

The Sustainability Change Laboratory

Fostering Transformative Agency for Sustainability Integration

in Higher Education

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Abstract

Despite the urgency of sustainability transformation, Higher Education (HE) institutions worldwide have been slow to embrace their role in promoting sustainable development. The extant literature about HE sustainability integration debates this issue frequently in terms of organisational barriers and drivers such as leadership, collaboration, resourcing, incentives, and stakeholder engagement. However, there is growing recognition that static views of these barriers are insufficient, and a more dynamic understanding of transformative efforts is needed. This requires attention to the processes by which this change can be achieved and to the concept of agency in this context - areas still largely underexplored in this field.

This thesis explores process and agency in sustainability integration in higher education by considering a research intervention at an Austrian University. Using Change Laboratory methodology grounded in Cultural-Historical Activity Theory (CHAT), the project engaged staff and student participants in online sessions to examine current sustainability practices and co-develop new solutions, such as strategies for curricular integration and new learning options for students. The research focuses on how transformative agency, understood in turn through the lenses of expressions, turning points, and the Transformative Agency through Double Stimulation (TADS) model, emerged throughout the intervention. Research data are derived from session recordings, collaborative participant outputs, surveys, and a research diary.

The findings show how transformative agency, traced through participants' agentic expressions, emerged throughout the intervention, with three turning points denoting a shift in emphasis from explicating the university's role in sustainable development and criticizing current conditions, to envisioning shared solutions, and finally to developing concrete implementation plans for sustainability learning pathways. TADS analysis further explores the process and mechanisms by which sustainability agency emerged as aspirational and systemic conflicts of motives were surfaced, reflecting the nature of sustainability-focused projects where motivated participants, driven by their own values and

broader social concerns, are challenged by institutional realities. Participants demonstrated agency by rejecting researcher-provided stimuli in favour of their own, and by arguing strongly that all students should engage with sustainability issues, even when this conflicted with arguments about upholding student choice.

This study contributes to the literature investigating HE sustainability integration approaches by advancing a dynamic, participatory and process-oriented approach that foregrounds learning, systemic understanding and the transformative agency of participants and productively employs contradictions as catalysts for change. It contributes a detailed, theory-informed account of how collective agency develops through mediated engagement. Conceptually, it proposes reframing the fragmented notion of sustainability agency as a form of transformative agency, offering a new model of sustainability agency based on the theoretical foundations rooted in CHAT.

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Author's declaration

This thesis results entirely from my own work and has not been submitted for the award of a higher degree elsewhere.

I declare that the word-length of this thesis, which exceeds the standard maximum for the programme of study, conforms to stipulations granted and approved on behalf of the Senate of Lancaster University.

Use of Generative AI

I acknowledge the use of AI tools during this research. The following tools were used:

Descript was used for initial session transcription, which I manually reviewed and corrected. I used **ChatGPT** (OpenAI, GPT-5, accessed between 2024-2025) to assist with language refinement and restructuring. **Napkin.ai** was used to create illustrations presenting outcomes and concepts.

All writing, analysis, and final decisions remain my own.

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1 Chapter 1: Introduction and Background

1.1 Introduction

As the first quarter of the 21st century is coming to a close, prospects for a peaceful and prosperous future of humanity on an intact planet Earth seem dire. The optimism of the late 20th century has turned into anxiety and trepidation for many people, as political and economic conflicts are on the rise globally, environmental degradation is rampant, the consequences of unabated global warming are becoming increasingly severe, and democratic values, human rights and the rule of law seem to be in decline.

Global agreements such as Agenda 2030 (United Nations, 2015) with the Sustainable Development Goals (SDGs), agreed on by the United Nations in 2015, and the Paris Climate Agreement (UNFCCC, 2015), adopted by 195 nations in the same year, seemed promising achievements of the international community to set humanity on a path of sustainability¹ (World Commission on Environment and Development, 1987). Yet despite these agreements, progress on the SDGs and similar initiatives is stalling if not declining (United Nations, 2024), and global solidarity, international alliances and collaboration are undermined by nationalistic interests, economic competition, unsustainable

¹ My interpretation of "sustainability" as used in this thesis is based on the "Brundtland definition" of sustainable development derived from the 1987 report titled "Our Common Future", produced by the World Commission on Environment and Development chaired by Gro Harlem Brundtland: "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (World Commission on Environment and Development, 1987, p. 43). I am, however, taking a more dynamic and expansive view and define sustainable development as a collective process of reimagining and transforming social, economic, and ecological systems with the aim to foster justice, resilience, and regeneration for present and future life on Earth. Sustainability is the underlying principle enabling this process.

exploitation of natural resources, and blatant disregard of international law, human rights, and equal opportunities for all.

