



Transformative education for sustainable development: A faculty perspective

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Abstract

Transformative learning focuses on stimulating a radical reassessment of worldviews on the part of students. Such learning outcomes resonate with practitioners concerned with education for sustainable development. However, research on applying transformative learning within higher education for sustainable development is limited. Thus, the objective of this study is to obtain a deeper understanding of what is happening at the institutional level. The research question guiding this study asks what the experience of faculty who harness transformative learning when teaching sustainability topics is. Results indicate that the successful adoption of transformative learning in sustainability programs within higher education is realistic. Participants prioritized critical thinking and analysis as these were deemed attainable within the prevailing operational constraints. Moreover, participants were obliged to reassess their professional roles; this exercise was considered a crucial determinant of success. Their traditional role as the expert in the classroom was exchanged for one emphasizing co-learning and co-creation of knowledge. On a personal level, participants were compelled to examine their values, behaviors, and worldviews comprehensively.

Keywords Education for sustainable development · Transformative learning · Sustainability · Higher education

1 Introduction

Education is crucial for a successful societal transition to more sustainable lifestyles. Since its earliest days, the sustainability discourse has incorporated the concept of Education for Sustainable Development (ESD) (Barth et al., 2015). ESD is intrinsic to the 2030 Sustainable Development Goals (SDGs). In 2019, UNESCO adopted a global framework—Education for Sustainable Development: Towards Achieving the SDGs (ESD for 2030) (UNESCO, 2019). This initiative, scheduled to operate from 2020 to 2030, is in the process of being ramped up. The road map for ESD for 2030 is unambiguously focused on the SDGs and enabling the “*great individual and societal transformation required to address the*

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urgent sustainability challenges" (UNESCO, 2020, p. 3). ESD is subsequently defined as a *"holistic and transformational education that addresses learning content and outcomes, pedagogy and the learning environment,"* enabling *"a shift from teaching to learning,"* and thus requiring an *"action-oriented, transformative pedagogy which supports self-directed learning, participation and collaboration, problem-orientation, interdisciplinarity and transdisciplinarity and the linking of formal and informal learning"* (UNESCO, 2017, p. 7). However, it is emphasized that competencies cannot be merely taught; instead, learners must enhance their skills through action based on experience and reflection.

Integrating ESD in higher education poses many difficulties (Franco et al., 2019); one problem is an undue focus on the environmental dimension (Wu & Shen, 2016). Historically, the broad education sphere was tasked with preparing students for the so-called global economy. Challenges now arise as the international sustainability discourse is inextricably linked to values, ethics, and geopolitics issues. Thus, lecturers must construct a personalized understanding of their educational practice (Sund, 2016). The observation of Hicks and Bord (2001) is perhaps as relevant today as it was in 2001, namely that: *"many educators, despite their commitment to global understanding, may make things worse for students by teaching about global issues as if this were solely a cognitive endeavor"* p. 423.

Many challenges arise when integrating ESD into curricula (Grosseck et al., 2019; Karatzoglou, 2013). Mainstreaming ESD requires fully integrating curricula and learning outcomes (Gregersen-Hermans, 2021). Two distinct learning outcome categories are identified: empowerment, which focuses on independent critical thinking, and behavior modification, which seeks to encourage an alteration in learners' habits that conform with ideals (Disterheft et al., 2013). However, there is a lack of empirical studies on sustainability in universities and how ESD affects students' behavior (Badea et al., 2020).

1.1 Transformation for ESD

Transformative Learning (TL) (Mezirow, 2009) was first introduced in the late 1970s and has evolved since then. In essence, TL is an adult education paradigm consisting of 10 phases (Table 1). It refers to that learning in adulthood where individuals radically reassess their values and belief systems, resulting in a new worldview. Such changes in worldview are inherently epistemological rather than simply acquiring new knowledge. TL's evolution over four decades is testimony to its robustness. For some, TL may be considered a *"living*

Table 1 Ten phases of transformative learning, as defined by Mezirow (2009)

Phases of Transformative Learning	
1.	A disorienting dilemma
2.	A self-examination with feelings of fear, anger, guilt, or shame
3.	A critical assessment of assumptions
4.	Recognition that one's discontent and the process of transformation are shared
5.	Exploration of options for new roles, relationships, and action
6.	Planning a course of action
7.	Acquiring knowledge and skills for implementing one's plans
8.	Provisional trying of new roles
9.	Building competence and self-confidence in new roles and relationships
10.	A reintegration into one's life on the basis of conditions dictated by one's new perspective

theory” (Anand et al., 2020). For others, it is regarded as an analytic metatheory (Hoggan, 2016a).

