societies

MDPI

Article

Scaffolding the Inner Curriculum: Supporting Students' Capacity to Engage Complexity, Uncertainty, and Societal Challenges in Higher Education

Paniz Mousavi Samimi [1,*] and Teri C. Balser [2]

[1] School of Architecture, Planning and Landscape, University of Calgary, Calgary, AB T2N 1N4, Canada
[2] Department of Biological Sciences, Faculty of Science, University of Calgary, Calgary, AB T2N 1N4, Canada; tcbalser@ucalgary.ca
* Correspondence: paniz.mousavisamimi@ucalgary.ca

Abstract

Preparing students for an increasingly uncertain and complex world has become one of higher education's defining challenges. Successfully engaging with complex issues requires more than disciplinary knowledge; it also demands the capacity to navigate uncertainty, multiple perspectives, and emotionally challenging realities. However, relatively little is known about how these capacities are experienced during the early undergraduate years. This exploratory qualitative study examined how first- and second-year undergraduate students described their approaches to learning about, processing, and engaging with difficult issues within a sustainability-focused program. Open-ended question responses were analyzed using inductive thematic analysis, followed by a cross-cohort comparison. Four dimensions of engagement emerged: how students approached difficult realities, processed challenging information, learned through dialogue and multiple perspectives, and connected their learning to possible action. While both cohorts expressed a willingness to engage with difficult issues, first-year students emphasized emotional preparation and structured support, whereas second-year students highlighted dialogue, reflection, multiple perspectives, and agency. The findings reveal different patterns of engagement across the two cohorts and point to the importance of intentionally supporting the inner curriculum—the developmental capacities that enable students to engage complexity, uncertainty, and social change throughout higher education, thereby strengthening universities' capacity to contribute to long-term social change.

Keywords: curriculum design; educational scaffolding; higher education; inner curriculum; student development; sustainability education; transformative education

Check for updates

Academic Editors: Tina Lynn Evans and Krista Hiser

Received: 29 July 2026
Revised: 14 October 2026
Accepted: 14 October 2026
Published: 20 October 2026

Copyright: © 2026 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license.

1. Introduction

Higher education increasingly asks students to confront difficult societal realities, including climate change, sustainability, social inequity, political instability, and other complex global challenges [1,2]. As universities increasingly position themselves as contributors to addressing these interconnected societal challenges, students are expected not only to understand complex problems but also to engage critically with competing perspectives, navigate uncertainty, and explore pathways toward meaningful action [3,4]. Successfully engaging with these challenges requires more than disciplinary knowledge or technical expertise. Students must also develop agency, learn to navigate uncertainty, ambiguity, emotional discomfort, conflicting viewpoints, and questions of responsibility

and action [5–8]. This view is increasingly reflected across higher education scholarship, which argues that preparing students for complex societal challenges requires intentionally developing adaptive capacities such as systems thinking, leadership, collaboration, and socially responsible action alongside disciplinary expertise [9]. Building on existing uses of the term in contemplative and values-based education, we use *inner curriculum* to refer to the developmental capacities through which students learn to engage with knowledge and complexity—including navigating uncertainty, managing emotional responses, engaging multiple perspectives, exercising reflective judgement, and connecting understanding to responsible action [10,11]. The inner curriculum is therefore not a separate formal curriculum, but a complementary dimension of learning that develops alongside disciplinary knowledge and can be intentionally supported through curriculum and pedagogy.

While higher education has established approaches for scaffolding disciplinary learning, comparatively less attention has been given to understanding how these capacities are supported across students' undergraduate experience [12–14]. Yet relatively little is known about how students themselves experience and describe this dimension of learning, particularly during the early undergraduate years [15].

The early undergraduate years represent a particularly important period in this regard. The transition into university involves substantial academic, personal, and social adjustment as students adapt to new learning environments, negotiate evolving identities, and develop increasing independence as learners [16–18]. Recent research continues to demonstrate that students' prior educational experiences shape their expectations and approaches to learning as they enter higher education, reinforcing the importance of attending to transition as a developmental as well as academic process [19].

Importantly, transition does not end with the first year. Emerging research on students' progression through higher education highlights the second year as another meaningful, yet comparatively underexamined, period in which students continue to negotiate changing expectations, engagement, independence, and their place within the university environment [20]. This provides an important connection between transition, scaffolding, and the inner curriculum. If disciplinary learning is progressively scaffolded as students encounter greater complexity, the developmental capacities that enable them to engage with uncertainty, competing perspectives, and difficult realities may likewise require intentional support across the early undergraduate years.

Understanding how students describe these capacities at different stages may therefore provide useful insight into how higher education can scaffold both disciplinary learning and students' developing capacity to engage thoughtfully with complex societal challenges [14,20,21].

Accordingly, this exploratory study examines how first- and second-year undergraduate students describe their preferred approaches to learning about and processing difficult societal issues within a sustainability-focused undergraduate program. By comparing students at two stages of the undergraduate experience, the study seeks to identify patterns of similarity and difference in how students approach challenging material and to consider the implications of these patterns for curriculum design and higher education.

Specifically, the study was guided by two questions: (1) How do first- and second-year undergraduate students describe their preferred approaches to learning about and processing difficult societal issues? (2) How do the patterns emerging from these descriptions compare across the two cohorts? We then consider what these cohort-level patterns and contrasts may imply for curriculum design and for higher education's role in preparing students to engage with complex societal challenges.

2. Scaffolding Learning in Higher Education

Scaffolding has long been recognized as a foundational principle in educational theory, referring to the temporary support provided to learners as they develop knowledge and skills beyond their current level of competence. Rooted in Vygotsky's concept of the Zone of Proximal Development and later formalized by Wood, Bruner, and Ross, scaffolding has become a central principle in curriculum design [13,22]. More recent higher education research continues to emphasize scaffolding as a process of sequencing learning experiences and providing structured support that enables students to engage progressively with increasingly complex tasks and assume greater independence [21,23,24].

This principle underpins many contemporary approaches to curriculum design. Bloom's Taxonomy provides one of the most widely adopted frameworks for scaffolding cognitive progression, guiding students from remembering and understanding toward analysing, evaluating, and creating [25,26]. Similarly, Biggs's theory of constructive alignment emphasizes aligning learning outcomes, teaching activities, and assessment to support increasingly sophisticated learning [12,27]. Together, these approaches have shaped higher education by providing explicit frameworks for scaffolding disciplinary knowledge and cognitive development through progressively more complex learning experiences.

However, university learning extends beyond disciplinary and cognitive development. Student development scholars have consistently argued that higher education also shapes how students understand knowledge, construct identity, exercise judgement, and engage with complexity. While Perry Jr described development as a progression from dualistic thinking toward greater comfort with ambiguity, contextual reasoning, and commitment [28], Chickering and Reisser emphasized identity development and interpersonal maturity throughout the undergraduate years [17]. Likewise, Magolda highlighted self-authorship as students become increasingly capable of constructing their own beliefs and values [29], while King and Kitchener proposed that reflective judgement develops as students learn to evaluate evidence and make decisions in situations where certainty is unattainable [30,31]. Although these theories differ in emphasis, they collectively portray undergraduate education as a period of substantial intellectual, ethical, and personal development.

