

CASEBOOK OF IDG IMPLEMENTING INTO HIGHER EDUCATION

Application of Inner Development Goals through Design Thinking in Entrepreneurship Education: A Case of the College of Interdisciplinary Studies at Zayed University, UAE

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Abstract

Design thinking, a human-centred iterative problem-solving approach, applied in entrepreneurship, allows for creation with empathy and compassion, the qualities so often overlooked, but necessary for sustainable development. Investigating the importance of design thinking through the Inner Development Goals (IDGs) lens helps in understanding how real-world solutions for sustainable development can be co-created. This casebook presents the author's observations of students during three semesters of teaching the Fundamentals of Innovation and Entrepreneurship course at Zayed University (2023-2024). The application of IDGs through the design thinking methodology led to tangible outcomes in student performance, engagement and skills development. The focus on empathy and compassion deepened their understanding of global challenges, such as sustainability and mental health issues, while collaboration enhanced their problem-solving, convergence and communication skills. This educational strategy can not only enhance student engagement and develop key competencies but also foster a generation of socially conscious entrepreneurs who are prepared to address local and global challenges with creativity, responsibility, and a deep sense of empathy. This approach represents a meaningful step towards aligning higher education with the Sustainable Development Goals (SDGs). Practical implications: Implementing design thinking in entrepreneurship education and an even more integrated focus on IDGs can help solve the world's wicked problems and co-create solutions for sustainable development.

Keywords/key phrases: design thinking, inner development goals, empathy, collaboration, sustainable development, entrepreneurship education

1. Introduction

In the times marked by growing complexity and the transgression of planetary boundaries – threatening both ecological stability and our quality of life, perhaps even survival (Richardson et al., 2023; Rockstrom et al., 2009) – there also lies a profound opportunity to reimagine and redesign our systems, structures and ways of living. Within this context, entrepreneurship education emerges as a pathway for fostering self-empowerment and innovation, enabling individuals to contribute meaningfully to a more sustainable and harmonious future. Addressing latter issues require a more integrated approach for entrepreneurship education – not only educating students for a successful business angle, but a recognised value of human-centred strategy such as design thinking (Brown, 2009; Buchanan, 1992) and cultivation of soft skills such as empathy, compassion and collaboration – skills also emphasised by Inner Development Goals (IDGs) framework (IDGs, 2025) – as essential components preparing conscious entrepreneurs for a sustainable future (Engel & Janssen, 2024).

This casebook presents a case study from Zayed University’s College of Interdisciplinary Studies (ZU CIS), an innovative academic unit that addresses today’s wicked problems through interdisciplinary thinking and problem-based learning. As CIS Dean notes, the college ‘seeks to nurture agile and dynamic minds, lateral and creative thinkers who have the transferable skills and know-how to thrive in the 21st-century workforce.’ Within this context, the Fundamentals of Innovation and Entrepreneurship course serves as a pedagogical laboratory, experimenting with the practical integration of IDGs and design thinking to help students create solutions grounded in real-world problems.

Given the importance of soft skills (Rieckmann, 2018; Val et al., 2017), which are thoroughly presented by the IDGs framework, the application of empathy and compassion remains controversial. Focused on a human-centred approach, it requires a reflexive stance and community research to ground solutions in real-world complexity. However, when critically applied, empathy and compassion embedded in design thinking can deepen understanding of social and environmental issues, improve problem-framing skills and inspire entrepreneurial solutions grounded in universal values – an emerging approach in education for sustainable development (Carella et al., 2023; UNESCO, 2020) - Figure 1.

2. Background

2.1. Education for Sustainable Development and Entrepreneurship Education – Overview

As the world faces intensifying planetary emergencies, social fragmentation, and economic uncertainty, education systems are increasingly called upon to cultivate not just knowledge but transformative competencies and skills that empower individuals and organisations to drive sustainable change (Rockstrom et al., 2009; Torres-Sanchez, 2024; UNESCO, 2020). Within this context, entrepreneurship education proves to support a promising approach – especially when aligned with the principles of Education for Sustainable Development (ESD) – to nurture innovation, self-empowerment and social responsibility - preparing students for sustainable business practices, aligning social, ecological and economic goals (Iglesias-Sanchez et al., 2019; Rosário & Dias, 2022).