Agency and action are recurring themes in ESD (Rieckmann, 2018). Such concepts are alien in many academic disciplines but must be reconciled within ESD. TL offers one possible approach and is thus of interest to the ESD community (Rodríguez Aboytes & Barth, 2020; Moyer & Sinclair, 2020; Elliott, 2010). The justification for this interest recognizes a need for “*a fundamental shift—from learning how to understand to learning how to act and transform*” (Schnitzler, 2019, p. 243). However, ESD and TL represent two schools or disciplines, and the bridge between them is currently weak (Schnitzler, 2019, p. 244).

2 Related research

Operationalizing and measuring sustainability is practically impossible without a standardized definition (Moore et al., 2017). Many studies need to define sustainability or identify a definition that they subscribe to, for example, that of the UN. In this discussion, sustainability is best thought of as a goal, whereas sustainable development is regarded as the process through which this goal is achieved. Common to both terms is the need for education and transformation (Wamsler, 2020; Balsiger et al., 2017). Likewise, fundamental to ESD is the notion of transformation (Dannenberg & Grapentin, 2016; Ichinose, 2017). UNESCO speaks of the need for a “*profound transformation*” in thinking and acting. ESD is perceived as transformational education, demanding inherently transformative pedagogies. Such emphasis on transformation has led educationists in sustainability to seek and evaluate pedagogies that encapsulate such characteristics. Thus, TL is seen by many as one such pedagogy (see, e.g., Rodríguez Aboytes and Barth, 2020; Singer-Brodowski et al., 2019).

Mainstreaming ESD demands its full integration into both curricula and learning outcomes (Gregersen-Hermans, 2021). Multiple studies of ESD curricula are documented. Ceulemans and De Prins (2010) outline a methodology for teachers when introducing sustainability into curricula. Glavič (2020) observed a lack of suitable content for ESD programs and proposed an exemplary sustainable development course model. Badea et al. (2020) acknowledge the need for empirical studies of sustainability by universities and how ESD affects students’ behavior, concluding that actions must be voluntary rather than compulsory. Hajdukiewicz and Pera (2020) advocate using MOOCs, arguing that they promote inclusion and gender equality, thereby enabling an equitable approach to lifelong learning. Incorporating ESD into a curriculum impacts teaching staff in the first instance. A study in Australia highlights the need for academics to engage in personal transformation if they are to attain a capacity to teach ESD (Wahr et al., 2013). Several examples of TL as an enabler of ESD are documented in the literature (see, e.g., Rodríguez Aboytes and Barth, 2020; Boström et al., 2018).

TL is a “*living theory*” in the view of Anand et al. (2020). Taylor (1998, 2007, 2017) has tracked the evolution of TL theory over several years. Hoggan (2016b) has focused on learning outcomes. Romano (2018) concentrated on assessment tools. TL continues to be adopted, and experiences are reported in the literature, even though there is some ambiguity over the term TL.

Pedagogy and practice may be shaped by one’s own learning experiences as a student. Attia (2014) explores the effect on teacher education via interviews with three in-service language teachers. The importance of teacher training in helping unpack their experiences is highlighted. Such training was considered a transformative process for the participants

where their beliefs and previous experiences were radically challenged. Bain et al. (2019) explored teachers' experiences as they adopt a dualistic teacher/student role when completing a qualification while teaching. Cooley and De Gagne (2016) document a hermeneutic–phenomenological study that explores the experience of novice nursing faculty in academia. An exploratory case study of TL by Blake et al. (2013) observed a need for staff to be comfortable with the possibility of unpredictable and difficult situations arising.