Comparable ideas have emerged within transformative learning, sustainability education, and critical pedagogy. Within sustainability education, scholars have long argued that addressing complex global challenges requires capacities such as systems thinking, collaboration, critical reflection, and navigating uncertainty [6,7]. More recent Education for Sustainable Development scholarship has increasingly emphasized agency and transformative capacity: students are expected not only to understand sustainability challenges, but also to develop the capacity to question assumptions, participate in collective meaning-making, and act within complex social–ecological contexts. Recent higher education research, for example, connects sustainability learning with student agency, self-formation, participation, and movement from understanding toward action [32–34].

Critical pedagogues including Freire and hooks similarly position learners as active participants capable of critically engaging with and acting upon social realities rather than simply acquiring disciplinary knowledge [35,36]. Collectively, this literature suggests that higher education contributes not only to what students know, but also to how they think, reflect, judge, relate, exercise agency, and engage with an increasingly complex world.

Related ideas have also been articulated through concepts concerned with learners' inner development. The term inner curriculum has been used in educational contexts to describe dimensions of learning concerned with capacities such as self-awareness, reflection, engagement with ambiguity, and relational or ethical development [10,11]. More recently, the Inner Development Goals framework has identified a set of inner capacities considered

important for responding to complex sustainability challenges, organized around the broad dimensions of Being, Thinking, Relating, Collaborating, and Acting [37]. These approaches share an emphasis on capacities that extend beyond disciplinary knowledge alone and resonate with contemporary calls for higher education to cultivate agency, reflexivity, collaboration, and the ability to engage constructively with complexity. While these approaches overlap with the present conceptualization, we use inner curriculum more specifically to describe the developmental capacities through which students learn to engage complexity, including uncertainty, emotional difficulty, multiple perspectives, reflective judgement, dialogue, agency, and responsible action.

Despite these important theoretical and conceptual advances, relatively little empirical research has examined how students themselves describe learning to engage difficult societal issues during the early undergraduate years. Existing studies have predominantly focused on competencies, pedagogical approaches, or intended learning outcomes, with less attention given to students' own accounts of how they learn to navigate uncertainty, process emotionally challenging topics, negotiate multiple perspectives, and connect understanding to action [38–41]. Recent research has begun to give greater attention to students' perspectives and preferences, but further empirical work is needed to understand how these dimensions are experienced across stages of undergraduate study [42].

Bringing these strands together, we conceptualize scaffolding as the pedagogical mechanism through which support can be progressively structured, the early undergraduate transition as an important developmental context, and the inner curriculum as the capacities being supported beyond disciplinary knowledge alone. Comparing first- and second-year students does not establish developmental change, but it provides an exploratory opportunity to examine whether different patterns of engagement are evident at two stages of undergraduate experience. Understanding these patterns may help illuminate how higher education can more intentionally support students in developing the capacities required to engage thoughtfully and agentically with complex societal challenges.

3. Materials and Methods

3.1. Research Context

This research was conducted within an interdisciplinary undergraduate design program at [University of Calgary]. The program prepares students to address complex urban, social, and environmental challenges through design thinking, systems thinking, and collaborative problem-solving. The curriculum emphasizes sustainability, equity, community engagement, and futures-oriented thinking, encouraging students to critically examine contemporary issues while developing practical responses to real-world challenges. Within this context, engaging with difficult societal issues is not peripheral to the curriculum but a central component of students' learning experiences.

Data were drawn from two undergraduate courses representing different stages of students' academic journeys. Both courses were taught by the same instructor, a professor specializing in sustainability education, providing a degree of consistency in pedagogical approach and course philosophy. DSGN 241, Introduction to Sustainability in the Built Environment, is a first-year course introducing students to sustainability, systems thinking, and contemporary societal challenges through an interdisciplinary lens. DSGN 323, The Future of the Global City, is a second-year course focused on global cities and future-oriented challenges, with greater emphasis on engaging complexity, uncertainty, and social change. Although both courses explore pressing social and environmental issues, they differ in their level, expectations, and opportunities for critical reflection.

This study adopts an exploratory qualitative case study approach, using two courses within a single interdisciplinary design program as a bounded educational context. Rather than seeking statistical generalizability, the study aims to generate contextually grounded insights into how students at different stages of undergraduate education experience and make sense of engaging with difficult societal issues within this pedagogical setting.

3.2. Data Collection

Data were collected once at the beginning of each course through reflective entry surveys administered as part of routine instructional delivery. In both courses, the surveys were designed to help the course instructor gain insight into students' learning preferences, experiences, and approaches to engaging with challenging topics.

The study included two distinct student cohorts in consecutive academic terms: DSGN 241 in Fall 2024 (September–December 2024) and DSGN 323 in Winter 2025 (January–April 2025). The cohorts were independent; students whose responses were included in the DSGN 323 dataset were not the same students whose responses were included in the DSGN 241 dataset. Overall, the dataset comprised 146 student responses: 93 from first-year students enrolled in DSGN 241 and 53 from second-year students enrolled in DSGN 323. Demographic information such as age, ethnicity, geographic origin, and language background was not collected as part of the entry survey and therefore cannot be reliably characterized for the study sample.

Because the surveys were administered at the beginning of each course, students' responses preceded their exposure to the instructional activities of the focal course during that semester. The second-year students had, however, completed approximately one additional year of university study and had greater prior exposure to the program's broader curriculum and pedagogical environment. These prior educational experiences may therefore have contributed to differences between the cohorts, although individual prior course histories and specific pedagogical exposures were not tracked.

The data analyzed in this study were drawn from student responses to the following open-ended question: *"Current things happening in the world are often challenging to hear about or engage with. How do you best like to learn about difficult/potentially triggering topics? What helps you process hard things?"* The question was intended to elicit students' own preferred approaches to learning about and processing difficult topics, rather than to evaluate the instructor's teaching approaches.

Responses varied considerably in length and depth, from brief statements identifying a preferred learning format or processing strategy to more developed reflections combining learning preferences, emotional processing, discussion, information evaluation, and questions of personal responsibility or action.

The entry surveys were originally administered as part of routine instructional delivery. At the end of the course, students were informed that their work and anonymized responses might be used for future scholarship related to teaching and learning and were given the opportunity to consent to or decline such use. Only responses from students who provided consent were included in the present analysis. Further ethical considerations are described in Section 3.4.

3.3. Data Analysis

A qualitative thematic analysis was conducted using an inductive approach, informed by established guidance on thematic analysis [43,44], allowing patterns to emerge from the data rather than applying predetermined theoretical categories. Student responses were exported from the D2L course shells into separate Excel spreadsheets for DSGN 241 and DSGN 323. The first author conducted the analysis, initially examining the responses from

each course separately to preserve the integrity of each cohort and reduce the likelihood that similarities or differences would be imposed during the analysis.

Analysis proceeded through repeated reading of the responses and identification of recurring ideas related to how students described learning about and processing difficult topics. Initial descriptive codes captured ideas expressed directly in the responses, such as preferences for direct communication, advance preparation, discussion, reflection, multiple information sources, hopeful or solution-oriented framing, and strategies for managing emotional responses. Related and overlapping ideas were then compared and grouped into broader cohort-specific themes. Emerging themes, representative quotations, and analytic observations were documented in working thematic summaries and subsequently organized into a comparative table examining similarities and differences between the two cohorts.