FIGURE 1. EDUCATION FOR SUSTAINABLE DEVELOPMENT (UNESCO, 2020)



Source: UNESCO, 2020

Preparing students for such practices requires an innovative approach to entrepreneurship education – the development of transdisciplinary thinking (Torres-Sanchez, 2024), the ability to build strategic partnerships with various stakeholders (Baltador & Grecu, 2023), a sustainability mindset (Kassel et al., 2016) and inner development skills (IDGs, 2025). Transdisciplinary thinking is emphasised in education for sustainable development as a background for recognising the complexity of today's problems while addressing the UN Sustainable Development Goals (SDGs). It can also support students' development of critical thinking, systemic awareness, collaboration, and long-term impact (UNESCO, 2020). Creative intelligence or creativity skills, risk-taking, problem-solving and collaboration – another set of necessary entrepreneurial skills addressing wicked problems (Buchanan, 1992; Egan et al., 2017; Rieckmann, 2018; Val et al., 2017). Social and sustainable entrepreneurship education, in particular, has gained traction as a form of entrepreneurship that specifically centres around human and planetary well-being (Baltador & Grecu, 2023).

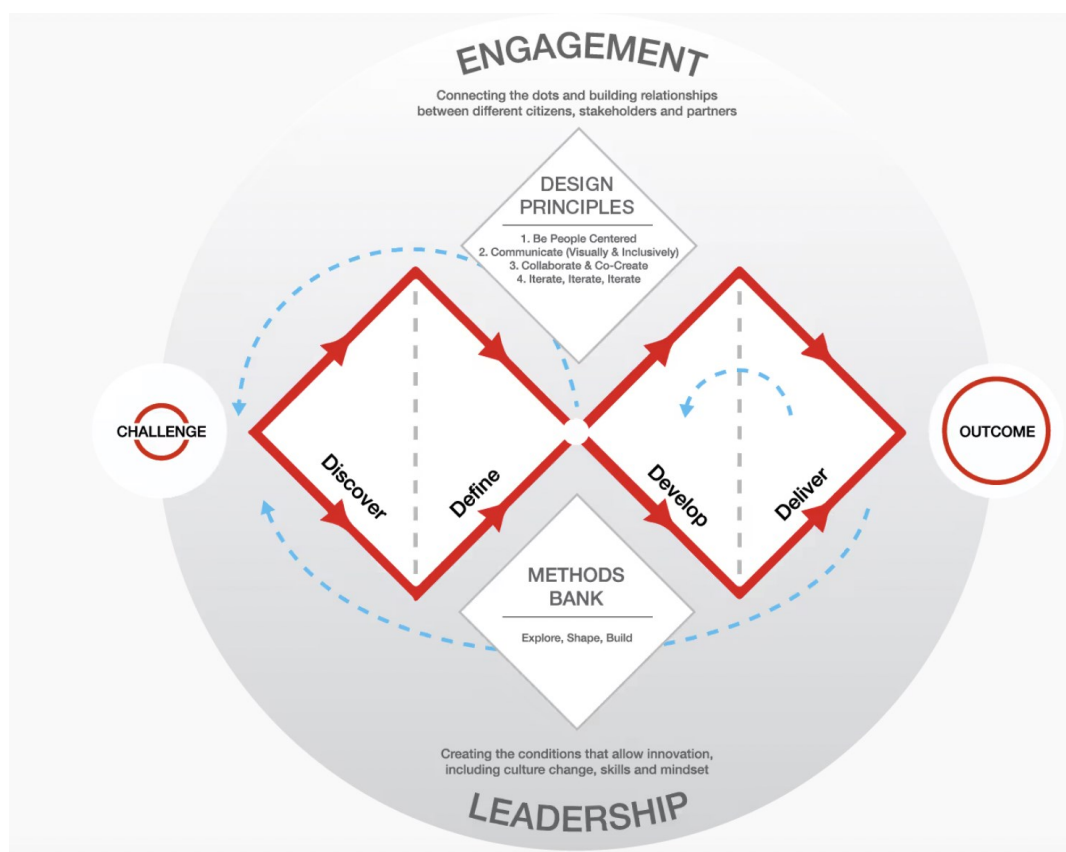
One of the most significant outcomes of this educational shift is students' self-empowerment – a capacity that supports students' self-efficacy and confidence in becoming agents of transformation. Empowerment through sustainable entrepreneurship education supports the sense of purpose and responsibility, especially when students are encouraged to work on challenges that resonate with their identities, communities and values (van der Wal-Maris et al., 2025). Another significant dimension is largely recognised in women entrepreneurship - care-oriented perspective, community orientation and emotional intelligence in relational leadership - as part of the 'soft skills' concept (Jennings & Brush, 2013; Marin-Zapata et al., 2022). These skills are known to contribute to sustainable innovation and regenerative systems, dismantling the extractive logic of dominant economic paradigms and suggesting a future-oriented entrepreneurship and achievement of SDGs (Costa et al., 2025; Engel & Janssen, 2024; Orser & Elliott, 2020).

