

An empirical exploration of a business school's effect on students' sustainability mindsets

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Abstract

Purpose – Aligned with the United Nation's Principles of Responsible Management Education, business schools are expected to incorporate sustainability education in their curriculum with an implicit assumption that graduates practice these values beyond university. This paper aims to challenge this assumption by investigating whether and how students' sustainability values and attitudes are developed in business schools through identity theory.

Design/methodology/approach – The authors used a two-stage parallel mixed methods design in this study. Stage 1 used a quantitative, two-wave longitudinal survey, assessing students' sustainability attitudes before and after completing a sustainability-focused course in 2021, 2022 and 2023. Stage 2 used qualitative, semistructured in-depth interviews to examine graduates' sustainability values while at university, during their transition to employment, and in the early stages of graduate employment.

Findings – The survey results show that sustainability education may not change students' sustainability attitudes. The findings from the interviews suggest that students' identity as "a sustainable person" is shaped more by individuals (family values, schooling, social norms and individual financial conditions) and workplace conditions (culture and coworkers) than by business school education.

Research limitations/implications – Contrary to existing studies that promote sustainability education for developing change agents (Hesselbarth and Schaltegger, 2014; Seatter and Ceulemans, 2017), the authors found no significant change, which they explained as being due to isolated sustainability courses and the wider university context suppressing sustainability identities and opportunities. Instead, the isolated sustainability courses in business schools might demonstrate and emphasize only the dominant identity, causing a barrier to activating sustainable graduates. Contrastingly, the authors discovered that workplaces fostered sustainability-related identities through work expectations, workplace culture and substantial actions and impact communication.

Practical implications – Practically, for universities, the authors propose that there is a need to combine education for sustainability pedagogical approaches with an understanding of self-identity evolution. Appreciating that university has a diverse range of students with multiple expectations, there is ample opportunity for purposeful efforts to support sustainability outcomes for everyone through curriculum and pedagogy innovation (Mason *et al.*, 2024). All the same, this needs to be implemented at-scale, regularly and in-depth. The authors anticipate that embedding this sustainability-related self-identity earlier will ease and accelerate the potential sustainability impacts in workplaces upon graduation.



Originality/value – By combining attitude-behavior and identity theories, the authors propose that business schools should substantively craft transformative sustainability environments enabling students' identity development to become change agents for better business.

Keywords Business school education, Sustainability identity, Sustainability education, Sustainability barriers, Sustainability enablers, University education, Higher education for sustainable development, Management education

Paper type Research paper

Introduction

After years of criticism, business schools have invested significant effort to be agents for better business through knowledge production, perpetuation and dissemination about urgent economic, environmental and social sustainability challenges (Parvathy *et al.*, 2025; Podolny, 2009; Stephens *et al.*, 2008; Thomas and Ambrosini, 2021). The United Nations' business group Global Compact also recognized the need for change and the crucial role business schools play through the creation of the Principles of Responsible Management Education (PRME) in 2007. With over 800 business school signatories from around the world investing efforts to this end, PRME signals an aspiration for transformation through imparting sustainability knowledge and fundamentally shaping how future business leaders think, value and act (Cotton and Alcock, 2013). The implicit promise is that by embedding sustainability in business curricula, business schools will produce graduates who carry these values into the workplace and drive sustainable business practices to achieve the Sustainable Development Goals (e.g. Ambrosini *et al.*, 2023; Huang and Wang, 2012; Parvathy *et al.*, 2025). This promise has become essential to business schools' social license and legitimacy (Hommel and Thomas, 2014; Snelson-Powell *et al.*, 2016).

These investments have driven efforts to implement an assumed hierarchy of change: sustainability education builds knowledge, which then shapes attitudes, which ultimately drives behavior (Bask *et al.*, 2020; Cotton and Alcock, 2013; Sales de Aguiar and Paterson, 2018). Students have been shown to develop a core set of pro-sustainability attitudes (Bask *et al.*, 2020; Cotton and Alcock, 2013; Sales de Aguiar and Paterson, 2018), which will activate sustainability values when negotiating their transition into employment, leading to increased sustainability behavior in businesses as change agents (Arbuthnott, 2009; Chong and Quek, 2022).

However, the assumption that graduates progress from attitude change to workplace behaviors is questioned. Three counterarguments are raised. First, emerging evidence suggests that many graduates do not sustain sustainability behaviors postuniversity, even when they report positive sustainability attitudes while enrolled (Authors, 2024; Butt *et al.*, 2014; Cullen, 2020; Vargas-Merino *et al.*, 2024). In part, the argument is that despite the abundant presence of sustainability, students were not involved in the design and did not personalize or embed the learning (del Mar Martínez-Bravo *et al.*, 2024). The other part of the argument is attributing failure to unsupportive contexts – organizations and professional communities that deprioritize sustainability or create structural barriers to sustainable action (Holdsworth *et al.*, 2020; Myrri *et al.*, 2013; Ziegler and Porto-de-Oliveira, 2022). Here, graduates must either find supportive organizations or reevaluate their sustainability priorities to align with prospective employers (Authors, 2024; Cullen, 2020). This argument risks externalizing the problem – attributing failure to the workplace rather than questioning whether business schools are creating substantive transformative environments in the first place.

Second, we wonder if the celebrated examples of sustainability education success may represent fragmented cases of adoption rather than systematic institutional change (Authors, 2024). The reported cases could be exceptional cases only, and, as such, the demanded

business school epistemological shift has not occurred *at-scale*. Snelson-Powell *et al.* (2016), Nguyen *et al.* (2025) and Ransome (2025) found that embedding sustainability in education was constrained by institutional factors, including size, financial resources, skillset of the educators and the prestige of the university. Mason *et al.* (2024) reinforced this argument that since curriculum and pedagogy innovation have been limited, business schools have failed to produce sustainability decision-making graduates.

Third, decades of research have documented a persistent attitude-behavior gap: individuals who express pro-sustainability attitudes frequently fail to behave accordingly (Kollmuss and Agyeman, 2002; Vermeir and Verbeke, 2006). Attitudes are malleable, context-dependent and vulnerable to competing pressures (Ajzen, 1991). They require constant cognitive deliberation and willpower to translate into action, particularly when sustainable choices conflict with convenience, cost or organizational norms.