In summary, the disconnect observed by Cotton et al. (2009) between the theory of both ESD and TL, and what was being practiced on the ground, is still valid. Interest in the potential of TL for ESD remains steadfast. Nonetheless, there needs to be more empirical evidence that suggests that it is the best approach for ESD. Moreover, the degree to which TL is feasible within the constraints of higher education is an open question. The experience of teaching faculty in higher education has been comparatively neglected, and what is currently happening on the ground needs to be clarified. Thus, this study aims to obtain detailed insights into the everyday experience of those operating at the coalface at were. The research question for this study is then as follows:

What is the experience of faculty in Higher Education Institutions when adopting a Transformative Learning approach in Education for Sustainable Development?

For a more detailed background to this study and some additional perspectives, see O'Grady (2021).

3 Methods

3.1 Study design

In this study, the worldview is constructivism, comprising an ontology of relativism and an epistemology of subjectivism. The strategy of inquiry is qualitative. A phenomenological methodology was identified as best suited to the core theme under investigation, namely experience. Phenomenology provides a framework to help explore fundamental questions concerning the what and the how of human experiences as these relate to a particular phenomenon. Experience is defined as the “*lived experience*” that differentiates transitory everyday experiences from those more profound and temporally coherent.

Several flavors of phenomenology exist; this study harnesses interpretative phenomenological analysis (IPA) (Smith et al., 2012). IPA acknowledges that researchers' conceptions are at once a necessity and a source of bias as they seek to gain an insider perspective. Likewise, the participants in a study are, in parallel, trying to make sense of their world and explain it. Thus, interpretation is a two-way process or a double hermeneutic. In this way, the voice of study participants and the interpretation of their narratives by the researcher both contribute to the quest for sense-making.

Ethical approval for this study was sought and obtained from the National College of Ireland.

3.2 Strategy and participants

Participants were recruited via non-random purposive convenience sampling. Two international initiatives in the broad domain of sustainable development agreed to advertise this study among their networks. On receiving expressions of interest, a detailed

description of the study was furnished, as well as practical issues concerning the interview protocol, data management, and confidentiality. If agreeable, consent forms were signed and returned, after which an interview was scheduled. IPA encourages semi-structured interviews with a small homogenous participant sample such that convergence and divergence can be examined in detail. All interviews were conducted in English.

There is no absolute or ideal number of participants in an IPA study. The most important feature is that all participants have had meaningful experiences of the phenomenon under investigation. For this study, seven participants contributed. Five were female; and two were male. Six are based in mainland Europe; and one is based in Australia. All are currently teaching in higher education institutions. All participants had practical experience with TL when teaching sustainability.

Each interview was one hour, including some time for debriefing. All interviews were recorded, and contemporaneous notes were taken. Transcriptions of interviews were then prepared, and participants were allowed to correct them. All participants availed themselves of this option. All data were maintained in compliance with both GDPR and ethical guidelines.

3.3 Questions

A schedule of 9 questions was constructed for interviews and shared with participants before the interview. Questions tended to be open-ended, allowing the participant ample time to reflect and prepare their answer. Some participants tended to think out loud, which was very illuminating. Sometimes, additional follow-up questions were asked. Occasionally, the discussion covered themes included in subsequent questions. Thus, the schedule of questions was not strictly adhered to. As all participants were teaching sustainability, the background context and focus were mostly on TL. For the interviewer, it was in seeking to understand their “journey” to TL and with TL that guided the discussion and would subsequently inform the answer to the research question driving the study. The advice of Guerrero-Castañeda et al. (2017) for conducting phenomenological interviews was followed. Questions asked included the following:

Q1: What is your understanding of the term “Transformative Learning”?

Q2: How did you become interested in Transformative Learning?

Q3: Tell me about your use of Transformative Learning in your teaching.

Q4: When adopting Transformative Learning, what has been the reaction of your students? Colleagues? Institution?

Q5: Why do you think Transformative Learning is an appropriate approach when teaching topics relating to sustainability?

Q6: What particular challenges do you see for Transformative Learning practitioners?

Q7: What particular benefits do you see for Transformative Learning practitioners?

Q8: So, looking at Transformative Learning in the future: how do you envisage Transformative Learning developing in your practice or, more generally, within your school or department?

Q9: Have you used Transformative Learning only in face-to-face teaching, or have you used it when teaching online?