2.2. Design Thinking in Entrepreneurship Education

Design thinking has received much attention in entrepreneurship pedagogy, reflecting enhanced student satisfaction and diverse learning outcomes, that incorporate not only practical business skills like innovation, communication and rapid experimentation but also deep understanding of user needs, creative confidence, critical thinking and resilience (Huq & Gilbert, 2017; Liedtka, 2015; Rauth et al., 2010; Val et al., 2017). A solution-oriented methodology rooted in design research, architecture and planning, its application in other disciplines has become widely relevant. It offers a human-centred approach, creative reframing, learning by doing, visualisation, and acceptance of 'failure' through a non-linear, iterative process of divergence and convergence. It includes five core stages: empathise, define, ideate, prototype and test – offering an entrepreneurship method, with a toolkit of skills and techniques, creativity and iteration (Carella et al., 2023; Linton & Klinton, 2019; Seelig, 2012).

The process begins with empathy – a critical starting point that encourages students to step into the shoes of those affected by a problem (Carella et al., 2023). This step is key in design thinking, requiring both cognitive and emotional skills to frame the right problem. Empathy is one of the Relating skills in IDGs (IDGs, 2025). Since the design thinking process is mostly non-linear but rather through modules, the steps can be rediscovered: identification of challenge/problem, interpretation of challenge/problem, ideation of solutions, prototyping of solutions, solution and future (presentation and pitching) in education or implementation in real world scenario (Interaction Design Foundation, 2016; Linton & Klinton, 2019; Seelig, 2012) – Figure 2. This approach allows students to frame problems systematically, explore multiple solution pathways and iterate based on real-world feedback via product interviews – nurturing a growth mindset and a tolerance for failure. Many of these skills are identified in IDGs (Figure 3): openness and a learning mindset in Being; sense-making, creativity, and critical thinking in Thinking; and communication and co-creation skills in Collaborating (IDGs, 2025). Furthermore, by involving users early and often, design thinking fosters a sense of ethical responsibility and inclusivity among aspiring entrepreneurs, which is particularly important in the context of sustainable development and education for sustainability, where stakeholder needs are more balanced (Kolko, 2015; Rieckmann, 2018; Shtaltovna et al., 2024).

FIGURE 2. DESIGN THINKING



Source: © Design Council, CC BY 4.0, 2016

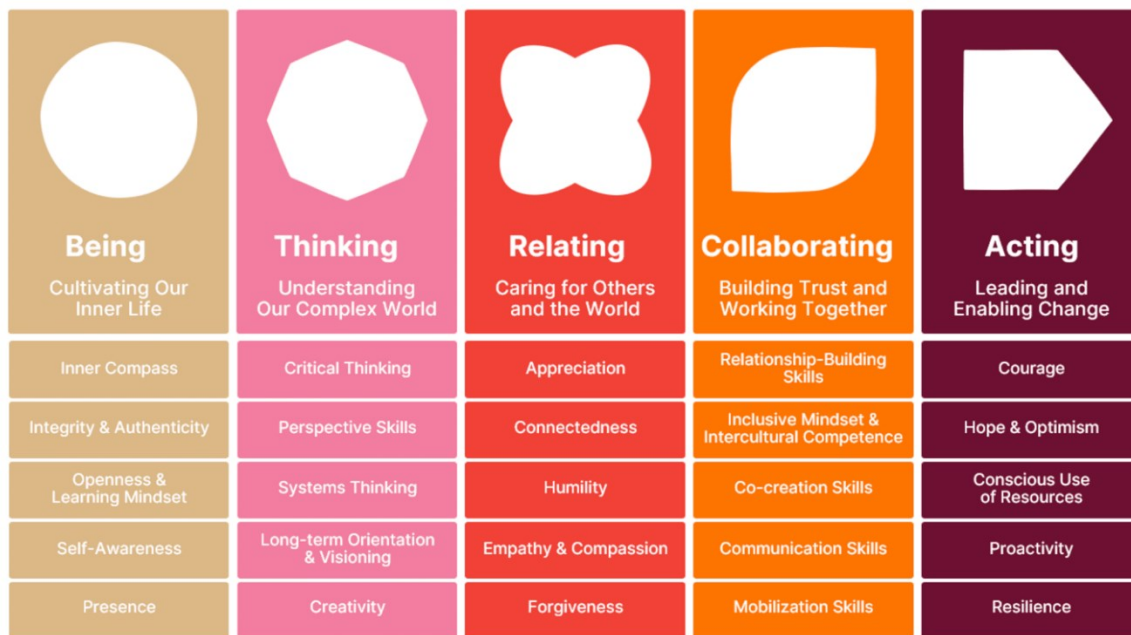
2.3. Inner Development Goals for Sustainable Development Goals