A probable explanatory response to these three arguments is that the gap between attitudes and behavior points to a deeper level of internalization: identity. Specifically, as compared to behavior, we aim to explore the underpinning driver for sustainability behavior, which is identity. Identity theory distinguishes between what people believe (attitudes) and who they are (identity) (Burke and Stets, 2009; Stryker and Burke, 2000). When sustainability becomes part of one's self-concept, that is, when individuals see themselves as "a sustainable person," behavior flows more naturally because it is self-verifying rather than requiring effortful attitude-behavior alignment (Stets and Burke, 2000). Identity provides stability across contexts: individuals with a sustainability identity actively seek environments and behaviors consistent with this self-definition, even in the face of situational barriers (Whitmarsh and O'Neill, 2010). Identity is therefore not just a stronger predictor of behavior than attitudes; it represents the kind of deep, stable transformation that higher education ostensibly aims to achieve (Mezirow, 1997; Sterling, 2011). While substantial research examines whether sustainability education changes knowledge or attitudes, our research extends the understanding of whether and how business schools influence the formation of sustainability identity. Therefore, we ask:

How do the business school students' sustainability attitudes change positively by completing a sustainability-focused course (component of a degree)?

How do business schools cultivate sustainability as a core component of students' self-identity that will persist as they transition into professional roles?

We answer these crucial questions through a two-stage mixed-methods design that moves from measuring attitude change to understanding identity formation. In Stage 1, we quantitatively examine whether students' sustainability attitudes change after completing sustainability-related business courses – interrogating the field's core assumption that sustainability education produces attitudinal shifts. Drawing on identity theory, in Stage 2, we qualitatively explore how and why students' sustainability identity is (or is not) shaped by business school experiences, particularly as they transition from university to workplace.

In addressing our research questions, we make three contributions. First, we directly interrogate whether business schools achieve even the intermediate goal of attitudinal change, challenging the field to confront evidence rather than assumptions. Second, by foregrounding identity theory, we shift the conversation from whether students hold pro-sustainability attitudes to whether they have developed a sustainability self-concept, which is a theoretically more robust foundation for sustained behavior. Third, our findings illuminate where and how sustainability identity is actually formed (university vs nonuniversity influences), providing business schools with actionable insights about whether they are creating genuinely transformative environments or merely performing sustainability education without substantive impact.

From attitudes to identity: Theorizing deeper change

The sustainability education field has focused predominantly on whether sustainability education changes knowledge and attitudes, that is, what students know and what they believe. The knowledge and attitude change aims to transform students into graduate agents for better futures, capable of dealing with “complex and value-laden issues in economy and society” (Dyllick, 2015, p. 17), including critical reflections of their own actions and acting on those reflections (Cavanagh *et al.*, 2023). To achieve this transformation, business schools have focused on both curriculum and pedagogy change (Authors, 2024; Leal Filho *et al.*, 2019; Podolny, 2009). Del Mar Martínez-Bravo *et al.* (2024) highlighted that, for students, key actions support the integration of sustainability education in business schools, particularly focused on informing students about the business schools’ curricular and extra-curricular initiatives in creating a sustainable environment. Adding to this, Agboola *et al.* (2026) found that, as well as creating students’ sustainability mindset awareness, universities should focus on curriculum design that provides opportunities for practical experiences to change behavior. Notably, the authors advocate for student-led bottom-up strategies to increase the opportunity to influence sustainability adoption.

Changes in sustainability education demonstrate promising effects, including greater internalization and implementation in personal and business contexts (Arbuthnott, 2009; Hesselbarth and Schaltegger, 2014; Leal *et al.*, 2024; Probst *et al.*, 2019). However, evidence of attitude change remains decidedly mixed (Earle and Leyva-de la Hiz, 2021), and these efforts often fail to demonstrate sustained sustainability attitudes and transformation postuniversity (Authors, 2024). For example, Sidiropoulos (2018) revealed that sustainability education has a mixed influence on students’ attitudes and behaviors, from positive to no-change and other studies found improvement in knowledge over time, but no change in attitude (Connell and Kozar, 2012; Sammalisto *et al.*, 2016). Others argued that resource constraints (e.g. financial barriers) could influence attitude and final behavior, even if individuals are sustainability educated (Kolil *et al.*, 2026; Nordhoff *et al.*, 2021). These reveal a fundamental vulnerability in sustainability education; attitude building and changes are potentially short-lived (or at the surface-level), and especially when tested against unsupportive graduate contexts (Bask *et al.*, 2020).

Identity theory offers a theoretical lens for understanding the deeper level of change needed, specifically, whether sustainability education shapes who students understand themselves to be. Identity is a sense-of-self formed through personal attributes (Hitlin, 2003), social categories (Turner, 1975) and practical roles (Holdsworth *et al.*, 2020; Stryker and Burke, 2000), thereby addressing the fundamental question of “Who am I?” across various settings (Ashforth and Mael, 1989). These formative and identity enacting settings include family, society, education and work, drawing on culturally significant symbolic material, values and attitudes to craft a multifaceted notion of self and the wider social structure (Burke, 1980; Hitlin, 2003; Turner, 1975).

Self-identity is often foundational in shaping the professions individuals pursue. That is, individuals are naturally drawn to careers that resonate with their sense of who they are or who they aspire to become. Furthermore, role (or occupational) identity, which is the identity shaped by the expectations, behaviors and norms associated with particular social positions, such as being a student, teacher, doctor or artist (Holdsworth *et al.*, 2020), can also actively reshape individuals’ values and identity. As individuals engage with the norms and responsibilities of a given profession, they often internalize the values, language and moral frameworks associated with that role (DeRue and Ashford, 2010).

Individuals’ identity affects their values and attitudes, motivating individuals to adopt, reinforce and initiate actions congruent with their identity (Hitlin, 2003; Oyserman, 2015).

However, for an individual to activate or validate their identity, eliciting congruent actions, certain contextual conditions must be present (Oyserman, 2015). These conditions include readiness cues for the individual to be more aware of their identity and the embodied values, attitudes and actions, and create a sense of relevance and urgency to act in congruence with the identity. An environmentally conscious student may not consistently act on that identity unless the context activates and reinforces it (e.g. course project on sustainability). However, some contextual conditions can undermine identity accessibility and make identity actions become irrelevant (Oyserman, 2015). An environmental advocating student, when attending university where sustainable practices are not prioritized, may feel that their identity is incompatible with the institutional culture. This incongruence might lead to a perception that acting on their sustainability values is futile or socially risky, ultimately disengaging them from sustainable behavior altogether.