Themes were identified based on the recurrence and coherence of ideas across responses and their relevance to the research question; no predetermined numerical threshold or formal frequency count was used to determine whether an idea constituted a theme. Accordingly, relative emphasis was interpreted qualitatively through repeated comparison of patterns across the two datasets rather than through quantitative frequency analysis. Because the analysis was not frequency-based, repeated references to the same idea within an individual response were not treated as separate numerical observations.

To remain closely grounded in students' accounts, the initial analysis focused on ideas explicitly expressed in the responses, and cohort-specific themes were developed before broader interpretations were considered. Representative quotations were retained alongside the thematic summaries to check that the themes remained supported by students' own language.

Following the within-cohort analysis, the cohort-specific themes were placed side by side in a comparative table and examined for conceptual overlap and contrast. Themes were grouped when they represented a similar underlying aspect of how students described engaging with difficult issues, even when the terminology differed between cohorts. This comparison resulted in four higher-order dimensions: engaging with difficult realities; processing and responding to difficult information; learning through others; and connecting learning to future action. For example, themes concerning directness, truth-telling, preparation, and pacing were grouped within engaging with difficult realities, while themes concerning emotional regulation, reflection, hope, and meaning-making were grouped within processing and responding to difficult information. Themes concerning dialogue, multiple perspectives, and contextual learning informed learning through others, while themes concerning information literacy, agency, responsibility, and solution-oriented engagement informed connecting learning to future action. These dimensions were therefore developed as higher-order comparative categories from the cohort-specific themes rather than as additional themes independently coded from the raw responses.

The first author conducted the initial coding, thematic organization, and cross-cohort comparison. The resulting themes and interpretations were subsequently reviewed and discussed with the second author, and the thematic organization and interpretation were refined through this process.

3.4. Ethical Considerations

The responses analyzed in this study were originally collected as part of routine course-based instructional reflection and course development rather than for a prospective research study. No application for institutional research ethics review was submitted at the time of data collection. Students were subsequently informed that their course work and anonymized responses could be used for scholarship related to teaching and learning. At

the end of the course, students were given the opportunity to provide or decline permission for such use, and only responses from students who explicitly provided permission were included in the present analysis. To protect participant privacy, all responses were anonymized prior to analysis, and any potentially identifying information was removed. Findings are reported in aggregate form and supported by selected anonymized quotations. The study was conducted as a reflective inquiry into student learning experiences and pedagogical practice, with no impact on students' course standing or final assessment.

4. Results

Analysis revealed several recurring themes related to how students prefer to learn about and process difficult societal issues. Students reflected on their preferred approaches to engaging with challenging information, their emotional responses to difficult topics, and the strategies they use to make sense of complex social, environmental, and global issues. The following sections present the themes identified within each cohort, followed by a comparative analysis of patterns observed across first- and second-year students.

4.1. Themes Identified Among First-Year Students

Analysis of first-year student responses identified six recurring themes describing how students preferred to engage with difficult societal issues. Students emphasized the importance of honest communication while also highlighting the need for emotional preparation, flexible learning approaches, and supportive environments for reflection and discussion. Together, these themes illustrate how first-year students approached challenging topics through a combination of curiosity, caution, and personal coping strategies. The themes are discussed below and summarized in Table 1 at the end of the subsection.

Table 1. Summary of themes identified among first-year students.

Theme	Key Patterns in Responses
Respect for Directness but Desire for Warnings	Context, preparation
Emotional Regulation Strategies	Reflection time
Multiple Modes of Engagement	Diverse pedagogies
Desire for Balanced or Hopeful Narratives	Solution-oriented framing
Critical Awareness and Media Literacy	Multiple sources
Openness to Conversation with Caveats	Safe discussion

4.1.1. Respect for Directness but Desire for Warnings

Many students expressed a preference for discussing difficult societal issues openly and honestly, rejecting attempts to minimize or "sugarcoat" challenging realities. At the same time, they mainly emphasized the value of advance notice or contextual framing before engaging with emotionally demanding content. Rather than avoiding difficult topics, students described wanting sufficient time and preparation to engage with them thoughtfully. One student wrote, *"Do not beat around the bush. . . understating the problem results in a lack of passionate action."* Others described trigger warnings or advance notice as helpful in preparing themselves emotionally before engaging with challenging discussions.

4.1.2. Emotional Regulation Strategies

A prominent pattern within first-year responses was the emphasis on managing emotional reactions to difficult information. Students described a variety of coping strategies, including taking breaks, writing, using humor, watching uplifting content, and focusing on aspects of a problem they felt able to influence. Several also described stepping back from issues they felt emotionally unprepared to process. As one student explained, *"If I*

find the topic especially triggering I give myself lots of time to take a breather." Another noted, "*Processing things is easier when you find ways to smile about them."*

4.1.3. Multiple Modes of Engagement

Students described diverse preferences for learning about difficult topics, with videos, documentaries, podcasts, lectures, news articles, and class discussions all identified as valuable. Visual resources were mentioned particularly often, while some students preferred independent reflection before engaging in discussion. Others noted that language proficiency or individual learning styles shaped how they processed complex information. One student explained: *"I learn best through videos and documentaries because seeing real examples helps me better understand what is happening and why it matters."*

4.1.4. Desire for Balanced or Hopeful Narratives

Although students acknowledged the importance of confronting difficult realities, many also expressed a desire for examples of progress, innovation, or positive change. Hopeful stories were described as helping maintain motivation and preventing feelings of discouragement when discussing complex societal issues. One student reflected, *"It's also important to learn of the good things happening in our world… giving a counter to the difficult topics… reminds me that although our world may be struggling, there is still steps being taken forward."*

4.1.5. Critical Awareness and Media Literacy

Many students described actively evaluating information sources by comparing perspectives, conducting independent research, and avoiding sensationalized media. Rather than relying solely on social media, students often emphasized the importance of verifying information before forming opinions. As one student stated, *"I learn better when I see both sides and get time to reflect before forming an opinion."* Such responses indicate a strong awareness of the challenges associated with navigating contemporary information environments and a desire for thoughtful engagement with multiple perspectives.

4.1.6. Openness to Conversation with Caveats

Students generally valued discussion as a way of exploring difficult issues but emphasized that meaningful conversations depended on respectful, supportive environments. Smaller groups, opportunities for private reflection, and constructive dialogue were preferred over large or confrontational discussions. These responses suggest that while first-year students welcomed diverse perspectives, they also valued conditions that promoted psychological comfort and thoughtful participation. As one student reflected, *"I prefer more independent learning to allow for me to process sensitive topics personally and not in large group settings… I will gain a deeper understanding and feel more comfortable discussing them at a later time."*

4.2. Themes Identified Among Second-Year Students

Analysis of second-year student responses identified six recurring themes describing how students preferred to engage with difficult societal issues. While many themes overlapped with those identified among first-year students, second-year responses emphasized dialogue, reflection, hope, and connecting difficult realities to meaningful action. The themes are discussed below and summarized in Table 2 at the end of the subsection.

Table 2. Summary of themes identified among second-year students.