In this daunting context, education generally, and Higher Education Institutions (HEIs) in particular, are faced with decisions to be made about what responsibility they have and what role they can play to promote and support sustainability. HEIs are places where future leaders, innovators and professionals are educated, where innovative solutions and new knowledge necessary to help solve current and future challenges are developed, and from where thought leaders emerge and influence public discourse (Barth & Rieckmann, 2015; Franco et al., 2019; Leal Filho, Shiel, et al., 2019; Purcell et al., 2019). Many universities have also traditionally been safe spaces where radical new ideas are generated, where students and academics join in communities that engage in activism and advocacy, and from where social change can emerge (Karatzoglou, 2013; Purcell et al., 2019), even though academic freedom is now under attack in many parts of the world (Cracium, 2025; Scholars at Risk, 2024).

However, many universities are not living up to the opportunities their position awards them. Sterling (2021) posits that neoliberal thinking has limited education's purpose, scope, and depth by narrowing its goals, content, and pedagogy over the past decades, with the consequence that many universities are in stasis, ignoring the challenges facing society and their role in addressing these. Sterling argues that:

We need to break down barriers through communication and networking, dispersed and transformative leadership, intergenerational initiatives, inter- and transdisciplinarity, and action research and community initiatives. This emerging path offers a relational, ecological, participative, and holistic alternative that speaks to the real needs of individuals, communities, and the planet (Sterling, 2021, p.5).

The realization of this alternative vision of transformative Higher Education (HE) that promotes sustainability is hampered by many aspects of the current system. Dominant epistemologies fail to address questions about fundamental values and ethics (McGeown & Barry, 2023; Mochizuki & Vickers, 2024), and prevailing

institutional structures and academic systems pose significant challenges (Leal Filho et al., 2017; Mallow et al., 2020; Price et al., 2021). Existing literature typically frames these challenges through discussions of organisational barriers and drivers, including leadership, collaboration, funding, incentives, and stakeholder involvement (Leal Filho et al., 2017; Weiss et al., 2021).

Despite these challenges, change is not only possible but urgent and essential (Cebrián et al., 2020; Sterling, 2021). There are many positive developments in the HE context, where HEIs transform their curricula (Weiss & Barth, 2019), re-focus their research agendas (Alcántara-Rubio et al., 2022), intensify their community engagement (Mittal & Bansal, 2024a) and reform their campus operations to contribute to sustainable development (Fia et al., 2022; Menon & Suresh, 2020). Several networks such as the Higher Education Sustainability Network², the UN Principles for Responsible Management Education³ (UN PRME), and the Copernicus Alliance⁴ provide platforms for exchange of good practice and collaboration at regional, national and international level. Accreditation bodies such as EQUIS⁵ and AACSB⁶ increasingly include sustainability and social impact in their criteria, and dedicated university rankings (e.g. Times Higher Education Impact Rankings⁷, Positive Impact Rating⁸) measure and compare universities' performance in this space.

² <https://sdgs.un.org/HESI>

³ <https://www.unprme.org/>

⁴ <https://www.copernicus-alliance.org/>

⁵ <https://www.efmdglobal.org/accreditations-assessments/business-schools/equis/>

⁶ <https://www.aacsb.edu/>

⁷ <https://www.timeshighereducation.com/impactrankings>

⁸ <https://www.positiveimpactrating.org/>

Creating the conditions for and promoting a transformation towards sustainability, however, remains a challenge each HEI has to address within its specific institutional context. And even though many universities seek to integrate sustainability principles, the process is often framed as a managerial task, obscuring the deep contradictions, negotiations, and emergent forms of agency required for transformative change. There is a growing acknowledgement that fixed interpretations of barriers fall short, and that a more fluid and process-oriented perspective on transformative change is necessary (Scahill & Bligh, 2025; Verhulst & Lambrechts, 2015). This calls for closer examination of how such change unfolds, and of the role of agency within these processes - dimensions that remain relatively underexplored in current scholarship.

It is within this context that the study described here aims to make a contribution in a novel way. The “Sustainability Change Laboratory” (SCL) was (and is) an attempt to respond to the imperative for change and the challenges mentioned above at my own place of work, a university of applied sciences in Austria. Despite a longstanding commitment to responsibility and sustainability, a combination of terms used internally to denote the university’s aspiration to contribute to sustainable development as defined above, my university has struggled to truly transform its culture, organisation and practices towards sustainability in a way that does not only fulfil accreditation requirements and the rhetoric of what it means to be a responsible university in the current context, but that reaches the university’s full potential as a leader in sustainable development with impact locally and in the region, and through its rich network of universities and other partners internationally.