This contextual sensitivity is particularly consequential in higher education, where students are in a critical developmental phase of identity formation (Adams and Marshall, 1996). University students enter with preexisting values and a developing sense of self. However, universities also shape how students enact their identities in new social and professional contexts. Students are especially likely to undergo shifts or reinforcement in how they express and perform their identities (Adams and Marshall, 1996). For example, a transformation from identifying as a high school student to envisioning oneself as a future manager or from holding general environmental concerns to actively adopting a proactive environmental stance. Through coursework, peer interaction, internships and institutional messaging, universities can provide both the structure and cues that facilitate or hinder this sustainability identity enactment.

These considerations reveal a significant gap in our understanding of sustainability education's transformative potential. Indicatively, business schools have focused on an intermediate level in the hierarchy of change: enhancing students' sustainability knowledge and changing attitudes. Yet these sustainability outcomes are unstable and insufficient for sustained behavioral change. Instead, for business schools, the critical question becomes: are they cultivating sustainability as a core component of students' self-identity, an identity that will persist as they transition into professional roles?

Research design and settings

In responding to the conceptualized context, we first interrogate the field's foundational assumption: that sustainability education successfully changes attitudes. Given the mixed evidence, we cannot take for granted that business schools are achieving even this goal. This uncertainty motivates our two-stage research design. In Stage 1, we explore to what extent business school students' sustainability attitudes change by completing a sustainability-focused course (component of a degree), anticipating the change would be positive. In Stage 2, we then move beyond attitudes to explore *why* and *how* students' sustainability identity is (or is not) shaped by business school experiences, with particular attention to how this identity formation (or lack thereof) influences their transition from university to workplace. Through this design, we investigate not only whether business schools achieve the assumed attitude change, but whether they accomplish the deeper identity transformation that is necessary for sustained behavioral change. The research was implemented in a large Australian Business School, with accreditation for excellent sustainability initiatives, though relatively isolated within their respective degrees. We have used a single institution-based study to gain exploratory insights (e.g. del Mar Martínez-Bravo *et al.*, 2024), compared to the generalizability desired in some other studies. This design was also intentional because different business schools often have substantially different curricula, pedagogical

approaches, assessment structures and sustainability emphasis. Including multiple institutions would introduce substantial heterogeneity that would make it difficult to attribute observed changes to curriculum exposure rather than institutional differences.

Stage 1: Change in sustainability attitudes

We used a two-wave longitudinal survey, assessing students' sustainability attitudes before and after completing a sustainability-focused course in 2021, 2022 and 2023. The 2021 cohort largely experienced an education *about* sustainability course, including content, complemented by video interviews with a sustainability expert (uploaded on the learning management system). Whereas the 2022 and 2023 cohorts received an education *for* sustainability course, incorporating live sessions with industry speakers, site visits and embedding personalizing, collaborative and industry activities into the assessment program.

To collect the data, a scale-based survey was designed, using [Michalos *et al.*'s \(2015\)](#) attitude toward sustainable development 15-item scale. All items were rated on a scale of 1 – strongly disagree to 5 – strongly agree, previously demonstrating a Cronbach reliability coefficient of $\alpha = 0.91$ ([Michalos *et al.*, 2017](#)). We also included demographic questions. The survey was approved through the host institution's human ethics committee. A member of the research team, who was not involved in the course, independently distributed the explanatory statement to students via e-mail, including a link to the survey. The explanatory statement provided a full explanation of the project, purpose and students' commitment. Students' participation was voluntary, and no incentives were administered. After reading the explanatory statement, students could proceed to the Qualtrics-based survey and give explicit consent prior to participating.

We collected data at the beginning (T1, Week 1) and end of the 12-week course (T2, Week 13, the week after the course was completed). A follow-up e-mail reminder was sent three to four days after the initial invitation. The data collected from the two points were matched using student-volunteered e-mail addresses, and only participants who completed the survey at both times were included in the final analysis.

In the 2021 cohort, the 250 enrolled students were invited to participate in T1 ($n = 47$, 18.8% response rate) and T2 ($n = 31$, 12.4%). Responses were matched across the two time-points, resulting in ten matched pairs for analysis. For the 2022 cohort, the 200 enrolled students were invited to participate at T1 ($n = 82$, 41%) and at T2 ($n = 53$, 26.5%), yielding 14-matched pairs. In 2023, the 300 enrolled students were invited at T1 ($n = 62$, 20.7%) and T2 ($n = 37$, 12.33%), with 11-matched pairs. Despite reminders and efforts to encourage participation (within the boundaries of ethics approval), response rates remained low. Reflecting other studies, we experienced high levels of participant attrition between T1 and T2 (e.g. [Lynn *et al.*, 2019](#)). As the course was consistent across 2022 and 2023, these two matched data sets were combined for the final analysis (i.e. 2021, $n = 10$; 2022–2023, $n = 25$). The data was de-identified prior to analysis.

Regarding participant characteristics, 90% of the 2021 participants identified as male, compared to 75% for the 2022–2023 participants. Participant ages ranged from 21 to 29 years, with the majority (75%) between 21 and 23 years. In our data, [Michalos *et al.*'s \(2017\)](#) attitude toward sustainable development scale demonstrated a high reliability coefficient of $\alpha = 0.92$ to $\alpha = 0.98$. Mean scores for the attitudes were calculated for the data analysis.