Theme	Key Patterns in Responses
Preference for Directness and Truth-Telling	Honest discussion
Emotional Overload and Need for Digestibility	Pacing
Hope, Optimism, and Agency	Solution-oriented learning
Discussion and Reflection	Collaborative reflection
Multimodal and Contextual Learning	Authentic examples
Information Literacy and Personal Responsibility	Multiple sources

4.2.1. Preference for Directness and Truth-Telling

Students consistently expressed a preference for engaging with difficult topics openly and without minimizing their seriousness. Rather than shielding students from challenging realities, many argued that honest discussion was essential for understanding the complexity of contemporary issues. As one student noted, *"Sugarcoating things makes it harder to understand or grasp the seriousness of a topic."* Others similarly described wanting to learn the full truth, even when it was uncomfortable, believing that realism provided the foundation for critical thinking and meaningful engagement.

4.2.2. Emotional Overload and Need for Digestibility

Although students welcomed difficult conversations, many acknowledged that continuous exposure to global crises could become emotionally overwhelming. Rather than avoiding these topics, they described strategies that made them more manageable, including breaking issues into smaller parts, understanding underlying causes, and allowing time for reflection. One student explained that *"understanding the causes helps with processing… rather than becoming stuck in a loop of negative thoughts,"* while others emphasized that digestible pacing allowed them to remain engaged without feeling emotionally exhausted.

4.2.3. Hope, Optimism, and Agency

Hope emerged as a recurring element of students' responses, not as an alternative to confronting difficult realities but as something that sustained engagement with them. Students asked for examples of innovation, community action, and practical solutions alongside discussions of global challenges. As one student wrote, *"Hope is not just blind optimism… but it needs to be fed,"* while another explained that ending class with possible solutions helped prevent "pessimistic mindsets" and encouraged continued engagement.

4.2.4. Discussion and Reflection

Discussion was prominently described as an important way of making sense of difficult topics. Students valued opportunities to exchange perspectives, ask questions, and reflect collectively in respectful environments. One participant observed that *"the best way I process triggering topics is to be open-minded and patient… initial reactions are just reactions,"* illustrating how conversation was viewed not simply as sharing opinions but as part of a reflective learning process. Reflection through journaling or quiet contemplation was also commonly mentioned alongside discussion.

4.2.5. Multimodal and Contextual Learning

Students described a preference for learning through diverse and contextualized formats that connected difficult topics to lived experience. Guest speakers, storytelling, music, art, documentaries, and historical parallels were all viewed as valuable ways of

building both understanding and empathy. As one student remarked, *"It's important to talk about these topics without acting as if it's a historical case study,"* highlighting the importance of connecting contemporary issues to present-day realities and personal relevance.

4.2.6. Information Literacy and Personal Responsibility

Many students described actively evaluating information by consulting multiple sources and looking beyond social media. Several also linked learning about difficult societal issues to a broader sense of personal and professional responsibility. One student posed the question, *"If we continue to ignore these issues for personal gain, who will address them?"* Others emphasized that being informed was not only an academic responsibility but also an important step toward contributing to meaningful change.

4.3. Cross-Cohort Comparison

Although first- and second-year students shared many of the same concerns, differences emerged across several aspects of how they described engaging with difficult societal issues. Following the cohort-specific analysis, the themes identified in the two cohorts were compared side by side for conceptual overlap and contrast. Conceptually related themes were then grouped according to the broader aspect of engagement they represented. This cross-cohort synthesis produced four higher-order dimensions: (1) engaging with difficult realities; (2) processing and responding to difficult information; (3) learning through others; and (4) connecting learning to future action. These dimensions were developed after the cohort-specific themes had been established and were used as a comparative framework rather than as additional independently coded themes.

The first dimension, engaging with difficult realities, drew primarily on themes concerning directness, truth-telling, preparation, and the pacing of difficult content. Processing and responding to difficult information brought together patterns concerning emotional regulation, digestibility, reflection, hope, and meaning-making. Learning through others synthesized themes related to dialogue, discussion, multiple perspectives, and multimodal or contextual learning. Finally, connecting learning to future action reflected patterns involving critical and information literacy, agency, personal or professional responsibility, and solution-oriented engagement. Figure 1 visually summarizes the contrasts observed across these four dimensions.

The most notable contrast between the cohorts was not whether students wished to engage with difficult societal issues, but how they described that engagement. Students in both courses expressed a desire for honest communication, multiple perspectives, and respectful learning environments. However, first-year students placed greater emphasis on the conditions that enabled them to engage with challenging material, including emotional preparation, pacing, and opportunities for private reflection. In contrast, second-year students more often described engagement as an active and collaborative process involving dialogue, contextual understanding, and consideration of potential responses to complex societal challenges.

Differences also emerged in students' approaches to processing difficult information. First-year responses focused on regulating emotional reactions and maintaining personal well-being through strategies such as taking breaks, seeking balance, or temporarily stepping away from emotionally demanding topics. Second-year students acknowledged similar emotional challenges but more commonly described reflection, discussion, and meaning-making as ways of working through complexity rather than distancing themselves from it.

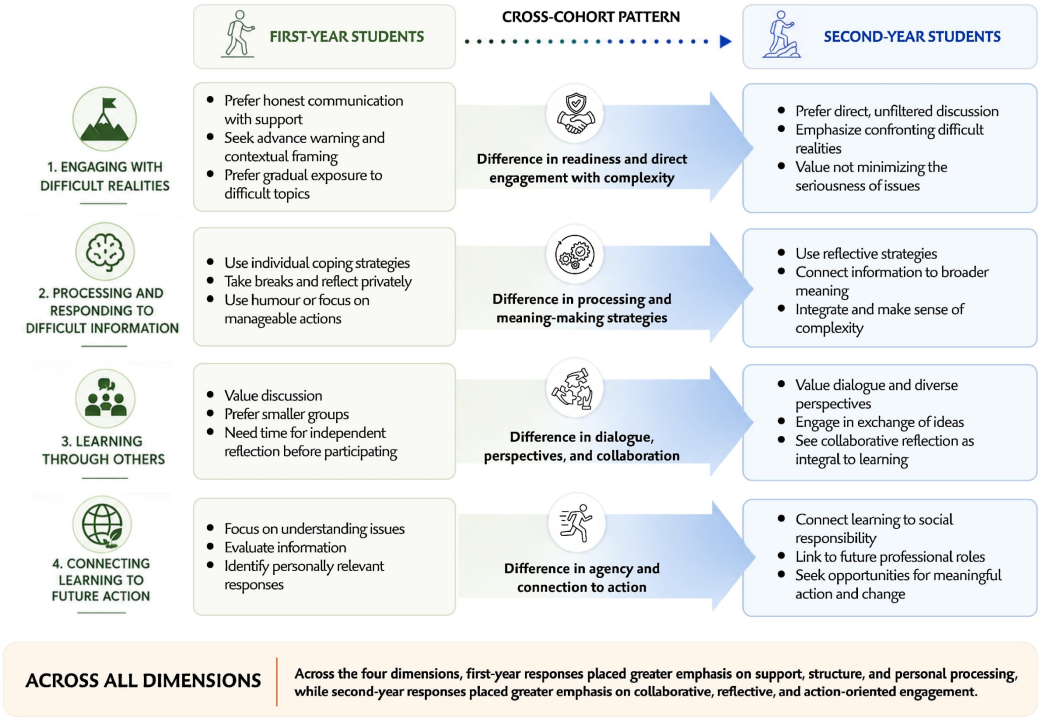


Figure 1. Cross-cohort synthesis across four dimensions of engagement (Arrows represent differences in emphasis observed between the two cohorts and should not be interpreted as longitudinal change within individual students).