Feeling the need to do something about the slow progress we were making despite the urgency to act was a key part of my decision to conduct an intervention in order to help accelerate this transformation. The SCL was a research intervention carried out between January and April 2024 at my university as a series of seven sessions with 18 staff and student participants. Based on the Change Laboratory (CL) methodology rooted in Cultural-Historical

Activity Theory (CHAT), the SCL engaged participants in critical reflection about the current sustainability efforts at the university and then facilitated co-creative collaboration to develop new models of sustainability integration. The project was conducted in the context of my doctoral research, but it was much more than a research project – it was a step towards accelerating my university’s sustainability transformation. Building on existing initiatives and structures, I wanted to take a different approach to expand their impact and open new possibilities through co-creation and collaboration with a group of engaged and motivated participants keen to support these efforts.

With its focus on agency, this project addresses a concept that has so far received limited attention in the research about Higher Education for Sustainable Development (HESD). Employing theoretical concepts and conceptual tools based on CHAT, the intervention explores how the group of research participants developed transformative agency, defined as “breaking away from the given frame of action and taking the initiative to transform it” (Virkkunen, 2006) and more recently “understood as collective strivings towards the common good” (Sannino, 2022). With the clear agenda to not only identify and trace the emergence of, but also explore how to foster, transformative agency in this context, the project is closely aligned with the aspirations of 4th Generation CHAT (Engeström & Sannino, 2020), which has been labelled an activist and interventionist theory (Sannino, 2011).

This chapter provides an introduction to the thesis by first explaining my personal motivation to conduct this study. I will then describe the practice context presenting the environment the study is situated in, with its key characteristics and challenges. The following sections discuss the policy context of HESD and the research context with a short summary of the key aspects debated in the literature and the limitations of the current body of knowledge. Next, I will position my research project within these contexts and finally provide an outline of the chapters to follow.

1.2 Personal motivation

I have been involved in sustainability integration at my university since 2017, when I assumed the role of coordinating the institution's activities around responsible management education and SDG integration. At first, this was a mere side job on top of my role as learning designer, which I took on because of strong intrinsic motivation and the desire to do more in this area than we, as an institution, were doing at that stage. I first assisted the coordinator at the time with administrative tasks and reporting, and gradually took over his role fully. Through my engagement with colleagues in sustainability focussed networks outside of the university, especially in the UN PRME regional chapter, by attending relevant conferences and other learning offers, and reading HESD related literature, my understanding of the urgency to act on scientific knowledge regarding current unsustainable practices grew.

At the same time, my grasp of the vital role HEIs can play in sustainable development and my sense of responsibility for what my own university was doing (or not doing) increased. Due to my institution's historical foundations as a business school, the role of business in sustainable development played a strong role in this (see also section 1.3 for the practice context). I became more aware of the political context globally and locally, and more active in university and network initiatives. I gathered a community of colleagues interested in sustainability and motivated to further this agenda at the university, the SDG Ambassadors, organised an international video contest within the UN PRME network inviting students to share their perspectives of responsible management education, and planned a range of sustainability events.

During this role shift, I was first encouraged by my line manager to invest in these additional tasks. Gradually, the workload became too much and I had to decide whether I wanted to continue my career as a learning designer of over 20 years or make a change to be fully dedicated to sustainability integration. This was a difficult decision, captured in an auto-ethnographic account (Obexer, 2022), but

my passion and sense of responsibility for advancing the sustainability agenda at the university and more generally prevailed. In 2021, I assumed the full-time position as head of the newly established “Center for Responsible Management & Social Impact”, which I have led since then. I am proud to say that we have achieved positive developments and successes over the years, for example by hosting an international conference on responsible management education and other events, establishing an annual sustainability week with strong student involvement, progressing an SDG mapping project, and founding a climate team. However, I know that more is possible and necessary, especially with regards to interdisciplinary collaboration across the various university departments and the focus on SDG integration and new business models.

Through discussions with colleagues, students, and observing practices on the ground, I have come to better understand the complexities of sustainability integration at my institution. I am particularly frustrated with the slowness in advancing the sustainability agenda in some areas and have encountered many of the barriers we will discuss in more detail in section 2.3.2. I have faced colleagues deferring responsibility to others in some areas of the university, and perceive a clear lack of agency amongst colleagues who are motivated but feel constrained in their ability to drive change due to their particular roles in the university system. I have also observed very diverse responses to sustainability on the part of students, with some keen to take actions, others confused about what they can do, and others being indifferent or unwilling to engage. This has made me more aware of the complexities underlying the concept of agency in this context, in particular also with regards to the power-related aspects in this context (Sannino, 2023), which are key considerations for interventions involving different stakeholder groups with unbalanced power conditions (Cin et al., 2025). As a consequence of these obstacles, I have long been engaged in ongoing reflection and dialogue, both with colleagues within my institution and with partners in networks locally and around the world, about how we can accelerate change towards sustainability and foster real transformation.