Stage 1 data analysis

To assess if the sustainability-focused course changed students' sustainability attitudes, paired samples *t*-tests were conducted to compare T1 and T2 group mean differences and individual participants' T1 and T2 scores ([Pallant, 2020](#)). Although *t*-tests assume normal

distribution of the data, small samples are often not normally distributed. To assess the assumption of normality, we conducted Shapiro–Wilk tests on the data sets. The 2021 T1 data set ($W = 0.838$, $p = 0.042$) and the combined 2022–2023 data set deviated from the normality assumption. To address these departures, one outlier was removed from the 2021 T1 data set and two from the combined 2022–2023 data set. Postremoval, the data satisfied the assumption of normality: 2021 T1 ($W = 0.946$, $p = 0.646$) and 2022–2023 T1 ($W = 0.913$, $p = 0.073$), T2 ($W = 0.912$, $p = 0.070$). In addition to the Shapiro–Wilk tests, graphical inspections of the pre- and post-test score distributions, including boxplots and normal probability (Q–Q) plots, were undertaken for both the 2021 and 2022–2023 data sets. These graphical diagnostics supported the interpretation of the distributional characteristics and the influence of potential outliers. Importantly, the results of the paired-sample t -tests remained consistent before and after the removal of outliers. As the results were consistent with and without outliers, the analyses reported are based on the full data sets. The t -tests demonstrated no statistically significant differences between groups at T1 and T2 (Table 1).

A paired-samples t -test indicated that the increase in sustainability attitudes for the 2021 cohort was not statistically significant, $t(9) = 1.70$, $p = 0.13$, 95% confidence interval (CI) $[-0.09, 0.64]$. However, the estimated effect size was moderate ($d = 0.53$), suggesting that the observed change may be educationally meaningful despite the lack of statistical significance. The confidence interval for the mean difference included 0, indicating considerable uncertainty around the estimated effect.

For the 2022–2023 cohort, the paired-samples t -test likewise showed no statistically significant difference in sustainability attitudes, $t(21) = -0.32$, $p = 0.75$, 95% CI $[-0.56, 0.41]$. The corresponding effect size was negligible ($d = -0.07$), indicating little evidence of a meaningful change in sustainability attitudes over the duration of the course. For a robustness check, we also conducted a Wilcoxon signed-rank test using the complete data sets (including outliers). This nonparametric test does not require the assumption of normality and compares median differences rather than means (Field, 2024). Consistent with the parametric t -tests, the results of the Wilcoxon signed-rank test also confirmed no statistically significant differences between groups at T1 and T2.

Stage 2: Change in sustainability identity

Although Stage 1 suggests that students' sustainability attitudes remained largely stable over time, this finding raises important questions about what, if any, mechanisms might underlie more subtle forms of change that are not captured through attitudinal measures alone. As we previously argued, attitudes are malleable, context-dependent and vulnerable to competing pressures (Ajzen, 1991). The gap between attitudes and behavior points to a deeper level of internalization for change: identity. Stage 2 therefore turns to a deeper level of analysis, focusing on identity-related change as a potential driver of students' longer-term transformation in sustainability mindsets. Therefore, we explored identity shifts among business graduates (different from participants from Stage 1) to deepen our understanding of why and how students' sustainability-related attitudes may remain unchanged.

We adopted a qualitative approach to gain a detailed account of individual experiences as well as a detailed description of the phenomenon being researched (Tharenou *et al.*, 2007), also allowing for an appreciation of change over time (Sommer and Sommer, 1997). The purpose of this design is not to trace attitudinal change within the same individuals, but to develop a deeper theoretical understanding of why stability in sustainability attitudes may occur within this educational context. In this sense, Stage 2 should not be read as “explaining” the Stage 1 null finding in a deterministic or participant-linked way. Rather, it offers a complementary explanatory framework that helps interpret the Stage 1 result by

Table 1. Descriptive statistics and results

Timeperiod	Mean	SD	Standard error mean	95% confidence interval of the difference		t	df	p-value
				Lower	Upper			
2021 Education about sustainability approach (n = 10) ASD T2–ASD T1	0.27	0.51	0.162	−0.092	0.639	1.70	9	0.13
2022–2023 Education for sustainability approach (n = 22) ASD T2–ASD T1	−0.08	1.10	0.234	−0.562	0.411	−0.324	21	0.75
Note(s): ASD = attitude toward sustainable development								

identifying identity-related mechanisms that plausibly shape how sustainability education is received and internalized by students more broadly within the same institutional setting.

We used semistructured in-depth interviews to examine graduates' sustainability values while at university, during their transition to employment, and in the early stages of graduate employment. Emphasis was placed upon understanding and explaining events as they occurred in their specific context, helping to build an interpretation of experiences (Hartley, 1994; Tharenou *et al.*, 2007). We structured the interview questions to guide participants chronologically through their sustainability-related experiences, ensuring a consistent and coherent flow across all interviews. This approach allowed us to explore key transition points – from prior to university, their time at university, through the shift into employment, and into their current professional roles – while examining how sustainability featured across these stages. Rather than asking direct questions about identity, we encouraged participants to reflect organically on their self-concept and evolving role identities (e.g. as students versus professionals) as these themes emerged naturally in the conversation. We recognize the risk for participants to provide general reflections about individual perceptions. To mitigate this risk, we looked for expressions implying long-lasting behaviors and self-identity such as “I am xxx kind of person,” “what I always do is xxx” and “I have been practicing sustainability since I was young.” We also asked probing questions to distinguish long-lasting self-perception and behaviors derived from narratives about their identity from situational preferences and behaviors.

We specifically selected business graduates as participants for two reasons. First, having completed the full curriculum, they were well-positioned to reflect comprehensively on their exposure to sustainability content throughout their university experience. Graduates also had the opportunity to integrate what they learned into “real-world” contexts – through internships, early career experiences and continued personal reflection. This temporal distance allowed us to assess whether initial learning was sustained and had matured into more enduring changes in perspective and identity.

Second, as graduates' transition from students to professionals, business graduates typically go through a critical identity shift and enactment stage. This transitional period, incorporating the emergence of professional role identity, heightens their self-awareness, making them more capable of articulating and reflecting on changes – or lack thereof – in their identity. Their retrospective insights can illuminate how educational experiences have shaped their evolving self-concept, values and decisions – particularly whether they now see themselves as professionals who actively prioritize sustainability. By capturing these temporal outcomes, we gain a richer understanding of sustainability education's impact – not just as a short-term educational approach as in Stage 1, but as a catalyst for long-term identity development.

Ten business graduates were interviewed. The project was fully explained, and interviewees gave explicit consent prior to participating. Each interview lasted for 45–60 min. Table 2 outlines the characteristics of each interviewee, including their pseudonym, their degree(s), business major and their current employment. While women were invited to participate, only men responded to take part in the Stage 2 research.