A further distinction was evident in how students connected learning to action. While both groups recognized the importance of understanding contemporary societal issues, second-year students more linked their learning to broader questions of professional responsibility, community engagement, and contributing to positive change. First-year students, by comparison, more often emphasized developing a personal understanding of issues before considering how they might respond.

Taken together, these patterns suggest that the principal differences between the cohorts lay not in their willingness to engage difficult societal issues, but in the ways, they described engaging with, processing, and responding to those challenges.

5. Discussion

The present study identified differences in how first- and second-year students described their preferred approaches to learning about and processing difficult societal issues. First-year students mainly emphasized emotional preparation, structured learning environments, and individual coping strategies, whereas second-year students more often highlighted dialogue, reflection, multiple perspectives, and connecting learning to future action. These findings suggest that the primary difference between cohorts lay in the kinds of conditions and strategies students described as helpful for working with complexity.

These cross-cohort differences should not be attributed to developmental progression alone. The second-year students had completed an additional year of university study and had greater exposure to the program's curricular and pedagogical environment before entering DSGN 323. Their stronger emphasis on dialogue, reflection, contextual understanding, and agency may therefore reflect, at least in part, prior educational experiences and curricular scaffolding alongside broader developmental differences. This possibility is particularly relevant to the concept of the inner curriculum, as it suggests that students' capacities for engaging with complexity may be shaped not only by maturation but also by

the cumulative learning environments and pedagogical experiences encountered across a program [19,45].

The particular educational context of this study is also important to the interpretation of these patterns. Students were enrolled in an interdisciplinary, sustainability-oriented design program in which complex social, environmental, and urban challenges form a central part of the curriculum rather than a peripheral topic. Even at entry to the first-year course, students' expectations and preferred ways of approaching such issues may therefore differ from those of students in programs where sustainability and societal complexity are less prominent. The Canadian institutional context and students' prior educational and personal experiences may also shape these orientations, although these influences were not examined in the present study. The findings should therefore be understood as contextually situated patterns rather than as a universal first-to-second-year developmental sequence.

These observations also invite a more precise positioning of the inner curriculum. The capacities grouped under this term are not themselves new to higher education. Competency frameworks, student-development theories, transformative learning, contemplative pedagogy, and sustainability education have long recognized that learning involves not only disciplinary knowledge but also skills, dispositions, identity, agency, relational capacities, and ways of making meaning. Litfin, for example, explicitly used the term inner curriculum in higher education to describe capacities including self-awareness, tolerance of ambiguity, engagement with diversity, civic discourse, and collaborative action, while more recent sustainability-oriented approaches such as the Inner Development Goals similarly foreground inner and relational capacities for engaging complex societal challenges [10,37].

We therefore do not propose the inner curriculum as a wholly new or separate domain of learning. Rather, we use the term as an integrative lens for making these developmental capacities more visible alongside formal disciplinary learning and, particularly, for considering how they might be intentionally scaffolded across the undergraduate experience. The contribution of the present study lies in grounding this lens in students' own accounts of how they prefer to learn about and process difficult societal issues and in identifying differences in emphasis across two stages of early undergraduate study.

Across both cohorts, students described a range of conditions and strategies they considered helpful when learning about and processing difficult societal issues. These included honest discussion, multiple perspectives, opportunities for reflection, contextual framing, emotional preparation, and supportive learning environments. First-year students placed greater emphasis on contextual framing, emotional preparation, and psychological comfort, whereas second-year students more often emphasized dialogue, reflection, and connections to action. These patterns suggest that students' preferences concerned not only the content through which difficult issues were encountered, but also the pedagogical conditions surrounding that learning. This finding aligns with research in sustainability education and critical pedagogy, which suggests that meaningful engagement with complex issues depends not only on curricular content but also on the pedagogical environments in which learning occurs [35,36,46]. It is also consistent with more recent empirical work demonstrating that dialogic learning, psychological safety, and opportunities for reflection enable students to engage more openly with uncertainty, controversial issues, and diverse perspectives [5,47]. At the same time, whereas much of the existing literature has focused on instructional strategies or desired learning outcomes, the present findings foreground students' own perspectives on the conditions that make engagement possible. The findings therefore suggest that students' preferred ways of working with complexity are shaped not only by the nature of the issues under discussion but also by the pedagogical conditions through which those issues are encountered [8].

The findings also intersect with scholarship on trauma-informed pedagogy. In particular, first-year students' emphasis on advance preparation, pacing, emotional regulation, and supportive conditions for discussion resonates with trauma-informed approaches that emphasize regulatory capacity, relational support, and students' psychological resources [48]. The relevance of this literature here is pedagogical rather than diagnostic; the present study did not assess students' experiences of trauma. Importantly, students' responses emphasized conditions for processing difficult material, including preparation, pacing, reflection, and supportive discussion, rather than providing evidence about whether such material should or should not be included. This distinction is consistent with recent critiques cautioning against equating pedagogical care with the removal of discomfort and emphasizing instead the development of learners' capacity to engage constructively with difficulty [49]. From this perspective, trauma-informed pedagogy and the inner curriculum may be complementary: supportive conditions may provide scaffolding through which students can practice navigating complexity, uncertainty, and emotionally challenging material rather than withdraw from it [48,49].

These observations also raise broader questions about how higher education conceptualizes scaffolding. Educational scaffolding has traditionally focused on supporting progression in disciplinary knowledge and cognitive development. Bloom's Taxonomy, for example, provides one of the most influential frameworks for describing this progression, with curricula intentionally designed to move students from foundational knowledge toward increasingly sophisticated forms of analysis, evaluation, and creation [25,26]. Similarly, constructive alignment emphasizes sequencing learning experiences so that students progressively achieve intended disciplinary outcomes [12].

The cohort differences observed here are consistent with the possibility that higher education involves a complementary developmental dimension concerned with navigating uncertainty, negotiating multiple perspectives, processing emotionally challenging realities, and connecting understanding to responsible action. This interpretation is consistent with scholarship arguing that higher education should intentionally cultivate students' capacity to navigate complexity, exercise agency, and address adaptive societal challenges through applied, real-world learning experiences rather than relying solely on disciplinary instruction [9]. Building on these observations, we conceptualize this complementary developmental dimension as the inner curriculum. Unlike the outer curriculum, which intentionally scaffolds disciplinary progression, the inner curriculum concerns the capacities involved in engaging complexity itself. This distinction complements recent calls to broaden conceptions of student learning beyond disciplinary knowledge acquisition by paying greater attention to how students come to engage with knowledge and complexity during the undergraduate experience [14]. Rather than replacing established models of curriculum design, this concept complements them by drawing attention to developmental processes that are often implicit rather than intentionally scaffolded within higher education.

