions, enabling students to internalize sustainability values and apply them in business contexts. This alignment not only strengthens students' ability to respond to global challenges but also meets a growing demand from industry for sustainability-literate graduates who can lead responsibly, innovate ethically, and contribute to long-term societal resilience.

Experiential Learning as an Effective Pedagogical Tool

Experiential learning, anchored in Kolb's experiential learning theory, has been extensively validated as an effective pedagogical strategy for cultivating sustainability competencies in higher education (Kolb, 1984; Barth et al., 2007). By engaging students in authentic, real-world challenges, this approach promotes not only the acquisition of knowledge but also the development of systems thinking, creativity, ethical reasoning, and reflective judgment, all essential competencies for sustainable entrepreneurship (Wiek et al., 2011).

Firsthand activities such as design thinking workshops, circular economy simulations, and prototyping with repurposed materials allow students to explore sustainability not as an abstract concept but as a tangible design and innovation challenge. In this study, the immersive sustainability workshop served as a core experiential component. Students were encouraged to actively repurpose wood waste and simulate business solutions that addressed SDG priorities. The activity fostered important levels of engagement, with many participants demonstrating a heightened awareness of sustainable lifestyles and a proactive stance toward SDG advancement.

Moreover, the use of scenario-based simulations, such as imagining how companies could integrate waste-to-resource models, enabled students to recognize the interconnectedness between business, society, and the environment. These simulations helped bridge the gap between theory and practice by situating sustainability within the decision-making contexts entrepreneurs are likely to face.

Students also came to understand that sustainable entrepreneurship is not solely a technical or economic exercise, but one that requires empathy-driven innovation. By taking on roles such as social entrepreneurs or impact investors, students developed a deeper capacity for stakeholder analysis, ethical foresight, and strategic thinking, skills that are indispensable for building ventures aligned with long-term societal and ecological well-being.

These findings reaffirm that experiential learning, especially when intentionally aligned with SDG objectives, not only deepens comprehension but also shapes values, mindsets, and the intention to act sustainably (Redman & Wiek, 2021).

Methodology: Qualitative Analysis of Student Reflections

This study adopts a qualitative research design thematic analysis to explore the pedagogical impact of experiential, SDG-integrated entrepreneurship education. Data were collected from 50 undergraduate and master's students enrolled in a 16-week entrepreneurship course at a leading university in Taiwan. The course attracted students from various countries and backgrounds, creating a rich, multicultural learning environment reflecting the global relevance of sustainability challenges.

As part of the course, students participated in the REWOOD Workshop, a firsthand activity designed to address SDG priorities such as Responsible Consumption and Production (Goal 12) and Sustainable Cities and Communities (Goal 11). As part of the course, students participated in the REWOOD Workshop, a firsthand activity designed to address SDG priorities such as

To evaluate the impact of the REWOOD workshop, this study employed thematic analysis of student reflection data collected throughout a 16-week entrepreneurship course. The workshop served as a central experiential activity, and students submitted weekly guided journals to document their evolving understanding of sustainability, ethical reasoning, and team dynamics.

At the end of the course, students completed a summative reflection capturing shifts in entrepreneurial identity and sustainability orientation. The dataset, consisting of 50 purposively sampled student narratives, was analyzed to identify patterns in how experiential learning shaped engagement with sustainability-focused entrepreneurship.

Findings: Human Factors in Sustainability Learning

Human interaction emerged as a decisive factor in shaping students' engagement and learning outcomes. The findings are organized around three critical influences: teachers, peers, and industry mentors.

Additionally, the REWOOD workshop itself significantly enhanced both interpersonal engagement and sustainability learning by providing a structured, collaborative setting for applied problem-solving.

1. Teachers

- Instructor encouragement directly correlated with students' willingness to take risks in proposing unconventional solutions. Teachers who affirmed effort over outcome nurtured a growth mindset and resilience.
- Educators who framed SDGs as actionable business opportunities, rather than abstract ideals, fostered more collaborative and open classroom environments.
- Students perceived teachers as role models, especially when educators demonstrated a personal commitment to sustainability through real-world examples such as circular economy practices. One student remarked, "Our teacher's passion for sustainability made me believe it is not just theory, it is a mission."

2. Peers

Students reported that collaborative video projects deepened their understanding of the SDGs and encouraged multiple forms of SDG expression. Creative freedom enabled teams to explore different perspectives and storytelling strategies.