Stage 2 data analysis

We inductively coded the data, ascertaining, classifying and interpreting thematic patterns that emerged (Saldaña, 2021). Three authors (the first two and the last one) read through the data and identified key emerging themes. Specifically, we entered the interview transcripts into MAXQDA24 and analyzed them using thematic coding, following a three-stage approach (Gioia *et al.*, 2013). First, we used open coding to identify recurring concepts related to sustainability experiences. Second, we used the program to search for links

Table 2. Interviewee characteristics

Interviewee pseudonym	Bachelor's degree(s)	Business major	Current work
#1A	Bachelor of Commerce	Finance	Analyst
#2C	Bachelor of Commerce and Bachelor of Science	Behavioral Commerce	Vendor Replenishment Planner
#3C	Bachelor of Commerce and Bachelor of Engineering (Honors)	Finance	Commercial Analyst
#4D	Bachelor of Commerce	Accounting and Management	Audit and Assurance
#5L	Bachelor of Marketing	Marketing	Marketing
#6L	Bachelor of Commerce and Bachelor of Engineering (Honors)	Econometrics	Graduate Consultant
#7M	Bachelor of Business	Human Resource Management	Graduate Consultant
#8M	Bachelor of Business	Marketing	Marketing
#9O	Bachelor of Commerce and Bachelor of Engineering (Honors)	Finance	Graduate Processing Engineer
#10R	Bachelor of Commerce and Bachelor of Engineering (Honors)	Econometrics	Graduate Data Officer

between and among these first-order concepts. This process facilitated grouping the concepts together into second-order themes that corresponded to their sustainability experiences at different stages of their lives (before, during and after university). As a result, three major categories of codes emerged:

- (1) factors influencing self-concept regarding sustainability;
- (2) the influence of university education on their self-concept and role as students; and
- (3) the influence of the workplace on their self-concept and role as employees regarding sustainability.

The formation of these major themes consequently allowed for the formation of theoretical constructs and qualitative explanations (Tharenou *et al.*, 2007), which lead to our third-order dimensions of self-identity and role identity and their interrelations (Figure 1).

Findings

The Stage 1 findings demonstrated that there was no significant difference in students' sustainability attitudes before and after completing a sustainability-focused course (Table 1). For 2021, the mean difference was 0.27 ($p = 0.13$, two-tailed). The findings for the 2022–2023 analysis show similar results (-0.08 , $p = 0.75$) despite the implementation of a more comprehensive education for sustainability approach. To check robustness, the data for each year was also analyzed separately and the results were the same. The nonsignificant difference in the means was reinforced by the Wilcoxon signed-rank test for the complete data sets for 2021 ($Z = -1.432$, $p = 0.15$, two-tailed) and 2022–2023 ($Z = -0.195$, $p = 0.85$, two-tailed), showing that there is no significant difference between the two time-points.

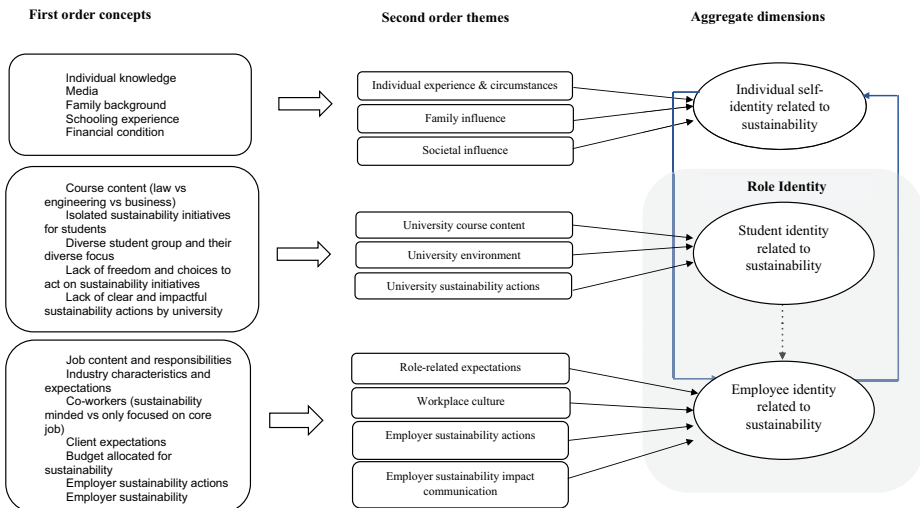


Figure 1. Structure of qualitative data

The lack of quantitative support suggests that *about* or *for* sustainability education does not always influence students' sustainability attitudes, challenging assumptions from prior studies (e.g. [Arbuthnott, 2009](#); [Authors, 2024](#); [Bask et al., 2020](#)). Our findings, and those of prior studies indicating limited change (e.g. [Connell and Kozar, 2012](#); [Sammalisto et al., 2016](#); [Sidiropoulos, 2018](#)), might be discovering meager short-term outcomes, whereas deeper transformations are unfolding beneath the surface.

Attitudinal changes can be slow to emerge, often resisting immediate shifts over a single semester ([Bask et al., 2020](#)). Yet, this does not mean that change has not occurred. Instead, the experience may be initiating a more fundamental reorientation at the level of identity – the early stages of becoming a “sustainable self.” This subtle internal shift may not register in short-term surveys focused on attitudes, but it could represent the foundation for longer-term transformation. Also, students may already value sustainability but only begin to act differently once the context cues those values. Rather than only measuring what students think or do immediately after a course, we might better trace the emergence of a sustainability-oriented identity over time. The findings from the Stage 2 research may provide an answer to this question.

Sustainability-related self-identity

Most interviewees had and demonstrated a sustainability-related identity, particularly articulated and expressed through their actions. For example, “definitely do my part in terms of, you know, keeping the world a sustainable place” (#2C [1], BCommerce and BScience, Vendor Replenishment Planner), “going to op-shops rather than buying new clothes” (#6L, BCommerce and BScience, Consultant). Two reported that they do sustainability things due to their role requirements as compared to personal values or motivation. For the others, they reported several common factors contributing to the formation of their sustainability-related self-identity, including family influence (particularly parents' values and lifestyles), prior life experiences, school education before university and broader societal norms. Exemplifying this, #6L (BCommerce and BScience, Consultant) stated: “you know, sustainability is more

of a personal thing rather than sort of a thing that's sort of placed upon you, or you learn or given to you." Relatedly, #1A (BCommerce, Analyst) offered a broader reflection: "People [...] grow up, they become nurtured, and they learn about themselves, and they become influenced by the external factors around them." The insights into growth of the sustainability-related identity indicated a space for business schools and universities to have a positive influence.