Perry's theory of intellectual and ethical development provides a useful conceptual lens for interpreting these patterns. Perry proposed that students' understanding of knowledge often develops from dualistic views of right and wrong toward multiplicity, relativism, and ultimately commitment within uncertainty [28]. Although the present cross-sectional study cannot demonstrate developmental progression or assign students to specific positions within Perry's framework, the observed differences resonate with several aspects of this trajectory. In particular, the movement from emphasizing structure and certainty toward dialogue, contextual understanding, multiple perspectives, and action-oriented engagement is consistent with broader theories describing increasing intellectual and ethical complexity throughout the undergraduate experience [29,30]. This interpretation

also aligns with transformative learning theory, which suggests that engagement with uncertainty and competing perspectives can foster increasingly complex ways of making meaning [50], and with contemporary sustainability education, which similarly positions systems thinking, reflexivity, and action competence as developmental capacities rather than isolated skills [7,34]. Nevertheless, these frameworks primarily describe desired constructs or desired outcomes, whereas the present study contributes students' own descriptions of the conditions and strategies they prefer when learning about and processing difficult societal issues during the early undergraduate years.

Overall, the findings support making the developmental dimensions of learning more explicit within curriculum design. Formal curricula already encompass more than disciplinary knowledge alone and may include collaboration, agency, judgement, identity development, and other capacities discussed here. The distinction between an "outer" and "inner" curriculum should therefore be understood as analytical rather than absolute: the two dimensions overlap and develop in interaction. The value of foregrounding the inner curriculum is that capacities such as navigating uncertainty, processing difficult realities, engaging multiple perspectives, exercising reflective judgement, and developing agency can otherwise remain implicit rather than intentionally sequenced and supported. Making these developmental aims more visible may help educators consider how disciplinary learning and students' ways of engaging with complexity can be scaffolded together [14,21].

6. Implications for Transformative Higher Education

The findings suggest potential value in a more intentional approach to supporting students' engagement with complex societal issues throughout the undergraduate experience. Although transition research has traditionally concentrated on university entry and the first year, recent work highlights the second year as a comparatively underexamined period in which students continue to negotiate changing expectations, engagement, independence, and their place within the university environment [20]. Supporting students not only academically but also developmentally across these early undergraduate years may therefore help them engage with increasingly complex learning experiences and societal challenges. Existing higher-education scholarship provides examples of pedagogical approaches through which related developmental capacities can be intentionally supported. In sustainability education, transformative and experiential approaches have combined critical reflection, collaborative learning, authentic real-world challenges, and design thinking to develop agency, sustainability mindsets, and confidence in responding to complex problems [14,51]. More recent work on the inner dimensions of sustainability education similarly emphasizes pedagogies that cultivate reflection, awareness of positionality, relational learning, perspective-taking, purpose, and agency [14]. These approaches suggest that scaffolding the inner curriculum need not require a separate set of courses; rather, developmental capacities can be intentionally embedded within disciplinary learning through the design and sequencing of learning experiences. The present study suggests three practical considerations for curriculum and pedagogical design:

- First, given students' expressed preferences for engaging with difficult societal issues, they may benefit from opportunities that are intentionally scaffolded across courses within a program or curriculum rather than left as an implicit outcome of higher education. Progressive developmental support during the early undergraduate years may help create conditions in which students can engage with complexity in ways that are responsive to their stated needs and preferences.

- Second, students may benefit from pedagogical approaches that are responsive to their expressed preferences at different stages of undergraduate study. For example, contextual framing, reflection, and opportunities for emotional processing may be particularly valuable in the earlier stages, while increasing opportunities for dialogue, perspective-taking, and collaborative problem-solving may support students as they progress. This might include reflective journals or positionality exercises, guided case discussions that progressively increase in complexity, structured dialogue and perspective-taking, and collaborative engagement with authentic problems. Such strategies may provide opportunities for students to practice reflection, relational engagement, judgement, and agency while gradually assuming greater responsibility for their learning.
- Third, students may be better supported in developing their capacities for engaging with complex societal issues when curricula move beyond fostering awareness alone and create structured opportunities to connect understanding with informed judgement, agency, and responsible action. For example, discussions of complex issues might culminate in collaborative, solution-focused projects that invite students to evaluate alternative responses and consider meaningful actions within their communities or future professional practice.

Collectively, these approaches may help higher education respond more intentionally to students' expressed preferences while supporting the developmental capacities needed to work thoughtfully and constructively with complex societal challenges.

7. Conclusions

This study contributes to a growing body of scholarship examining how higher education can support students in working with increasingly complex societal challenges. First- and second-year students differed in how they described their preferred approaches to learning about and processing difficult issues. First-year students placed greater emphasis on emotional preparation, structure, and individual processing, whereas second-year students more often emphasized dialogue, reflection, multiple perspectives, and connections to action. These cross-cohort patterns are consistent with the possibility that capacities for engaging with complexity develop alongside students' broader educational experiences during the undergraduate years. However, because the study compared distinct cohorts and did not track individual curricular trajectories, it cannot establish developmental change or determine the contribution of specific disciplinary or pedagogical experiences to the observed differences. The findings point toward the importance of scaffolding not only the outer curriculum of disciplinary knowledge and cognitive development, but also the inner curriculum—the developmental capacities through which students learn to navigate uncertainty, engage multiple perspectives, exercise informed judgement, and respond thoughtfully to complex societal realities (Figure 2). Conceptualizing these capacities as an inner curriculum provides a way of connecting established theories of educational scaffolding and student development while extending current conversations about transformative higher education.

Future research should examine these capacities longitudinally by following the same students across the undergraduate experience and documenting the curricular and pedagogical experiences they encounter over time. Such designs would make it possible to distinguish developmental change from cohort differences and to examine more directly how particular forms of scaffolding contribute to students' capacity to engage complexity. In an era increasingly defined by complexity rather than certainty, one of higher education's most significant contributions may lie not only in teaching students about society's greatest challenges, but also in cultivating their capacity to engage them thoughtfully, responsibly,

and constructively. Ultimately, preparing graduates to navigate complexity, engage diverse perspectives, and act thoughtfully and responsibly in uncertain contexts may be among higher education's most enduring contributions to long-term social change.