3.4 Analysis

Transcripts were analyzed qualitatively using MAXQDA Analytics Pro by the author. When preparing transcriptions, the focus was on verbatim replication and the participant's experience. In this way, participants' voices are prioritized. A thematic analysis aligned with the steps suggested by Smith et al. (2012) was undertaken. Such an IPA analysis is iterative and inductive.

A process of repeated reading, augmented with cross-checking of the audio, was undertaken to ensure familiarization with the data. Initial ideas for codes and themes were recorded using a traditional paper and marker approach. In the second stage, items from the complete dataset for one participant were systematically identified and coded. Where possible, the context was maintained. Where necessary, data were coded multiple times as contradictions and inconsistencies were to be expected. Moreover, data and codes that seemed to diverge from provisional emergent themes were explicitly retained. The third stage explored potential relations between codes, sub-themes, and overarching themes. In searching for themes, the scrutinizing techniques of Ryan and Bernard (2003) were followed; these techniques include looking for repetition, indigenous typologies, metaphors and analogies, and theory-related material. Stage 4 involved repeating stages 1–3 for all the other six cases.

Stage 5 focused on developing coherent patterns across cases; it is both an iterative and inductive process. The first step constituted reviewing the themes and codes and assessing them for coherence. A potential superordinate thematic map was produced. This map was then systematically considered in its totality, and its coherence was confirmed. For this last step, the advice of Patton (1990) was followed with themes being judged by their "internal homogeneity" and their "external heterogeneity." The final stage, Stage 6, comprised the final analysis and report. Here, the advice of Bazeley (2013) was followed; the significance of identified themes, their interrelationships, their implications, and their relation to the literature were guiding principles.

Ensuring qualitative research's rigor, trust, and quality raises challenges due to paradigm, epistemology, and ontology diversity. For this study, the guidelines of Lincoln and Guba (1986) were utilized. Credibility was addressed by aligning the underpinning theory, the research question, and the research strategy. Dependability is safeguarded as all procedural steps in this study are documented, allowing replicability. Within the boundaries of GDPR, the prevailing context is factored into the findings ensuring transferability.

4 Results

Four superordinate themes emerged from the analysis; each is now discussed. All participants are anonymized for this discussion and referred to as P0# going forward. The resultant themes that emerged, both superordinate and subordinate, are illustrated in Table 2.

4.1 Role and identity—Lecturer? Facilitator? Co-creator?

Motivations for adopting TL varied among participants. For P06, motivation was driven by what pedagogies are best for sustainability. In contrast, for P05, it was a desire to make classes more interesting for students. For others, an acute awareness of a need for

Table 2 Superordinate and subordinate themes

Themes	
Superordinate	Subordinate
Role and identity—Lecturer? Facilitator? Co-creator? Participants were obliged to reassess their previous assumptions concerning their understanding of their profession.	Background: Here, participants' journey to TL and their triggers for embracing TL are considered. Nature of teaching: Participants reassessed their views and expectations of the teaching profession as part of their respective journeys. Role of the Teacher: After reassessing the intrinsic nature of the profession, participants reflected on what applying TL would mean for their practice (the practical issues faced in the classroom are considered under Operationalizing Transformation). Need for support: Adopting TL was experienced as a different or even radical choice. Participants emphasized the need for support from experienced practitioners.
Transformation in Practice Participants were obliged to consider their understanding of the "transformative" in TL.	Nature of TL: Participants confronted the meaning of transformation in TL. Personal transformation: Transformation is not just for others (students). Participants were obliged to consider TL within the context of their own lives. Emotion: TL has an emotional dimension that participants must understand and anticipate. Culture: Response to TL needs consideration of cultural diversity.
Operationalizing Transformation The practical application of TL on the ground posed many questions.	University: Participants pondered whether TL aligns with the mission of a modern HEI or university. Students: Strategies for mitigating students' concerns needed consideration. Online delivery: Participants were obliged to consider the implications of TL in online contexts.
Transformation for ESD Participants reflected on their experience of ESD.	Nature of sustainability: Participants developed a more complex model of sustainability. Personal responsibility: Sustainability is not an abstract concept; rather, it has a personal dimension. Possible futures: The future is intrinsic to ESD.

behavioral change developed, and the possibilities of TL emerged in response to a realization that *"people don't know how to change, or they don't want to change, or they're afraid of changing"* (P02). Thus, behavioral change is transversal, demanding deep self-reflection such that the lecturer becomes:

"a person who's deeply engaged in the practice of transformation, and both at the thinking level but also at the embodied level" (P07).