The root causes of environmental and socio-economic challenges facing humanity in the 21st century are arguably not solely financial, structural or technological (Ives et al., 2020). Even though sustainable development offers a high return, after 10 years, the world, on average, is far off track in achieving the Sustainable Development Goals of the 2030 Agenda (Sachs et al., 2025). Launched in 2020, the Inner Development Goals framework addressed this potential gap by focusing on inner and relational factors to cultivate the individual and collective skills needed to accelerate sustainable transformation (Ankrah et al., 2023; Engel & Janssen, 2024; IDGs, 2025). Rooted in interdisciplinary research, with an open-source and universal approach by a coalition of educators, psychologists, sustainability experts, and systems thinkers, the IDGs provided an inner roadmap to support the SDGs, focusing on five key dimensions (Figure 3): being, thinking, relating, collaborating and acting (Ankrah et al., 2023).

While the IDGs framework covers 25 diverse skills/competencies/qualities divided into five main dimensions, it is a living organism that responds to changes and adaptations by the framework's research team, facilitating global co-creation of the guide (Ankrah et al., 2023; IDGs, 2025). Currently implemented by several major global organisations with more than 700 hubs across educational and research institutions, the guide aims to provide a simplified global language to catalyse inner transformation for collective change (IDGs, 2025). The five dimensions of the IDGs guide emphasise the development of consciousness, emotional

intelligence, and ethical leadership - qualities essential for navigating today's complex, uncertain world (IDGs, 2025; Wamsler, 2020). Embedding IDGs into education systems offers a practical response (Shtaltovna et al., 2024). When students develop empathy, compassion, collaborative skills, and self-awareness, they are more likely to generate inclusive, ethical, and resilient solutions to societal challenges (Rieckmann, 2018). In entrepreneurship education, this translates into purpose-driven innovation: students begin not with 'what can I sell?' but 'what matters, to whom, and why?' Applying it as a systems lens by educators and leaders in organisations and communities can support innovation, inner/outer capacity, and transformational competencies for achieving the SDGs (Ives et al., 2023; OECD, 2021).

FIGURE 3. INNER DEVELOPMENT GOALS



Source: Inner Development Goals, 2025

3. Methodology – Qualitative Case Study Approach

This casebook adopts a qualitative single case study design (Hamilton & Corbett-Whittier, 2012; Stockdale, 2003) to explore the application of the Inner Development Goals through Design Thinking in entrepreneurship education at the College of Interdisciplinary Studies, Zayed University, UAE. The case is bounded by the Fundamentals of Innovation and Entrepreneurship course delivered between 2021 and 2024 to approximately 2,500 students by teams of CIS instructors/educators. For in-depth analysis, a purposive sample of 100 students' interim and final project papers and reflective journals during the years 2023 and 2024 was examined. The data was analysed using a qualitative thematic coding approach, identifying recurring patterns related to the development of empathy, collaboration and entrepreneurial capacities. In-depth description supports transferability, while transparent coding procedures enhance dependability and confirmability (Braun & Clarke, 2021; Gioia et al., 2013; Tracy, 2020). The weekly course meetings, amongst practicalities and planning, addressed topics related to students' experiences and the themes of their final projects, triangulating the data. The following sections focus on the course introduction and final analysis of the results.

3.1. College of Interdisciplinary Studies (CIS) at Zayed University, UAE – Fundamentals of Innovation and Entrepreneurship Course

Since its establishment in 2021, CIS at Zayed University, UAE, with campuses in Dubai and Abu Dhabi, has set a high standard for innovation, an interdisciplinary approach, and the student learning experience. By applying a flipped classroom approach and a hybrid lecture format (both online and offline), industry projects, dedicated educators and career mentors, a focus on transferable skills, the college introduced several innovative programs to the region, grounding the first year BSc students in multiple transformational general education courses, including the Fundamentals of Innovation and Entrepreneurship course.