I had started my Ph.D. programme in Technology Enhanced Learning at Lancaster University in 2021, then still in my position of learning designer. As my studies progressed, I focussed more and more on HESD in my research and writing throughout several modules, which are part of the programme's curriculum in the first two years. As mentioned above, I wrote an auto-ethnography about the struggles with my professional identity in the shift to a new role, subsequently published, which helped me clarify my feelings about the urgency and responsibility to accelerate my university's sustainability impact from a personal point of view. I then wrote assignments about the use of transformative learning theory and digital pedagogies for education for sustainable development and became more familiar with the HESD discourse, including the difficulties in transforming pedagogical practice towards sustainability learning. Finally, I conducted a small project with one of the departments at my university, examining the difficulties in integrating responsible management aspects across their business programme. Using CHAT as a theoretical basis, I conducted a focus group with the team, and we collaboratively identified a set of contradictions and tensions in their activity. This was an important precursor to my thesis project as it sensitized me to many issues affecting agency, especially those related to the various roles of the participants, which ranged from head of department to office assistant.

When it came to choosing the topic for my doctoral thesis, recognizing the challenges at work whilst feeling the urgency to act and knowing that we can be more effective as drivers of sustainability, were key motivations that led me to consider conducting a research intervention using CL methodology. I was introduced to the CL methodology through the readings in a module taught by my supervisor and a group activity on CHAT. I later learned about a former Ph.D. student who had applied CL in his sustainability-focused research at an Irish university (Scahill, 2022). He generously shared his experience with me, which I found deeply inspiring and exciting.

CL relies on active participation of stakeholders, which was very much in line with my general philosophy of proactive change and bringing in diverse viewpoints, and it also aligned well with the collaborative and co-creative approach I prefer to take in my work. Other factors that appealed to me were the opportunity for expansive learning through contradictions, and the strong theoretical foundation in CHAT, which I had encountered in the course of the Ph.D. programme and the research community I discovered around it. The ethos espoused in this circle resonated strongly with my values of justice, sustainability and social transformation.

When I first discussed the possibility of conducting a Change Laboratory with my supervisor, the thought seemed daunting, with many doubts plaguing me: Would I be able to recruit enough participants? Would university management even agree to me carrying out the study? Would I be able to deal with the frustrations and possible conflicts in the group? Would I dare invite both students and staff, and be able to create a safe space for all? How could the outcomes of the Change Laboratory be implemented at my university, and how could I manage participants' expectations? Wasn't there a much easier and safer way to complete my Ph.D.?

These questions were on my mind when I set out on this journey, but ultimately the brave side in me won. Rather than conducting a harmless and inconsequential study, I decided to invest my time in a project which would allow me to explore avenues to facilitate change towards sustainability transformations and to learn from this process, particularly with regards to better understanding the concept of agency in this context. In hindsight, I would even say that the CL served as a mediating tool offering a structured, collective space to work through these tensions and envision transformative possibilities within my work setting.

In the end, it was my desire to create impact together with my intellectual curiosity and my ambition to do something different that convinced the frightened part of me that I could find the courage and take on this challenge, knowing that I would have to navigate possible difficulties quite typical of complex, messy research

interventions such as Change Laboratories rather than sticking to conventional research paths. The encouragement and support of my Ph.D. supervisor, including his own research in the HESD area (Scahill & Bligh, 2022, 2025), were instrumental in this decision and ultimately gave me the confidence to embark on this journey.

1.3 Practice context

The research site is a University of Applied Sciences in Austria with approximately 3600 students and 500 staff, located in a regional capital. To ensure a certain level of anonymity, the research site will be labelled “UNI” throughout this thesis (to retain this anonymity, I will also refrain from directly citing policy documents and websites from my institution). UNI is an ambitious, young institution established just over 25 years ago, offering close to 30 programmes at Bachelor and Master level in the areas of Business, Society, Technology and Life Science. UNI is spread over six campuses of varying sizes across the city, which is challenging in terms of creating a common identity and strong collaboration across all areas of the university.

“Responsibility” has been a value pursued by the university from its inception, and starting in 2011, UNI became part of the UN PRME network, which strongly aligned with the universities efforts at that time to gain international accreditation. Over the years, UNI has implemented many different strategies aimed to promote sustainability, including faculty development initiatives, the integration of the Sustainable Development Goals in study programmes, the organisation of an annual Sustainability Week, an extensive extracurricular offering of courses on sustainable development and responsible management for students, active participation in local, national and international sustainability networks, the establishment of a climate team, and many more. Particularly noteworthy is the UNI SDG Ambassador Group, a cross-institutional initiative including over 30 staff representatives from all departments that promotes sustainability and SDGs across teaching, research, and campus activities. Ambassadors act as

multipliers, fostering collaboration between departments, students, and external partners, and leading initiatives such the UNI Sustainability Week and other events.