Nonetheless, the interviewees noted their identity as "a sustainable person" was shaped more by influences outside university, reporting that their university experience did not play a notable role. Interviewees collectively perceived that the business school did not aim to have a significant impact on their sustainability-related self-identity. Rather, they acknowledged that business education was most helpful to prepare them for the workforce in fields like accounting and finance. Interviewees expected to gain a solid understanding of commercial aspects, helping them to get jobs quickly. Therefore, students' strong preexisting identity commitments formed prior to university, and their utilitarian perception of the purpose of business schools, may have filtered how new sustainability content is interpreted. This may filter how new sustainability content is interpreted and further influence their attitudinal change in sustainability. The interviewees were consistent regarding their sustainability experiences at university and subsequent perception of identity. Interviewees felt their business degrees fell short in terms of addressing broader business responsibilities, particularly sustainability. Indeed, interviewees demonstrated that the business school's role in delivering sustainability education appeared unclear or minimal. While a few acknowledged a couple of isolated though excellent sustainability-focused courses, most reported very limited exposure to sustainability-related content in their business degrees.

Reinforcing the limited exposure, interviewees reported that sustainability concepts were sporadically addressed in business courses, with some noting that such discussions were confined to the introductory week only. Particularly for these sporadic connections to sustainability, the content was often perceived as generic and lacking depth and hence was limited in its ability to shape their personal or professional engagement with sustainability. This appears reflective of education *about* sustainability approaches, and is evidenced by #90 (BCommerce and BEngineering, Processing Engineer):

I vaguely knew that it was important, but I wasn't really sure about specifics [...] When I was at university, I didn't really have the whole concept of how implementing much sustainable thinking or sustainable processes would actually take place in work.

It is important to note that, though, interviewees highlighted that this limited connection to sustainability was particularly business-school specific (as compared to generic to university). Interviewees who had also undertaken degrees in other schools (e.g. engineering or law) contrasted the exposure where sustainability was integrated more comprehensively throughout courses and embedded in assessments. More broadly, interviewees also noted the weak influence of university-organizational socialization processes related to their sustainability-related identity. Interviewees consistently expressed that they were unclear about their university's specific actions on sustainability, citing a lack of communication from the university. Despite this, they assumed that sustainability initiatives must have been in place, as universities "are expected to send such messages" (#2C, BCommerce and BScience, Vendor Replenishment Planner). In addition, interviewees noted that universities are large organizations, and, as such, students were often not exposed to small-scale initiatives that could help them understand their own capacity to contribute and have an impact on sustainability issues. Nevertheless, interviewees did not perceive a strong cultural environment at the university encouraging the expression of sustainability-related identities

through concrete actions. As #9O (BCommerce and BEngineering, Processing Engineer) pointed out, “there were not many showcases of avenues to be more sustainable [...] there was a big disconnection between the thought, process and action”.

Possibly because of these factors, some interviewees developed a sense of pessimism about their sustainability-related self-identity while at university. For example, #3C (BCommerce and BEngineering, Commercial Analyst) stated that “it is hard to act sustainably as an individual.” This sentiment echoed the view of #4D (BCommerce, Auditing and Assurance), who believed that until large institutions like their university “change their processes, realistically, not much is going to change.” It was evident among the interviewees that even if they wish to express and practice their sustainability-related self-identity, meaningful change will not occur unless universities actively provide space and encourage sustainability actions. These qualitative findings help understand the stability observed in Stage 1: their sustainability courses act as, at best, only a stabilizing frame to students’ preexisting sustainability-related identity rather than a transformative influence.

However, despite these university experiences, sustainability-related self-identity influenced some interviewees’ job and employer selection. This suggests self-identity influences a person’s role alignment in the selection phase (at least). Some interviewees chose jobs, employers and industries that were aligned with their sustainability-related self-identity (e.g. #6L, #9O) whereas others were indifferent to what jobs or industries they chose if the payment was acceptable (e.g. #1A, #7M, #8M).

In their graduate roles, compared to university, interviewees described the workplace as having a significant transformative role in shaping their sustainability-related self-identity. Interviewees attributed this shift primarily to the change in role – from students to employees – which introduces more specific responsibilities and expectations around sustainability within their professional contexts. Interviewees reported that their workplaces not only require individuals to consider sustainability in their daily tasks but also offer a concrete setting in which the significance and impact of sustainability become more tangible. As interviewees internalize the responsibilities and cultural meanings tied to their roles, their values and self-identity shifted accordingly. For example, #2C (BCommerce and Bscience, Vendor Replenishment Planner) explicitly highlighted the performance-driven nature of sustainability in their role: “the job that I’ve gone into in the company, sustainability is focused on a lot [...] and there are definitely KPIs that need to be hit.” Similarly, #6L (Bcommerce and Bengineering, Consultant), working on carbon capture projects, reflected how their professional experiences deepened their understanding of sustainability, stating that it helped them “understand how human activities impact heavily on the environment,” and as a result, made them “more conscious of my own decisions and habits.” In this way, their roles reinforce and reshape sustainability-related self-identity, illustrating that who we are is deeply influenced by what we do and the social meaning attached to our work.

While context was prominent, we also discovered enablers for interviewees’ sustainability identity once in graduate roles. Most prominent was financial independence during this transitional life stage. Greater financial autonomy empowered them to make independent choices and encouraged more deliberate and environmentally conscious consumption habits – such as purchasing recyclable products, using solar energy and seeking out sustainable alternatives. One interviewee (#6L, Bcommerce and Bengineering, Consultant) reflected: “I guess the factor that is pushing me to be toward being more sustainable is the fact that I’m sort of financially independent, so I can make my choices.” Another interviewee (#4D, Bcommerce, Auditing and Assurance) also echoed this sentiment: “now that I’m earning more and it has been a big motivator in myself to care more about environmental sustainability.” In contrast, a lack of financial stability poses a

significant barrier for interviewees in enacting a meaningful sustainability-related identity; “sustainability wasn’t part of the focus when you need to have a stable pay first” (#7M, BBusiness, Consultant) and “when survival is a priority I didn’t think of sustainability” (#8M, BBusiness, Marketing).