TL required a radical reconsideration of the lecturer's role. Initially, a need emerged to make lecturers' pedagogy explicit. In the first instance, lecturers should acknowledge that *"I do not see myself as the knowledgeable person who knows everything"* and that TL *"goes beyond knowledge transmission"* (P04). Furthermore, it is argued by P03 that *"transformative learning processes can only be enabled"* and that I can only *"create some rooms for it."* As students are unlikely to have encountered such a pedagogy previously,

P06 advises making a “*pact*” with the students; in addition, lecturers should develop and promote an “*experimental attitude to learn together*” (P03). P04 concurs, seeing learning as a collaborative process that gives “*way more opportunity to learn together with the students.*” Thus, lecturers must see themselves more as facilitators. Likewise, students must understand that the role of the lecturer is no longer one of information transmission.

Challenges for lecturers in adopting TL are many. The primary challenge concerns that of role, moving from being the in situ expert to one of “*learning and coaching facilitation*” (P04). P07 further notes that lectures must be prepared to learn through collaboration and co-creation, drop the “*authority dimension,*” and overcome the omnipresent fear that “*they’re going to be found out to be frauds.*” P05 focuses on the practical issues of career development, noting that students’ feedback has implications for tenure and contract renewal.

In summary, when adopting TL, lecturers need to reflect fundamentally on their role, be ready to radically reassess how they undertake their responsibilities and consider how they may best prepare their students for what may be a completely different educational experience.

4.1.1 Transformation in practice

Participants confronted the essence of TL. P06 views TL as “*a life-long process that requires a contained and continuous dynamic*” or “*a different ontology of human being.*” For P01, TL is a “*conversation with students.*” Such differing views are acknowledged by P02, who perceives much confusion about what TL actually is, which she attributes to the broad range of practices adopted by TL practitioners. The need for a safe space is a prerequisite for P04 because “*you touch vulnerable topics, or you discuss about so many things that go way beyond knowledge and go to the values.*”

P03 perceives increasing reflexivity as the most significant outcome of TL, for both lecturers and students. One natural consequence of sustained reflexivity is that of personal transformation. In the view of P02, confusion may result as “*you don’t know where you are in the transformation process.*” However, lecturers must be open to their own transformation; moreover, lecturers must not just be prepared to change but expect to change when engaging in TL. Thus, as perceived by P03, TL represents a “*deep structural shift*” in our mindsets and our relationships with the environment, other people, and ourselves. In the view of P01, personal transformation is a prerequisite for personal sustainability.

P07 perceives emotion as a critical element of “*what we call the transformative.*” Likewise, P04 sees emotional stability as a prerequisite for student engagement in TL. This need is accentuated in the case of sustainability in the experience of P03; when faced with climate change or global injustice, students risk being overwhelmed with sadness and grief, especially if they consider themselves part of a world responsible for such situations. However, this should not deter the lecturer, in the view of P04, from “*integrating some emotional or some embodied exchange processes or exercises*” into their praxis. In this way, TL becomes dynamic and relevant:

“It’s always about experimenting, experiencing things, about acting things out and also about connecting to emotions and the feelings” (P04).

Culture is also perceived as intrinsic to transformation; increasingly, student classes constitute many nationalities, cultures, and languages. Some students may be accustomed to formal teaching processes where hierarchy and memory dominate and thus

find TL difficult. For example, some cultures are comfortable discussing personal issues, others less so. Moreover, students may find voicing criticism, and even their own opinions, challenging:

“it’s way more difficult to engage in transformative learning processes because it’s nothing that they are used to and voicing something critical, for example, our own opinions, are often not asked for in classes” (P04).

In summary, the notion of transformation is not limited to the professional educational sphere. It has an intrinsically personal dimension for lecturers and students that may demand confronting significant obstacles that encompass and conflate experience, worldview, expectations, emotions, and culture.

4.2 Operationalizing transformation

Delivering TL in real-life posed many practical challenges. At the heart of this theme is an obligation to reconcile TL with a university’s mission and operational procedures. However, it demands confronting, addressing, and mitigating students’ concerns.