However, despite all these efforts, sustainability integration at the university remains somewhat fragmented and insular, with a small circle of motivated colleagues being engaged and putting effort and energy into sustainability related activities, whilst for much of the university this is a side issue that can be considered when there is time, but not a key concern driving strategy and policy or impacting on resourcing and daily practice. Feedback from SDG Ambassadors indicates reluctance to embrace sustainability integration and also lack of awareness at the department levels, and sustainability activities always compete with other priorities for resources, pointing to the low priority this agenda holds. In my view, systemic change requires a different approach, but obstacles like resistance to change for various reasons, short-term mind-sets, and fragmented institutional structures present major challenges.

Recognizing these issues and the gap between current practice and institutional potential prompted me to reflect on how meaningful transformation could be achieved. The discrepancy between the reach and impact of the work I was doing with colleagues and UNI's potential to play a stronger role in promoting and supporting sustainable development - especially in the region but also more broadly - motivated me to undertake the Sustainability Change Laboratory.

As a University of Applied Sciences, UNI has strong links to industry and business locally and is in an excellent position to align its practice-oriented education and applied research with real-world challenges. UNI also boasts a range of disciplinary areas, offering much scope for the interdisciplinary work required in sustainability efforts (Annan-Diab & Molinari, 2017). These aspects might seem to provide favourable conditions for strong engagement of the university for sustainable development.

However, progress on sustainability integration is fragmented and slow. This is typically blamed by stakeholders on reasons such as institutional funding and reward systems, lack of UNI leadership commitment and a coherent narrative, inflexible curricula, and resource and knowledge deficits. Whilst this is my personal judgement, it is a perception informed by my intimate knowledge of the institution, intensive exchange and benchmarking with colleagues at partner universities locally, nationally and internationally, as well as ongoing research I conduct as an academic practitioner. As explained in section 1.2, I was convinced that there is more that can be done, and I believed that an intervention such as the Sustainability Change Laboratory could be effective in identifying and overcoming real, local barriers to sustainability integration and thus contribute to transformational institutional change.

1.4 Policy context

This section examines the evolving global, European, and national policy landscape surrounding HESD, highlighting both the frameworks promoting sustainability in HE and the persistent challenges in translating high-level commitments into institutional practice.

The pivotal role HE plays in enabling individuals and societies to address sustainability challenges is reflected in a robust global agenda promoting and supporting HESD. Preceding the SDGs, the UNESCO “Decade of Education for Sustainable Development” first introduced the notion of Education for Sustainable Development (ESD) in 2005 (Franco et al., 2019). When the 2030 Agenda for Sustainable Development and the 17 SDGs came into effect in 2016, “Quality Education” became a key focus area embodied in SDG 4, which aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” (United Nations, 2015), with Target 4.7 focussing specifically on ESD:

By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for

sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development. (United Nations, Goal 4, Target 4.7)

Since 2015, UN bodies have launched several key initiatives and adopted several resolutions (United Nations General Assembly, 2023) to strengthen ESD. The *ESD for 2030 Roadmap* (UNESCO, 2020) emphasizes the role of ESD in achieving all 17 SDGs and promotes country-led efforts through the Global ESD-Net. The *Berlin Declaration on Education for Sustainable Development* (UNESCO, 2022a) reaffirms this commitment, while the report *Reimagining Our Futures Together* (International Commission on the Futures of Education, 2021) calls for urgent, collective action to transform education in response to global challenges and proposes a new social contract rooted in human rights, non-discrimination, social justice, and solidarity, positioning education as a public good and shared responsibility.

In Europe, the European Higher Education Area (EHEA) has progressively engaged with ESD over time, integrating the SDGs into its international policy framework as stated in the 2018 *Paris Communiqué* (EHEA, 2018):

We commit to developing the role of higher education in securing a sustainable future for our planet and our societies and to finding ways in which we, as EHEA Ministers, can contribute to meeting the United Nations Sustainable Development Goals at global, European and national levels. (Paris Communiqué, 2018, p.4).

Since then, the EHEA has established further initiatives and policy tools to embed sustainable development in higher education. The *Rome Ministerial Communiqué* (EHEA, 2020) confirmed the SDG commitment and introduced the *Principles and Guidelines to Strengthen Social Dimension and Recommendations for Learning and Teaching*, which referred to greener education and sustainability competencies.

These and other global declarations, frameworks and reports provide much needed guidance and high-level commitment to institutional efforts to embed

sustainability. They deliver a convincing rationale for this work and help frame the narrative around sustainability integration, which is essential for cultural change in universities. More specifically, they provide a useful starting point for several aspects of my work, including strategy development, where they serve as a guiding framework; faculty development, where they contribute definitions of concepts and competences; and communication and reporting, where they provide the basis for a narrative that links local actions with global impact.