This case study explores the integration of IDGs, specifically empathy, compassion, and collaboration, via design thinking into the Fundamentals of Innovation and Entrepreneurship course at the College of Interdisciplinary Studies, Zayed University. The data for this casebook include insights from six sections of the course, taught over three semesters in 2023 and 2024, to approximately 100 students of different cohorts. The course adopts a design thinking framework to enhance students' skills in identifying and solving real-world problems while fostering a human-centred approach to entrepreneurship.

3.2. Course Structure and IDGs – A Case of Human-centred Design

The course Fundamentals of Innovation and Entrepreneurship is structured around design thinking modules, with several additional frameworks such as NABC, the Business Model Canvas, and lean startup methods, and the application of design thinking to student life and career. The first focal point of this section is the initial part of the course, with the first step in the design thinking – discovery of the challenge/problem or need finding, where empathy and compassion support the process of right problem identification. The second focal point of this section is the importance of collaboration skills, applied in several ways throughout the course.

3.2.1. The Role of Empathy and Compassion in Need/Problem Identification

The first step of the design thinking – the discovery of the problem – was introduced in the course through several sessions, and a crash workshop on design thinking methods, including practical examples of user need identification via need finding, the empathy map, and the journey map. The practical workshop was focused on each student's personal experience, explored during pairs interviews and through imitation of the whole design thinking process: problem identification, reframing, iterating, and prototyping with testing. The time, space, and instructions were given to each student to interview their fellow student about a personal question related to gift-giving. This experience involved active listening (while identifying core needs through several rounds of questions for deeper enquiry), empathy and compassion (while listening), and critical thinking skills (when creating an empathy map, drawing a journey map, and reframing the problem). The remaining steps were performed individually (iteration and prototype building), with feedback provided only during the testing phase, when the built gift proposal was presented to the fellow student.

The main course project was then designed as team/group work, the first step being students' interviews with their community members to identify real problems/needs. Building on the

individual experiences from the design crash workshop, the students were asked to interview several users to identify the need and to reframe and uncover the true problem of that user group, fostering an in-depth analysis approach. Empathy and compassion were important during such interviews, as finding the true need/problem requires an intangible skill: sensing pain points, filtering out artificial information, and asking the right questions to dig deeper, while documenting the process for further reframing and opportunity identification. These are parts of the design thinking process that require stronger emotional and cognitive intelligence.

3.2.2. Collaboration as a Catalyst for Opportunity Identification and Solution Convergence

The team-building activities, along with multi-stakeholder collaboration, played an important role throughout the course, including multiple sessions and activities such as assembling and motivating the team, distributing roles, planning the project timeline, brainstorming and building prototypes, and presenting/pitching the final product/service prototype. While students were assessed individually and in a group setting, the collaborative aspect of the course was emphasised as a reflection of developing communication and co-creation skills.

During the first step of the design thinking process, the students built on their individual interviews and reflections/analysis, collaboratively presenting the final developed point of view (POV) and how might we (HMW) question, preparing for the further stages of ideation and prototype building. During this step, the students were asked to present their final POVs and HMW questions in the group presentation, identifying the opportunities. Table 1 presents the identified initial problems/needs and the developed group POVs, along with HMW questions.

TABLE 1. FUNDAMENTALS OF INNOVATION AND ENTREPRENEURSHIP – EXAMPLES

Identified initial problems/opportunities	Developed POVs and HMW questions
Problem: Legal communication is often complex, jargon-filled, and difficult to understand for non-lawyers. This can lead to frustration, anxiety, and a lack of trust between clients and lawyers. Opportunity: There is a growing need for a solution that can simplify legal communication and make it more accessible to everyone.	POV: Legal professionals need a way to consistently nurture and maintain trust because trust is the foundational element in long-lasting client relationships, directly impacting client satisfaction and retention. HMW: How might the law firm build a healthy relationship with clients?
Problem: Increase in Car Accidents in Abu Dhabi Opportunity: Decrease in car accidents in Abu Dhabi.	POV: Abu Dhabi Traffic Police (users) need effective strategies and resources to curb the rising number of car accidents in the city (need) because they are committed to enhancing road safety, and the current problem demands a proactive approach (insight). HMW: How might we develop a comprehensive strategy for a police officer, to effectively address the issue of increasing car accidents in Abu Dhabi?
Problem: Teenagers misconceive their normal daily mood fluctuations as mental illnesses. Opportunity: Design educational and support systems that help teenagers	POV: Teenagers need a way to normalize the fluctuation of daily emotions because authentic well-being requires understanding and accepting emotional fluctuations. HMW: How might we help teenagers better understand and normalize their daily emotional changes?