What constitutes a university continues to preoccupy academics and society (see, e.g., Newman, 2008). Both sustainability and TL contribute to this discourse—one that remains active while always seeking to crystallize the purpose of the university and higher education:

“Because it’s always a little bit like what is the role of the University” (P04).

P02 agrees, seeing the university as a place where *“I can make a difference”* but also *“serving society and the world.”* Society often perceives a disconnect between academia and the real world. Both sustainability and TL are perceived by P03 as challenging this disconnect, acknowledging an acute need for an awareness of *“what other kinds of epistemologies are in the world outside our academic ivory tower.”*

A fundamental question arises as to whether TL is a classical pedagogy. P04 sees TL as being primarily applicable in self-development. A question then arises as to whether TL should take place in higher education, again querying the role of a university. P03 reinforces this view, observing that TL processes are *“self-regulated and self-organized,”* thus challenging prevailing models of time-constrained, evaluation-focused lecturing. Practical difficulties are emphasized by P05, encompassing class size, classroom layout, and timetables. The possibilities offered by TL to enable discussion about controversial issues were highlighted:

“What are our transformation strategies towards a sustainable society? Who’s involved with which interests? Which power position?” (P03).

Students find TL radically different from conventional approaches as observed by P03 as *“they are quite unfamiliar with such a kind of learning journey.”* Thus, students are *“out of their comfort zone”* (P02), resulting in doubts, confusion, and criticism. Introducing group work can be beneficial, but students may *“rebel because somehow they lose control of their scores”* (P05). In the experience of P04, the need to share feelings is one that students find difficult. However, lecturers must be acutely aware that students can be at different stages of the TL process and thus have different needs regarding attention, guidance, and support.

In summary, TL can only be undertaken with due cognizance being paid to the mission of the institution in question and society's expectations. With this overall context, students' differing learning journeys must be facilitated.

4.3 Transformation for ESD

Sustainability is complex, comprising an environmental dimension with economic and social dimensions. Each dimension must be considered in ESD, but a more holistic view was manifested. P04 views sustainable development as intrinsically a *"transformative societal learning process."* P07 views sustainability primarily as *"a question of our relationship"* rather than an ecological or economic construct. Personal responsibility is intrinsic for sustainability; for P06, TL is an enabler of that change of view of oneself and of the world that is a prerequisite for sustainability, demanding that one *"looks at your own habits in terms of how can you kind of [move] towards a sustainable lifestyle and how can you change these habits and personal Lifestyle behavior that you have"* (P02).

A change of life emerges from such an exercise, resulting in oneself being *"modest with consumption of all kinds of materials, energy, information and so on"* (P01). Lecturers should then expose students to problems of sustainable development and encourage them to explore ways of solving these problems.

The future is intrinsic to sustainability and is reflected in teaching activities. P01 advocates grounding this discussion initially within climate change, biodiversity, and initiatives such as the SDGs. But future challenges facing society, such as the healthy aging problem, should also be considered. Ultimately, TL in ESD is *"about getting the confidence and competencies to critically reflect to be able to envision new futures"* (P04). Imaginary exercises about possible futures are encouraged and should also include the *"impossible future"* (P06).

"There are many futures and the transformative is the space in between" (P07).

In summary, TL within the context of ESD cannot be decoupled from how one lives at present nor the pursuit of a better future for everybody.

5 Discussion

Participants' respective journeys to adopting TL all differ, but the motivation was broadly similar. It was increasingly recognized that what was considered conventional best practice was, in fact, insufficient. One step toward such a realization may result from several years of practice from which a wealth of experience informs the lecturer about what works—in the classroom, for particular student cohorts, and for the specific topic being taught. Such experience challenges the lecturer to question themselves, especially in their practice, as what may have been attractive and sensible at the start of their career may no longer suffice. Such self-analysis has all the characteristics of reflective practice and reflexivity (see, e.g., Borie et al., 2020; Ryan and Murphy, 2018; Kreber, 2012).