However, for some interviewees, sustainability was purely role-driven, and they do not self-identify as a sustainable person outside of work. In this, if their clients require them to be, or adopting sustainability is an industry requirement or contributes to shareholder values, they can easily switch to a sustainable performance. For instance, #3C (BCommerce and BEngineering, Commercial Analyst) expressed their sustainability-related identity as purely “client-based” and #4D (BCommerce, Audit and Assurance) stated, “sustainability is not related to job for now, but part of future career aspirations and further study.”

Interviewees also highlighted the role of organizational socialization in shaping their sustainability-related identity. Beyond formal job requirements, #4D, #5L, #7M, #9O and #10R reported that employers actively promote sustainability through tangible initiatives, such as reusable coffee cup programs and employee-led sustainability clubs. By frequently communicating the outcomes of the organizational sustainability efforts, organizations help employees see the direct impact of their contributions. For interviewees, such communication fostered a sense of purpose and reinforced individual sustainability engagement. Moreover, interviewees noted these workplaces cultivate an empowering and supportive culture around sustainability. Complementing this, #2C, #4D and #6L emphasized leadership practices, where CEOs act as role models; they are encouraged to raise sustainability-related concerns and are also offered ongoing professional development in sustainability. As #2C (BCommerce and BScience, Vendor Replenishment Planner) described, “it is obviously embedded in everything we do.” This sense of organizational embeddedness reinforces interviewees’ sustainability-related identity and supports the internalization of sustainability as a core professional value.

In summary, integrating the two stages, the qualitative findings from Stage 2 offer a complementary understanding of the stability observed in Stage 1 by suggesting that students’ largely utilitarian perceptions of the purpose of business school shape how they interpret and assimilate sustainability content. Rather than prompting attitudinal reconstruction, sustainability learning is filtered through preexisting identity frames that students formed prior to university. As a result, sustainability is often incorporated into an already established sense of self, rather than leading to identity change, which is consistent with the absence of attitudinal shift observed in Stage 1. In this context, the limited and often indirect connection between business courses and sustainability functions more as a stabilizing influence on students’ existing sustainability-related identities, rather than as a transformative force. Therefore, although sustainability was included in the university’s business curricula, the isolated experiences of the interviewees did not foster deep, transformative engagement with sustainability nor demonstration of a sustainability-related identity. While other schools did provide these opportunities, the interviewees reported that the university context did not sufficiently provide space for students’ sustainability demonstrations. Understandably, students’ sustainability knowledge remained generic, without opportunities to practice and demonstrate their sustainability impacts. As a result, interviewees’ sustainability values, attitudes and actions experienced through identity are less likely to manifest. In contrast, work environments allow greater demonstration of a mostly preexisting sustainability-related self-identity and even growth. Interviewees emphasized how their occupational role, particularly in jobs that required sustainability-related actions, fostered a deeper connection to sustainability. Even then, for some, the sustainability-related identity was specific to their occupational role, rather than self-identity.

Taken together, the findings from Stages 1 and 2 support the hierarchical model of change proposed in the theoretical background, suggesting that shifts in students' sustainability mindsets require not only surface-level attitudinal change but also deeper identity transformation. This emerges as the central theme of the study, highlighting the importance of identity-level processes in understanding sustainability-related development in business education.

Discussion

The exploratory findings shed light on the complex relationship between individual, university education and workplace in shaping sustainability-related self-identity. Our core finding contrasts with the dominant theme in prior studies. Rather than business schools crafting sustainability graduates for better business (Arbuthnott, 2009; Chong and Quek, 2022; Vargas-Merino *et al.*, 2024), and businesses stopping sustainability identity and action (Holdsworth *et al.*, 2020; Myyry *et al.*, 2013), we have found the opposite. Contrasting with prior studies which focus on workplace barriers (Cullen, 2020; Ziegler and Porto-de-Oliveira, 2022), we discovered that even if a student is sustainably minded, it may prove difficult for them to demonstrate their sustainable identity at university. Instead, despite business school's isolated or even exceptional sustainability efforts, the context may block the development and enactment of students' sustainability attitudes and values. Our findings reinforce the argument that the business school epistemological shift has not occurred at-scale (Authors, 2024; Mason *et al.*, 2024).

This alternative interpretation focuses attention on business schools again for further systematized effort for better outcomes (Ambrosini *et al.*, 2023; Kiss *et al.*, 2025; Podolny, 2009; Thomas and Ambrosini, 2021). That is, while education for sustainability achievements should be celebrated, indicatively these exceptional occurrences demonstrate to students the stark contrast with everything within the business school context, and the dominant unsustainable identity tacitly supported or endorsed. We argue for the continued business school internalized efforts for at-scale change and substantively crafting transformative sustainability environments for students to become agents for better business (Kiss *et al.*, 2025). Such an approach is particularly important during transitional periods – like moving from school to university or from university to the workforce – when identities are still forming or being redefined, and new attitudes are continually shaped and negotiated (Bask *et al.*, 2020).

Aligning education for sustainability and the understanding of self-identity directs the systemization of pedagogic approaches for passion and purpose (Bask *et al.*, 2020), incorporating physical, emotional and cognitive learning (Shrivastava, 2010). Here, consistency in the educational context is also important, crafting an at-scale, supportive social-cultural environment in which students are encouraged to express their sustainability identity (Kiss *et al.*, 2025; Leal Filho *et al.*, 2019), and embedding exposure to the realities of sustainability in workplaces (Probst *et al.*, 2019; Seatter and Ceulemans, 2017). Here, business schools can create prominent sustainability hubs (Achuthan *et al.*, 2020; Agboola *et al.*, 2026). This can be done through sustainability embedded in curriculum workshops, campaigns and site visits (Agboola *et al.*, 2026; Leal *et al.*, 2024). Moreover, it is important that universities and business schools be active in communicating explicitly the sustainability-related activities implemented through regular campus activities, complementing curriculum design. For example, extracurricular activities such as sustainability hackathons and volunteering opportunities organized by the student club/associations to provide training and raise awareness about the university's support for sustainability (Leal *et al.*, 2024). The visible commitments reinforce business schools' responsibilities in shaping global citizens'

sustainability mindset and create awareness among students (Ambrosini *et al.*, 2023; Buckner and Zhang, 2024).