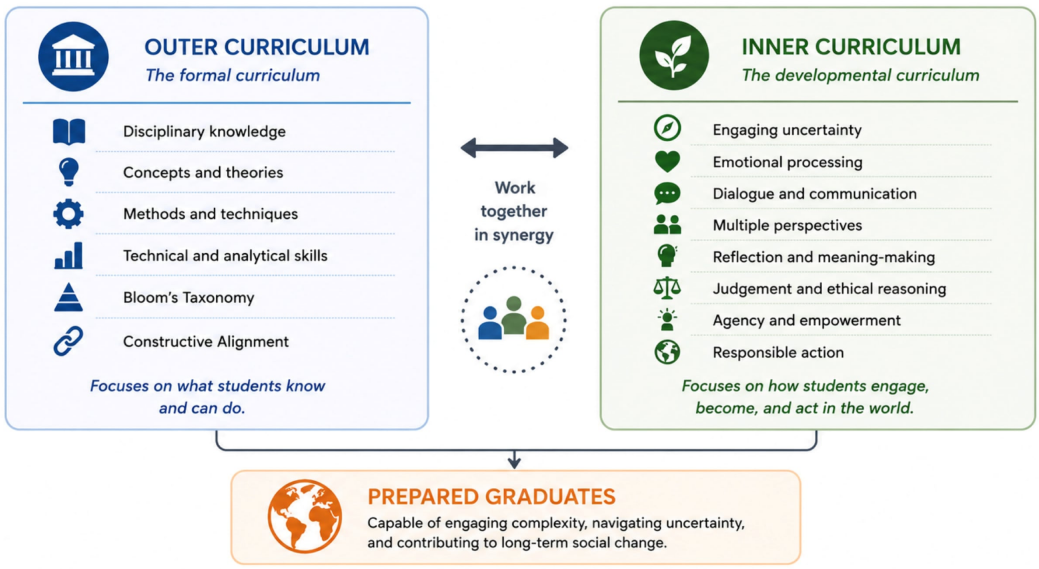


Figure 2. A conceptual synthesis of complementary dimensions of learning in higher education.

8. Limitations

This exploratory qualitative case study has several limitations. First, the findings are drawn from a single sustainability-focused undergraduate design program at one Canadian university and may not be transferable to other disciplinary or institutional contexts. Second, the cross-sectional comparison of first- and second-year students provides insight into cohort differences but cannot establish developmental change over time or disentangle developmental differences from the potential influence of prior curricular and pedagogical experiences or other cohort-specific factors. Finally, the analysis was based on students' written responses to a single open-ended question that was part of a routine introductory assignment. Future research employing longitudinal designs, multiple data sources, and diverse educational contexts would strengthen understanding of how students develop the capacity to engage complexity throughout higher education.

Author Contributions: Conceptualization, T.C.B.; methodology, P.M.S.; formal analysis, P.M.S.; writing—original draft, P.M.S.; writing—review & editing, T.C.B.; visualization, P.M.S.; supervision, T.C.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Because the data were originally collected as part of routine course-based instructional reflection and intended for course development rather than as a prospective human-subjects research study, formal ethical review was not sought. Students were asked for permission to use anonymized responses for presentations related to teaching and learning and were given the opportunity to consent to or decline such use. Only responses from students who provided permission were included in the analysis. All responses were anonymized before analysis, and findings are reported in aggregate form with selected anonymized quotations. Participation had no impact on students' course standing, assessment, or relationship with the instructional team.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available from the corresponding author upon reasonable request. The data are not publicly available due to participant privacy considerations and the conditions under which informed consent for the use of the responses was obtained.

Acknowledgments: The authors thank the students who participated in this study by sharing their thoughtful reflections and experiences. Their contributions made this work possible.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Hess, D.J.; Maki, A. Climate change belief, sustainability education, and political values: Assessing the need for higher-education curriculum reform. *J. Clean. Prod.* **2019**, *228*, 1157–1166. [CrossRef]
2. Leal Filho, W.; Shiel, C.; Paço, A.; Mifsud, M.; Ávila, L.V.; Brandli, L.L.; Molthan-Hill, P.; Pace, P.; Azeiteiro, U.M.; Vargas, V.R. Sustainable development goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *J. Clean. Prod.* **2019**, *232*, 285–294. [CrossRef]
3. Constantinou, C.S. A reflexive goal framework for achieving student-centered learning in European higher education: From class learning to community engagement. *Societies* **2020**, *10*, 75. [CrossRef]
4. Norton, D.; Norton, F.-A.; Veciana, S. Connected art practice: Transformative learning environments for transdisciplinary competences. *Societies* **2024**, *14*, 33. [CrossRef]
5. Trott, C.D.; Lam, S.; Roncker, J.; Gray, E.-S.; Courtney, R.H.; Even, T.L. Justice in climate change education: A systematic review. *Environ. Educ. Res.* **2023**, *29*, 1535–1572. [CrossRef]
6. Sterling, S. Higher education, sustainability, and the role of systemic learning. In *Higher Education and the Challenge of Sustainability: Problematics, Promise, and Practice*; Springer: Dordrecht, The Netherlands, 2004; pp. 49–70.
7. Wiek, A.; Withycombe, L.; Redman, C.L. Key competencies in sustainability: A reference framework for academic program development. *Sustain. Sci.* **2011**, *6*, 203–218. [CrossRef]
8. Balser, T.C. University leadership that enables sustainability education and scholarship. In *The Routledge Handbook of Global Sustainability Education and Thinking for the 21st Century*; Routledge India: New Delhi, India, 2025; pp. 805–823.
9. Andenoro, A.C.; Sowcik, M.J.; Balser, T.C. Addressing complex problems: Using authentic audiences and challenges to develop adaptive leadership and socially responsible agency in leadership learners. *J. Leadersh. Educ.* **2017**, *16*, 1–19. [CrossRef]
10. Litfin, K.T. The contemplative pause: Insights for teaching politics in turbulent times. *J. Political Sci. Educ.* **2020**, *16*, 57–66. [CrossRef]
11. Huang, R.X.; Pagano, A.; Marengo, A. Values-based education for sustainable development (vbesd): Introducing a pedagogical framework for education for sustainable development (esd) using a values-based education (vbe) approach. *Sustainability* **2024**, *16*, 3562. [CrossRef]
12. Biggs, J. Enhancing teaching through constructive alignment. *High. Educ.* **1996**, *32*, 347–364. [CrossRef]
13. Wood, D.; Bruner, J.S.; Ross, G. The role of tutoring in problem solving. *J. Child Psychol. Psychiatry* **1976**, *17*, 89–100. [CrossRef] [PubMed]
14. Fagerholm, N.; Coles, N.; Beery, T.; Torralba, M.; Hakkarainen, V.; Albert, C.; Andersson, E.; Bergström, R.; Bieling, C.; Gentin, S. Operational principles for fostering transformative qualities and capacities in higher education sustainability science and practice. *Sustain. Sci.* **2026**, *21*, 365–379. [CrossRef]
15. Moffett, J.; Hammond, J.; Murphy, P.; Pawlikowska, T. The ubiquity of uncertainty: A scoping review on how undergraduate health professions' students engage with uncertainty. *Adv. Health Sci. Educ.* **2021**, *26*, 913–958. [CrossRef] [PubMed]
16. Tinto, V. *Leaving College: Rethinking the Causes and Cures of Student Attrition*; University of Chicago press: Chicago, IL, USA, 2012.
17. Chickering, A.W.; Reisser, L. *Education and Identity. the JOSSEY-Bass Higher and Adult Education Series*; Jossey-Bass Inc.: San Francisco, CA, USA, 1993.
18. Mousavi Samimi, P.; Mousapour, B.; Alizadeh Asli, A.; Patiar, A. Built environment usability and freshmen's coping skills: The mediating effect of place attachment. *Archit. Sci. Rev.* **2023**, *66*, 433–442. [CrossRef]
19. Timmis, M.A.; Hibbs, A.; Polman, R.; Hayman, R.; Stephens, D. Previous education experience impacts student expectation and initial experience of transitioning into higher education. In *Proceedings of the Frontiers in education, Washington, DC, USA, 13–16 October 2024*; Frontiers Media SA: Lausanne, Switzerland, 2024; p. 1479546.
20. Hodgkin, K.; Young, N.; Smith, E.R.; Woolridge, B.; Morris, T. 'The often-forgotten middle child': Student transitions and engagement through higher education. *Cogent Educ.* **2025**, *12*, 2579717. [CrossRef]
21. Masava, B.; Nyoni, C.N.; Botma, Y. Scaffolding in health sciences education programmes: An integrative review. *Med. Sci. Educ.* **2023**, *33*, 255–273. [CrossRef] [PubMed]