- Cross-disciplinary teamwork was cited by 78% of participants as a catalyst for increased

creativity and innovation. Students valued how combining business, design, and engineering perspectives led to more comprehensive and viable solutions.

- Peer feedback and group reflection sessions helped balance idealism and practicality in the design of sustainable business solutions. Students learned to negotiate different viewpoints and apply constructive critique.

3. Industry Mentors

- Practitioner stories about transforming waste into high-value products helped students reconceptualize waste as a resource. These sessions bridged academic concepts with entrepreneurial reality.
- Students appreciated learning how sustainability could be translated into competitive business advantages. One participant shared, “Hearing how a mentor turned coconut shells into furniture changed how I think about business.”
- Exposure to real-world sustainability entrepreneurs ignited post-course initiatives. 65% of students reported intentions to pursue sustainability-focused ventures, internships, or further study. The mentors' passion and authenticity served as both inspiration and validation.

The REWOOD Workshop's Impact

- Through collaborative wood waste repurpose and product co-design, students built stronger peer trust, communication skills, and a sense of shared purpose. The teamwork environment fostered mutual support and created a psychologically safe space for idea exchange and experimentation.
- Firsthand activities enabled students to translate abstract SDG principles into tangible outcomes. Designing personalized wooden planters helped link sustainability concepts to everyday life and entrepreneurial thinking.
- The experience deepened students' sense of agency, ethical reasoning, and long-term commitment to sustainability values, positioning them to act as proactive change-makers in future sustainability-driven ventures.

Qualitative Validation of Methodology

This study employed the Gioia methodology to inductively analyze student learning outcomes, providing a structured pathway from raw data to theoretical insight. Through first-order coding of students' guided reflection journals and developing second-order themes and aggregate dimensions, we uncovered how experiential learning and human-centric pedagogy jointly contributed to meaningful educational transformation.

The data structure revealed clear cognitive, emotional, and behavioral development evidence. Students repeatedly described the course as “transformative,” citing perspective, motivation, and self-awareness shifts. The second-order themes that emerged included:

- A deepened ability to articulate the linkages between the SDGs and entrepreneurial strategy.
- Greater appreciation for interdisciplinary and cross-sector collaboration
- A transition from abstract sustainability awareness to concrete, action-oriented mindsets
- Strengthened reflective capacity regarding personal values and societal impact.

These themes converged into three aggregate dimensions:

1. Systems Thinking: the ability to understand interdependencies between economic,

environmental, and social systems.

2. Ethical Reasoning: increased sensitivity to ethical dilemmas and stakeholder perspectives

3. Transformative Motivation: a heightened sense of agency and purpose in advancing sustainable change.

The findings affirm the pedagogical value of integrating experiential learning with human-centric instruction. Beyond conceptual understanding, the course environment fostered effective and relational learning, where encouragement, belonging, and real-world relevance served as catalysts for internalizing sustainability competencies. This structured analysis underscores the efficacy of the Gioia approach in capturing the nuanced, multi-layered impact of sustainability-oriented entrepreneurship education.

Conclusion

This study highlights the transformative potential of combining experiential learning with human-centric pedagogy to advance SDG-oriented entrepreneurship education. By leveraging a multidimensional learning ecosystem, including the influence of teachers, peers, and industry mentors, students were cognitively, socially, and emotionally supported. The structured insights generated through the Gioia methodology revealed that this integrated approach cultivates essential competencies such as systems thinking, ethical reasoning, and purpose-driven motivation, equipping students to engage with sustainability challenges through entrepreneurial innovation.

As the global community faces escalating environmental, social, and ethical dilemmas, the role of entrepreneurship education must evolve. It is no longer sufficient to focus solely on business acumen or innovation skills, entrepreneurial education must also nurture empathy, accountability, and systems awareness. This study underscores the importance of designing learning environments that are immersive, collaborative, emotionally resonant, and grounded in real-world relevance.

Future research should examine the longitudinal effects of such pedagogical models on students' entrepreneurial behavior, including their impact on venture creation, career trajectories, and the internalization of sustainability values. Additionally, further investigation is needed to assess the scalability and adaptability of this approach across diverse cultural and institutional settings. Nonetheless, the evidence from this study affirms a critical insight: transforming how we teach entrepreneurship is inseparable from the broader goal of shaping a more sustainable, equitable, and resilient future.