At the same time, they can seem too broad and lofty to be directly applicable to local contexts, and the “translation” of their key messages into specific organisational settings and practice can be challenging. Policies at both UN and EHEA level have been criticized for lacking explicit definitions and concrete implementation strategies, and for being ambiguous about the definition of sustainable development. Critics argue that the metrics developed for SDG 4.7 are flawed (Brockwell et al., 2024), that UNESCO’s framing of education is Western-centric (Bengtsson, 2024), and that high-level guidance lacks resources and actionable pathways (Mochizuki & Vickers, 2024). Kushnir et al. (2024) propose that the EHEA define sustainability in the European context and ground its policies in academic research to better guide HESD efforts.

While these critiques about the challenges of “translating” the actions laid out in policy documents into institutional practice are valid, I argue that they repeat the implicit assumption that sustainability can be implemented through top-down, linear planning. This perspective risks overlooking the need for more generative, creative, and context-specific approaches that cultivate agency amongst stakeholders. This is reflected in the general absence of the concept of agency from many key UNESCO policy texts (UNESCO, 2015, 2017, 2022b), even though related concepts such as empowerment, participation, and transformative action are emphasized (UNESCO, 2020). A notable exception is the UNESCO report *Reimagining our Futures Together* (International Commission on the Futures of Education, 2021), which defines agency as the collective and

individual capacity of learners, teachers, and communities to actively participate in shaping the future through education:

Education builds capacity for sustained civic, social and political action by teaching people to reflect on and analyze their work together within a common framework. Relational and collective agency are strongly supported when curricula focus on building coalitions and making connections to larger histories and trajectories of activism and solidarity. (International Commission on the Futures of Education, 2021)

However, even where agency is acknowledged, high-level calls for its development often remain detached from the processes and contexts through which agency is formed and enacted. They risk overlooking the structural conditions, institutional cultures, and power imbalances that critically shape transformative practice in HE.

In the Austrian national context, where this research is located, the UniNEtZ project, a collaboration of 16 universities and other institutions, was tasked with developing a comprehensive national SDG implementation plan, which was submitted to the Austrian government in 2022 (UniNEtZ, 2022). Among its 150 measures, the report highlights three key actions for HEIs: co-develop participatory sustainability strategies, embed ESD across all curricula, and provide professional development in ESD for educators. These recommendations have had a significant impact on all sectors of HE in recognizing the need for change.

Austrian Universities of Applied Sciences (UAS) play a critical role in training professionals based on local industry demand, conducting applied research and fostering regional innovation. There is evidence that a shift towards programmes aligned with sustainable development is occurring, and recent funding rounds for new programmes have had a specific focus on sustainability. Many UAS have established dedicated sustainability strategies, including integration of the SDGs into teaching, research, campus operations, and partnerships, and a specific

UAS network, the Co-Op Sustainable UAS⁹, was founded in 2021 to connect institutions and leverage synergies.

These national and local efforts are useful for my work as they provide a more concrete and relatable context, employing the global aspirations discussed above as overarching frameworks. They can, however, also be overly mechanistic and focussed on administrative aspects, failing to acknowledge or cultivate the agency of educators, students, and staff whose engagement, creativity, and commitment are essential for navigating the complexities and tensions inherent in transformative change.

It might seem that within this rich policy context at global, European and national level, HEIs and in particular UAS should be thriving beacons of sustainability, driving progress towards the SDGs and having a strong impact on society and business. The reality is that despite this policy momentum, universities face conflicting pressure and systemic barriers. Policies often provide symbolic commitment and a joint direction, but transformative institutional change requires more than that. These limitations underscore the need for practice-oriented, participatory integration approaches that examine systemic contradictions in context and cultivate transformative agency of the relevant stakeholder groups. This is what my work seeks to contribute toward.

1.5 Research context

This study is embedded in the research field of Higher Education for Sustainable Development (HESD), a term used as early as 1993 by the International Association of Universities (IAU) in their Kyoto Declaration on Sustainable Development (IAU, 1993), which followed the Talloires Declaration (ULSF,

⁹ <https://www.nachhaltige-hochschulen.at/>

1990), the first official statement made by university leaders of a commitment to environmental sustainability in higher education. The field has seen growing scholarly attention over the last two decades (Aghajani et al., 2024; Chusniyah et al., 2025), reflecting the increasing recognition of the critical role HE plays as a key driver of social transformation for sustainable development (Barth & Rieckmann, 2015; Probst, 2022). The continually expanding body of work broadly explores how HEIs can contribute to global sustainability challenges through their key activities, including teaching and learning (Weiss & Barth, 2019), research and innovation (Wu & Shen, 2016), campus management (Bellou et al., 2017), and community engagement (Borsatto et al., 2024).