In contrast, the workplace appears to play a greater role in shaping graduates' sustainability-related self-identity through their roles, opportunities for acknowledged contributions and greater financial autonomy (Burke, 1980; Thoits, 1991). As students transition into professional roles, we discovered they foreground their sustainability-related self-identity, also fostered by their workplaces and by their clients/customers' valuing of sustainability efforts. Their self-identity becomes increasingly reinforced and shaped by the expectations, norms and responsibilities embedded in their work (DeRue and Ashford, 2010), which created a positive influence for sustainability. Importantly, we also found that workplaces foster sustainability-related identity even for those who do not personally prioritize sustainability. These findings could be explained by Rogers (2003) diffusion of innovation theory, which suggests acceptance of new innovations depends on relative advantage, compatibility, trialability, ease of use and observability. Since workplaces can fulfil all these conditions, they can implement sustainability practices at full scale and support identity formation of graduates.

All the same, these conditions should also be very possible in business schools, providing a further opportunity. Most insightful of these workplaces' conditions, which enabled sustainability-related self-identity, reflect two elements of education *for* sustainability. First, regular and in-depth engagement with sustainability to develop sustainability values, and second, an empowering and enabling environment for sustainability practices, expression and agency (Bask *et al.*, 2020; Cotton and Alcock, 2013; Sales de Aguiar and Paterson, 2018).

Our closing reflection questions an underpinning assumption of business school sustainability education. The assumption was that universities' transformative efforts would empower business students to be the needed workplace change agents. Instead, the sustainability-identity is indicatively being suppressed in business schools. This presents a clear opportunity for developing substantive impact by the business schools and further magnifying positive impacts through the graduates' workplace contexts.

Contributions, implications and conclusion

Our research has several theoretical and practical contributions. Theoretically, through exploring the assumption that education *about* or *for* sustainability will induce attitude and identity change for students, we contribute to the discussions related to sustainability education and the role of identity in the management education sector. First, contrary to existing studies that promote sustainability education in making change agents (Hesselbarth and Schaltegger, 2014; Seatter and Ceulemans, 2017), our exploratory findings demonstrated no statistically reliable change. We explained the lack of change as due to the isolated sustainability courses and the wider university context's weak signaling, suppressing sustainability identities and opportunities. Instead, the isolated sustainability courses in business schools might demonstrate and emphasize only the dominant identity, causing a barrier in activating sustainable graduates.

Second, contrastingly, we discovered that workplaces fostered sustainability-related identities through work expectations, workplace culture and substantial actions and impact communications, which act as enablers to support and shape sustainability mindset. Combined, these sensitized us to the magnified efforts needed in business schools to achieve at-scale change in sustainability education to emphasize the sustainability identity, and to foster a context in which students are encouraged to enact it.

Third, we highlighted how beyond sustainability education and workplaces, individual conditions (or factors) play a role in shaping students' sustainability values/identity. This is

an important contribution to the identity theory too since it sensitizes us about the presence of different external factors to make students/graduates sustainable and sheds light on the intersection of role and self-identity.

Practically, for business schools, we propose that there is a need to combine education for sustainability pedagogical approaches with an understanding of self-identity evolution. Sustainability education should move beyond content delivery to explicitly engaging with students' identity development. At the curriculum level, this implies embedding sustainability longitudinally and coherently across programs rather than treating it as isolated modules, ensuring that sustainability is repeatedly reinforced in ways that allow it to become part of students' emerging professional identities. At the pedagogical level, education for sustainability approaches should be complemented with practices that actively surface and work with identity formation processes, for example, through reflective exercises, narrative-based learning and opportunities for students to connect sustainability to their own values and future professional selves. Given the diversity of student motivations and expectations, such approaches should be designed to accommodate multiple entry points into sustainability meaning-making.

At the institutional level, these efforts require sustained, systematic commitment rather than *ad hoc* initiatives. Business schools should consider embedding sustainability-related identity development as a program-level learning outcome, supported through staff development and curriculum design frameworks that encourage consistency across courses. Importantly, such embedding should be implemented at-scale, regularly reinforced and integrated throughout the student journey rather than concentrated in standalone interventions. We anticipate that fostering sustainability-related identity formation earlier and more consistently within business education may strengthen and accelerate graduates' capacity to enact sustainability-oriented practices in their subsequent professional roles. Appreciating that business schools have a diverse range of students with multiple expectations, there is ample opportunity for purposeful efforts to support sustainability outcomes for everyone through curriculum and pedagogy innovation (Mason *et al.*, 2024). All the same, this needs to be implemented at-scale, regularly and in-depth. We anticipate that embedding this sustainability-related self-identity earlier will ease and accelerate the potential sustainability impacts in workplaces upon graduation.

Through this exploratory research, we developed a preliminary understanding of graduates' sustainability identity. Like any study, our research has limitations, which direct avenues for future studies. First, we undertook this research to explore students' sustainability attitudes and identity. We did not achieve the sample we desired, and our sample was from a single business school. It is not uncommon to have single-institution-based empirical studies to provide an in-depth understanding of the phenomenon (Leal *et al.*, 2024). Nevertheless, future studies could investigate the topic in other contexts to further test and interrogate our findings. Second, we found several enablers and barriers (e.g. financial capability) of sustainability adoption through our interviews. These factors could be examined in future studies to understand their roles in developing sustainability identity in students. Third, though we invited participants from all genders, our interviewees were all male. Future studies could examine if participants from different genders show different sustainability values and ethical positioning and thereby enact different sustainability identities. Finally, to address the potential ceiling effects, together with the modest matched sample size, which may have reduced the instrument's sensitivity to detect short-term changes in sustainability attitudes at Stage 1, we recommend future studies use larger longitudinal samples and designs to specifically capture attitudinal change. In conclusion, business schools especially have a crucial role in fostering sustainability outcomes to address

a growing list of challenges evident in our shared communities. To achieve these outcomes, an internal focus is needed to move from the innovations and experiments of sustainability education to adopting these approaches at-scale. The collective demonstration of action will foster the needed sustainability-related self-identity in our student population, enabling an accelerated transition to a more sustainable future.

Note

- [1.] The reference of each interview is formatted as: interviewee code + degree ("Bachelor of") + current role.

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