Inherent within sustainability is a need for action. Participants who had taught topics with a solid sustainability component followed this route to TL. Given the nature of the topic, they realized that conventional approaches in their didactic and pedagogical dimensions were insufficient. Such a realization might indeed be termed transformative, although

no participant characterized it as such. This call for action is not necessarily a singular characteristic of sustainability; instead, it may also be attributed to an obligation on the part of the lecturer to practice what they preach and to be seen to do so in the eyes of their students and perhaps to a lesser degree, in the view of the colleagues and institution. Interestingly, the call for action is consistent with and implicitly grounded in transdisciplinarity (Knapp et al., 2019). It transcends disciplinary boundaries, focusing on real-life, complex problems, and is intrinsically solution-focused (Hoffmann et al., 2017).

TL's interpretation and implementation are diverse. For teaching professionals, it is essential to consider and understand the essence of TL before it can be fruitfully harnessed in the classroom. No participant recalled any of their lecturers engaging in TL. Ultimately, participants needed to reassess two personal issues profoundly—(i) their understanding of TL, and (ii) how adopting TL would affect themselves as individuals and professionals. In this way, participants reflected, reformatted, and refined their identity as lecturers (Illeris, 2014; Hegarty, 2008). No participant regretted adopting TL or planned on replacing it with another pedagogy. While a deep understanding is a prerequisite, acquiring such an understanding is problematic due to the diversity of interpretations of TL in existence (Anand et al., 2020).

Lecturers and teaching staff are often referred to as facilitators or co-creators in the TL literature. However, participants in this study never identified their job title as a problem. Nonetheless, there was a consensus that their view of themselves changed, and such a change in perspective could prove problematic. In essence, the lecturer must no longer view themselves as the resident expert in the classroom. Instead, they must be comfortable acknowledging that they do not have the answer to a question but be at ease in inviting students to engage in a process of co-learning with themselves and their co-students. Such an approach is radical in that it fundamentally changes how lecturers see themselves, present themselves, and relate to the subject matter and their students. In essence, their role changes from knowledge transmitters to one of enabling knowledge discovery. Adopting such a role is inherently transformative; lecturers find this transition difficult due to their experiences and the expectations foisted upon them. Nevertheless, making this transition is fundamental if their adoption and application of TL are to be successful. Lecturers must freely, openly, and comfortably acknowledge their limitations. In doing so, lecturers can liberate themselves from their expectations of themselves and students' expectations of the lecturers' role. However, setting aside their expert profile and the implicit authority role that comes with this is difficult for those used to such a role. Active support from institutions is usually lacking the degree to which conventional establishments can support TL has been questioned (Sterling, 2011). Lecturers should not be afraid to look outside their professional circles for guidance and encouragement.

Introducing TL into the classroom poses various challenges. Most problematic is the response of students and its potential ramifications. Students arrive in the classroom with both education and life experience; however, they also come with expectations, and it is here that a critical problem arises. Students have no experience with TL; in all probability, they have no exposure to alternative pedagogies and may thus struggle (Joubert & Slabbert, 2017). Naturally, they expect the lecturer to fulfill the traditional role of knowledge transmitter, contrary to TL's ethos and principles. The first challenge for the lecturer is to manage this expectation. The difficulty is exacerbated if students regard themselves as paying customers and the lecturer as a service provider. Good practice suggests making the pedagogy (TL) explicit to the class but without overloading students with additional terminology and concepts.

In the classroom, culture and emotion pose additional obstacles. Students from certain cultures will be used to a rigidly hierarchical and authoritative structure in the classroom. Transitioning to TL poses different challenges in that questioning, arguing, and debating might be alien to them. A deeper problem arises in that deep reflection, including self-reflection, and the critical thinking necessary for TL will invariably pose additional challenges. Interestingly, using online technologies reduced this problem; it was surmised that students are more comfortable in their environment and thus feel freer to contribute and share.

Emotion is now acknowledged as an integral part of TL (Mälkki, 2019); initially, Mezirow did not consider emotion but subsequently acknowledged its role in TL. Emotion has ramifications for learning and memory retention (Tyng et al., 2017). One of the attractions of TL is that it allows space for discussion on sensitive or controversial topics. However, such topics invariably generate an emotional response; lecturers must anticipate scenarios encompassing liminality and emotions (Förster et al., 2019) and be prepared to manage them.