The area of HESD research is interdisciplinary, drawing on education, environmental studies, organizational theory, sociology, communication studies, business studies, systems theory, and others, which reflects the complexity and interrelatedness of the challenges to be addressed (Machado & Davim, 2022). There is wide recognition that sustainability integration in HEIs requires more than policy alignment or curricular addition: it demands transformative organizational change (Baker-Shelley et al., 2020; Chambers & Walker, 2016; Mader et al., 2013; Trevisan et al., 2024).

Sustainability transformation in higher education is commonly understood as the embedding of sustainable development (understood not as a fixed set of goals but as a contested and evolving orientation toward addressing social, environmental, and economic challenges) across institutional structures, cultures, pedagogies, operations, and research practices (Fia et al., 2022; Kohl et al., 2022). In this thesis, I do not treat sustainability integration and sustainability transformation as separate or sequential phenomena. Instead, I conceptualise sustainability integration as the concrete, situated process through which sustainability transformation unfolds in practice. From this perspective, integration refers to how sustainability is negotiated, embedded, and reworked across institutional activities, while transformation denotes the qualitative reorganisation of these activities over time. Both terms therefore describe

different analytical emphases on the same developmental change process, rather than distinct stages or outcomes.

In practice, this includes how sustainability is taken up across teaching and learning, research agendas, governance structures, decision-making processes, and operational practices, as well as how these domains are connected to one another. Importantly, sustainability integration is not only about formal strategies or policies, but about how staff and students interpret, negotiate, and enact sustainability in their daily work. In my study, sustainability integration is therefore understood as a developmental and collective process that unfolds through interaction, mediation, and learning, shaped by institutional constraints and opportunities.

Much of the existing HESD literature focuses on how to integrate sustainability holistically within HEIs, with scholars increasingly calling for comprehensive integration across all areas of activity in a “whole-institution approach” (Mcmillin & Dyball, 2009). A substantial body of work has identified drivers and barriers to this integration (Blanco-Portela et al., 2017; Hueske & Guenther, 2021; Leal Filho et al., 2017) with studies developing frameworks such as maturity models (Baker-Shelley et al., 2020), SDG integration tools (Franco et al., 2019), and sustainability management systems (Roos & Guenther, 2020). While these frameworks provide valuable strategic insights, critics argue they often treat sustainability integration in overly technical terms, neglecting the political, historical, and developmental dimensions of change (Adams et al., 2018; Scahill & Bligh, 2022; Verhulst & Lambrechts, 2015).

There is increasing consensus that integrating sustainability into HEIs is an urgent and complex task that must go beyond operational and managerial approaches. Scholars such as Holst (2022) and Mader et al. (2013) emphasize comprehensive change processes that involve leadership, participatory governance, and institutional learning. Likewise, literature on organizational learning and capacity building (Mulà et al., 2017; Niedlich et al., 2020) stresses the importance of reflexivity, critical engagement, and adaptability. However,

existing approaches often treat barriers and drivers as static, failing to account for how contradictions within institutional systems evolve and catalyze change. Moreover, the micro-level processes through which transformative change unfolds remain under-theorized.

Whilst emerging strands of research highlight the importance of stakeholder engagement and collaborative learning in driving sustainability-related change (Chakraborty et al., 2019), one notable shortcoming in the literature is the insufficient conceptualization of agency. Staff, students, and leadership are often framed as passive adopters or resisters, with only a few studies exploring more agentic roles in driving transformation processes (Melles, 2019; Mittal & Bansal, 2024a, 2024b; Murray, 2018). When addressed, agency is frequently treated as an individual sense or trait, or a static outcome, rather than as a historically mediated, socially situated, and tension-filled phenomenon. For example Koskela and Paloniemi (2023), define agency as the capacity to initiate action and drive change, Leichenko et al. (2022) refer to a “sense of personal agency”, and Probst et al. (2019) to a “feeling of having an influence” in sustainability transformations. Shortcomings in the conceptualization of agency in the literature about HE sustainability change initiatives are highlighted by Scahill and Bligh (2025), who critique the individualistic rather than collective understanding of agency, the lack of attention to the process of agency development over time, and the restriction of agency to predefined roles. The fragmented treatment of agency also limits cross-study comparison and theoretical accumulation.

In summary, while progress has been made, the field continues to critique the dominance of technical, managerial approaches and calls for more reflexive, participatory, and critical methodologies that address the social, cultural, and ethical dimensions of sustainability in higher education.