understand and navigate their emotional and psychological fluctuations healthily.	
Problem: Many consumers struggle to find eco-friendly and ethically made clothing options. Opportunity: Help consumers find eco-friendly and ethically produced clothing	POV: Eco-conscious consumers need a way to find trusted sustainable brands because they are overwhelmed with uncertain information. HMW: How might we increase awareness about the unethical practices and environmental harm associated with fast fashion while making sustainable alternatives more accessible and appealing?
Problem: Students struggle to cope with academic stress Opportunity: Support students in coping with the academic stress	POV: Students need a way to better manage their time because they value managing several activities, but they find it difficult to handle all of them at once. HMW: How might we help students improve their time management and other related skills so that their academic stress is reduced?
Problem: Students spending too much time on screens, affecting their well-being and productivity. Opportunity: Create strategies and tools to help students manage their screen time effectively, promoting better mental health and increased productivity	POV: A university student, overwhelmed by distractions, needs a way to limit social media usage because it impacts her studies. HMW: How might we help university students reduce their social media distractions during study time without compromising their connection with friends?

Source: author's compilation, based on students' reports

3.3. Analysis and Post-implementation Insights

The reflections of students participating in the course showed growth, not only in entrepreneurial competencies but also in relational and collaborative intelligences. As students engaged with real-world challenges through a design-thinking lens, they developed and refined skills closely aligned with the IDGs and the Education for Sustainable Development (ESD) frameworks.

One of the most recurring insights concerned the challenge of integrating multiple ideas into a coherent and user-centred solution. As one team noted, “The most significant challenge we encountered was the convergence of multiple solutions into one cohesive idea...We had to ensure that our solution not only met the identified user needs but also provided a unique value proposition.” Along with empathy and compassion, this process required multiple stakeholder perspectives, with many students relying on clear communication to reframe the problem and ideate their proposed solutions. Another team mentioned, “Integrating multiple solutions into one framework was our biggest issue. We overcame this difficulty by discussing our strategy in depth and using each team member's unique perspectives”, showing a growing awareness of collaborative processes, co-creation skills and an inclusive mindset. Another group shared, “Throughout this project, we've learned the importance of collaboration and the power of diverse perspectives. By integrating the ideas of team members, we created a more robust solution that could potentially revolutionise road safety.” Some students reported a shift from fragmented or passive group dynamics to co-creative teams: “We had started out as a very silent and discrete group, but over time, we had developed into a more collaborative and engaging team.”

Several reflections revealed how entrepreneurial learning became a vehicle for self-empowerment, especially in the face of ambiguity and complexity. One group wrote, “As we

progress through the process, as a team, we have learned to have the courage to take the next step even when we do not feel ready.” Others highlighted how the iterative nature of the project improved their problem-solving and strategic thinking, stating: “We enhanced our feedback skills, becoming more adaptable and focused on project improvement... This experience strengthened our confidence for future projects...”

Importantly, the students’ projects also demonstrate a sense of purpose and responsibility. Most of the projects addressed sensitive issues related to students’ health, road safety, and eco-consciousness, as well as other problems faced by communities, reflecting the need to co-create solutions with, rather than for, communities. One student remarked, “Through collaboration and determination, we’ve advanced our app from a mere idea to a promising business venture, poised to positively impact teenage emotional well-being worldwide.” Another added, “This project addresses a current realistic problem in an engaging and culturally relevant way.”

These reflections support the premise that integrating design thinking with IDGs-aligned educational practices does more than foster business skills - it creates a space where students become conscious innovators, capable of engaging with real-world challenges in empathic, collaborative, and strategic ways. As one student summarised: “Working together brought diverse perspectives, leading to innovative ideas we might not have developed alone.”