TL challenges both lecturers and students to reconsider their views of assessment. A perceived lack of clarity will emerge for students who are used to traditional assessment forms as they cannot identify a clear path toward obtaining their desired grade. Thus, students may feel they need to be more in control of their learning and may challenge lecturers. One approach being adopted is rubrics; here, a degree of transparency is introduced that guides both lecturer and student. However, rubrics can be problematic (Gallardo, 2020); they may be subjectively interpreted, and students can mistakenly prioritize certain elements and perhaps limit their creativity as a result.

Transformation is not temporally bound; furthermore, transformation cannot be objectively quantified and assessed. Even though changes in behavior and thinking are crucial dimensions of TL, such changes cannot be meaningfully and consistently assessed when viewed through the lens of competence development. Those harnessing TL must understand that assessment brings considerable challenges and that a naïve assessment scheme will not suffice. One approach focused on students' evidence of critical or higher-order thinking. Such a method is consistent with TL and is tractable within institutional constraints. Participants employed a range of techniques, including learning journals. Nonetheless, how to best assess a transversal competence such as critical thinking as a skill or a learning outcome remains open to debate. Stimulating critical thinking for sustainability is seen as essential by many (see, e.g., Thomas, 2009); thus, it is a skill equally needed by both students and lecturers.

Sustainability is transversal, multifaceted, and complex (Jay et al., 2017)—the number and diversity of the SDG indicators are testimony to the difficulty in neatly conceptualizing and defining sustainability. Each participant in this study had a different interpretation. Some were entirely holistic, others more scientifically focused. Hence the intrinsic nature of sustainability makes it particularly challenging to teach; indeed, sustainability poses metachallenges that lecturers in other disciplines do not face (Anastasiadis et al., 2020). For a fuzzy topic such as sustainability, a consensual view cannot be presented, and it is better to prepare students to cope with uncertainty, divergent values, and different interpretations of problems and their solutions. An alternative view, articulated by Wals and Corcoran (2006), envisages sustainability as just one input for transformative learning, arguing that in a deep democracy context, it is far more critical to focus on new ways of thinking about difference rather than forging consensus.

In conclusion, the teacher's role in the classroom remains under-researched (DeAngelis, 2021), and TL practitioners are no exception. Lecturers and students are always at different

stages of their transformation journey, and an awareness of this should be manifested continuously. Overall, a view of TL emerges that is remarkably consistent with that of Wals and Corcoran (2006), who envisages TL as constituting four shifts—(i) transdisciplinary, (ii) transcultural, (iii) transgenerational, and (iv) transgeographical. Such a view demands a radical redesign of educational systems, which is unlikely as “*the academy remains notoriously stubborn in changing its unidirectional, hierarchical, and essentially reproductive approach of teaching*” (p. 105).

6 Future directions

This study has several limitations that should be understood when considering its results. Firstly, the gender, age, experience, and subject matter expertise all differed. Such an imbalance may introduce biases and limitations that are not immediately obvious but may only become apparent later. Secondly, the degree to which findings may be transferred to other contexts, that is, generalizability, should be approached with caution. While effort has been made to provide sufficient context and detailed description, the reader must determine how the findings may apply to their situation.

Several streams of further research emerge from this study. Analyzing both the student and institutional perspectives would complement and extend this research. In the former case, a longitudinal study on the impact of transformative education on students’ and lecturing staff’s personal and professional lives would inform subsequent developments in ESD. In the latter case of the institution, issues concerning quality and assessment are of the utmost importance. Finally, a more rigorous definition of transformative learning for the specific context of higher education would benefit the ESD community.

In conclusion, harnessing TL within education for sustainable development has been accomplished. This endeavor demanded a thorough and transformative reassessment of lecturers’ professional and personal lives. Sustainability is never perceived as an abstract concept or a subject for which the mere transmission of facts and knowledge is sufficient. Instead, it is seen as a societal obligation and collective endeavor. Sustainability for lecturers must indeed be a “*lived experience*.”

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Data availability Due to the confidential nature of this research, data were not retained.

Declarations

Conflict of interest The author has no conflicts of interest to report.

Ethical standard The Ethical Code for Education Programmes Research of the National College of Ireland (NCI) was adhered to in this study.

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