22. Vygotsky, L.S. *Mind in Society: The Development of Higher Psychological Processes*; Harvard university press: Cambridge, MA, USA, 1978; Volume 86.
23. Puntambekar, S.; Hubscher, R. Tools for scaffolding students in a complex learning environment: What have we gained and what have we missed? *Educ. Psychol.* **2005**, *40*, 1–12. [CrossRef] [PubMed]
24. Murtagh, L.; Webster, M. Scaffolding teaching, learning and assessment in Higher Education. *Teach. Educ. Adv. Netw. J.* **2010**, *1*.
25. Anderson, L.W.; Krathwohl, D.R. *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives: Complete Edition*; Addison Wesley Longman, Inc.: Boston, MA, USA, 2001.
26. Bloom, B.S.; Engelhart, M.D.; Furst, E.J.; Hill, W.H.; Krathwohl, D.R. *Handbook I: Cognitive Domain*; N.Y. David McKay: Philadelphia, PA, USA, 1956; pp. 483–498.
27. Biggs, J.; Tang, C. *Teaching for Quality Learning*; Society for Research into Higher Education: Buckingham, UK, 2003.
28. Perry, W.G., Jr. *Forms of Intellectual and Ethical Development in the College Years: A Scheme. Jossey-Bass Higher and Adult Education Series*; Jossey-Bass Inc.: San Francisco, CA, USA, 1999.
29. Magolda, M.B.B. *Making Their Own Way: Narratives for Transforming Higher Education to Promote Self-Development*; Routledge: Abingdon, UK, 2023.
30. King, P.M.; Kitchener, K.S. *Developing Reflective Judgment: Understanding and Promoting Intellectual Growth and Critical Thinking in Adolescents and Adults. Jossey-Bass Higher and Adult Education Series and Jossey-Bass Social and Behavioral Science Series*; Jossey-Bass Inc.: San Francisco, CA, USA, 1994.
31. King, P.M.; Kitchener, K.S. Reflective judgment: Theory and research on the development of epistemic assumptions through adulthood. *Educ. Psychol.* **2004**, *39*, 5–18. [CrossRef] [PubMed]
32. King, J.; Brundiers, K.; Fischer, D. Student agency in a sustainability-oriented assessment process: Exploring expansive learning in student-led rubric co-design. *Assess. Eval. High. Educ.* **2024**, *49*, 851–863. [CrossRef]
33. O'Grady, M. Transformative education for sustainable development: A faculty perspective. *Environ. Dev. Sustain.* **2025**, *27*, 20745–20761.
34. Brundiers, K.; Barth, M.; Cebrián, G.; Cohen, M.; Diaz, L.; Doucette-Remington, S.; Dripps, W.; Habron, G.; Harré, N.; Jarchow, M. Key competencies in sustainability in higher education—Toward an agreed-upon reference framework. *Sustain. Sci.* **2021**, *16*, 13–29. [CrossRef]
35. Freire, P. Pedagogy of the oppressed. In *Toward a Sociology of Education*; Routledge: Abingdon, UK, 2020; pp. 374–386.
36. Hooks, B. *Teaching to Transgress*; Routledge: Abingdon, UK, 2014.
37. Nordén, B. Advancing sustainability through higher education: Student teachers integrate inner development goals (IDG) and future-oriented methodologies. *Challenges* **2024**, *15*, 28. [CrossRef]
38. Lozano, R.; Barreiro-Gen, M.; Lozano, F.J.; Sammalisto, K. Teaching sustainability in European higher education institutions: Assessing the connections between competences and pedagogical approaches. *Sustainability* **2019**, *11*, 1602. [CrossRef]
39. van der Wee, M.L.; Tassone, V.C.; Wals, A.E.; Troxler, P. Characteristics and challenges of teaching and learning in sustainability-oriented Living Labs within higher education: A literature review. *Int. J. Sustain. High. Educ.* **2024**, *25*, 255–277. [CrossRef]
40. Sundman, J.; Feng, X.; Shrestha, A.; Johri, A.; Varis, O.; Taka, M. Experiential learning for sustainability: A systematic review and research agenda for engineering education. *Eur. J. Eng. Educ.* **2025**, *51*, 1173–1203. [CrossRef]
41. Pham Xuan, R.; Håkansson Lindqvist, M. Exploring sustainable development goals and curriculum adoption: A scoping review from 2020–2025. *Societies* **2025**, *15*, 212. [CrossRef]
42. Araneo, P. Exploring education for sustainable development (ESD) course content in higher education; a multiple case study including what students say they like. *Environ. Educ. Res.* **2024**, *30*, 631–660. [CrossRef]
43. Braun, V.; Clarke, V. Using thematic analysis in psychology. *Qual. Res. Psychol.* **2006**, *3*, 77–101. [CrossRef]
44. Nowell, L.S.; Norris, J.M.; White, D.E.; Moules, N.J. Thematic analysis: Striving to meet the trustworthiness criteria. *Int. J. Qual. Methods* **2017**, *16*, 1609406917733847.
45. Young, D.G.; Bunting, B.D. Rethinking college transitions: Legitimate peripheral participation as a pathway to becoming. *AERA Open* **2024**, *10*, 23328584241255631. [CrossRef]
46. Wals, A.E.; Jickling, B. "Sustainability" in higher education: From doublethink and newspeak to critical thinking and meaningful learning. *High. Educ. Policy* **2002**, *15*, 121–131. [CrossRef]
47. Lodge, J.M.; Kennedy, G.; Lockyer, L.; Arguel, A.; Pachman, M. Understanding difficulties and resulting confusion in learning: An integrative review. In *Proceedings of the Frontiers in Education, San Jose, CA, USA, 3–6 October 2018*; Frontiers: Lausanne, Switzerland, 2018; p. 49.
48. Funfar, M.G. Out of trauma comes strength: The trauma-informed positive education (TIPE) model. In *Strategies and Methods for Implementing Trauma-Informed Pedagogy*; IGI Global Scientific Publishing: Hershey, PA, USA, 2022; pp. 208–224.
49. Bakshi, P. Between care and avoidance: Ethical limits of trauma-informed pedagogy in education. *Ethics Educ.* **2026**, 1–15. [CrossRef]

50. Mezirow, J. *Learning as Transformation: Critical Perspectives on a Theory in Progress. The Jossey-Bass Higher and Adult Education Series*; Jossey-Bass Inc.: San Francisco, CA, USA, 2000.
51. Macagno, T.; Nguyen-Quoc, A.; Jarvis, S.P. Nurturing sustainability changemakers through transformative learning using design thinking: Evidence from an exploratory qualitative study. *Sustainability* **2024**, *16*, 1243. [CrossRef]

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.