By encouraging students to focus on the lived experiences of individuals and communities, the course, by design, enhanced their ability to recognise the nuanced dimensions of the challenges faced in both the university and broader societal contexts. This approach fostered a deeper understanding of the problems, shifting students’ perspectives from solution-oriented thinking to problem-centred design, enabling a human-centred approach and enhancing relational and collaborative skills, including effective communication, teamwork, and conflict resolution. Moreover, the interdisciplinary nature of the course enabled students from various fields to bring diverse perspectives to their projects, fostering an environment of co-creation and shared responsibility. The emphasis on collaboration mirrored the increasing importance of partnerships in achieving entrepreneurial success while solving societal problems.

4. Conclusion

The Fundamentals of Innovation and Entrepreneurship course at Zayed University successfully integrates several IDGs - especially cognitive, relational, creativity and collaboration skills - through a design thinking approach. This casebook’s aim is to clarify the importance of empathy and compassion along with collaboration for a more meaningful entrepreneurship education is visualised through students’ project processes and reflections. By engaging in empathy-based interviews, active listening, and team-based problem-solving, students can develop a deeper emotional and cognitive connection to real-world issues. This human-centred method shifts their perspective from quick solutions to understanding the root causes of complex challenges in the communities around them (Ives et al., 2020, 2023). Ultimately, the course cultivates a creative mindset and prepares students to co-create meaningful solutions grounded in diverse perspectives and societal needs, as a part of future-oriented methodologies (Nordén, 2024). While integrating empathy and collaboration into entrepreneurship education offers meaningful benefits, it also presents certain challenges.

Without careful pedagogical design, empathy-based activities may remain superficial or reinforce existing assumptions rather than foster genuine understanding, while collaborative

work can lead to issues such as unequal participation or team conflict. In this course, these problems are addressed by team-building activities and faculty training in empathy-based workshops.

This casebook focused specifically on empathy and collaboration, as these important yet often overlooked dimensions provide innovative angles for developing more human-centred and socially responsive entrepreneurship education (Marin-Zapata et al., 2022; UNESCO, 2020). Future research could further test the application of empathy and collaboration for sustainable entrepreneurs and explore additional intersections between IDGs, design thinking, and entrepreneurship education, including areas such as creative confidence, learning from failure, and the development of a sustainability mindset, which are increasingly recognised as critical competencies for addressing complex societal challenges (Egan et al., 2017; Val et al., 2017; Rieckmann, 2018; Kassel et al., 2016). It could also expand the conclusions of this study by incorporating multiple institutions, longitudinal designs, and mixed-method approaches.

Implications for Research, Education, Practice, and Society. The casebook adds to the emerging scholarship on inner–outer transformation frameworks, encouraging comparative studies across cultures, pedagogical models, and institutional settings to assess the long-term impact of IDGs-applied education. The findings from this exploratory qualitative case study underscore the practical value of integrating IDGs into entrepreneurship education through design thinking, particularly in fostering socially and environmentally conscious innovators by developing inner qualities. This approach can be adopted by universities and professional training institutions to strengthen experiential and values-based learning. It can also support further integration of IDGs into faculty training and accreditation frameworks. For practitioners, this approach provides a replicable framework to cultivate empathy, collaboration, and purpose-driven problem-solving - core competencies of social entrepreneurship. As Baltador & Grecu (2023) emphasise, aligning entrepreneurship with social and environmental justice is critical in addressing today's complex societal challenges. The future of entrepreneurship can look very different (Pereseina, 2025). Policymakers and higher education leaders can use these insights to support curriculum reform that equips future entrepreneurs with the mindset and skills needed to drive inclusive, sustainable development across industries and communities, thereby supporting SDG 4 (Quality Education), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 17 (Partnerships for the Goals) – as in Figure 1.

Reflexivity. The author's reflexive stance is grounded in a rainbow of global experiences, academic inquiries, and personal transformations, which inform the research process without biasing it. With a background in sustainability and business studies and a commitment to understanding the root causes of global crises, the author brings both critical insight and practical engagement reflections into her current projects/teaching/research. While lived experiences and deep reflection shape the research perspective, any potential biases are balanced by an interdisciplinary approach, scientific rigour, an exploratory approach and triangulation through weekly meetings with fellow educators teaching the same course. This reflexive awareness reflects a commitment to universal values, continuous learning, and integrity, ensuring that the research remains both grounded and inclusive.

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Data Availability

Data supporting the conclusions of this study can be made available upon reasonable request from the corresponding author.

Ethical Statement

The authors confirm that they have obtained the necessary permissions from their respective universities to publish the case studies included in this manuscript.

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