My study is situated at the intersection of these areas of knowledge. I explore the context of HE sustainability transformation and aim to contribute to three specific areas critically discussed in the literature review chapter (chapter 2). First, I consider the literature about proposed frameworks, common barriers, and the

significance of organisational learning and capacity building, offering a comprehensive understanding of how sustainability integration is currently approached and conceptualised in the HESD literature (section 2.3). Next, the focus shifts to the role of stakeholder participation, particularly staff and student engagement and leadership, to explore the motivations, conditions, and challenges that shape individual and collective involvement in sustainability efforts (section 2.4). Finally, I explore the evolving concept of sustainability agency, a term commonly used to refer to the capacity of individuals or groups to intentionally influence practices, decisions, and trajectories toward sustainability goals within a given social or institutional context (cf. Teerikangas et al., 2021), situating it within broader debates and connecting it to the notion of transformative agency (section 2.5), with a view to progressing the current fragmented status of this concept in HESD scholarly discourse.

From a theoretical and methodological point of view, my project applies an approach yet uncommon in the HESD research community. It draws on Cultural-Historical Activity Theory (CHAT) and Change Laboratory methodology to explore how agency and transformative capacity are built collectively through processes of expansive learning and development.

Grounded in this theoretical and methodological basis, the study understands sustainability integration as a learning-driven, contested, and negotiated transformation that uses contradictions and tensions as drivers of change. It pays careful attention to the evolving motives of institutional actors, the tools introduced and developed to mediate their collaborative, co-creative work, and the movement they achieve as they question, analyse, reimagine and plan for new models of the activity systems they are part of.

Mediation is a central concept underpinning this study. Rather than focusing only on how individuals think about sustainability-related issues, this perspective emphasises how collective work on complex problems is shaped and supported through mediating artefacts such as conceptual tools and models. Change is thus understood as arising from engagement with mediational means that enable new

ways of acting. This emphasis on mediation is one reason why I adopted an interventionist approach in the form of a Change Laboratory, which explicitly foregrounds the use of mediating tools to support collective analysis and development in the process of double stimulation (see section 3.4.2). I return to the concept of mediation in more detail in section 3.4.7, where it is further elaborated in relation to transformative agency.

In doing so, the study contributes theoretically to the understanding of sustainability integration, related organizational change, and emergent sustainability agency in an HE institutional context.

1.6 Research question

I have argued in sections 1.3 – 1.5 that the current status of practice, policy, and research indicate that sustainability transformation in HE is not progressing at the rate required to adequately respond to the urgent challenges humanity is facing today.

This inquiry is grounded in my professional practice at UNI described in section 1.3, where I observed a disconnect between institutional potential and actual sustainability impact. I was motivated to instigate this work by the fact that, at the time I started this project, sustainability transformation remained fragmented, slowed by hidden contradictions in structures, leadership, and resourcing despite individual and collective efforts and institutional commitment. These tensions, alongside a lack of clarity about the specific barriers different stakeholders face, motivated the initiation of a Sustainability Change Laboratory. I saw the method's potential to catalyze change at UNI by surfacing contradictions and enabling collective learning, but also to offer a scalable, theoretically grounded model for other HEIs seeking to move beyond shallow sustainability action.

Despite the growing momentum of HESD policies at global, European, and national levels described in section 1.4, many universities fall short of realizing their transformative potential. Instead of acting as local engines of sustainability,

they are caught up in systemic pressures including rigid funding structures, performance metrics, and a lack of leadership, incentives, or support for deep organizational change. Existing policy frameworks, while valuable in signalling direction, often fail to activate the institutional learning and transformation required.

As outlined in section 1.5 and discussed in detail in chapter 2, within the research field of HESD, critiques have similarly emerged. Much of the literature remains focused on practical integration, international benchmarking, and structural adjustments, without adequately theorizing the developmental, political, and cultural nature of change or the emergence of agency within it. There is growing consensus that sustainability transformation is not just a managerial task but a deeply social process of learning and negotiation, but research projects investigating these processes, and particularly research interventions fostering them, remain scarce.

Combined, the shortcomings discussed above led to the formulation of the central research question (RQ) and related sub-research questions (SRQ 1 & SRQ2):

RQ: How can a Change Laboratory research-intervention stimulate Transformative Agency in participants to accelerate the integration of sustainable development at a university of applied sciences?

SRQ 1: How does Transformative Agency develop over the course of the CL intervention, as manifested in discursive expressions of agency, and what turning points can be identified indicating a transition from paralysis to action?

SRQ 2: How does Transformative Agency develop as participants work through conflicts of motive and engage with mediating tools in the process of double stimulation during the SCL?

In addressing the RQ, my study attempts to respond to the limitations at practice, policy and research levels by applying CHAT and the Change Laboratory

methodology, currently underused in HESD research, to explore how sustainability integration can be understood as a contested, expansive learning process and how transformative agency can be fostered in order to accelerate sustainability integration.

1.7 Thesis overview

The thesis is structured as follows:

Chapter 2 presents a critical review of the literature on sustainability integration in higher education, surveying key approaches and debates across the areas of institutional transformation, stakeholder participation, and the emerging concept of sustainability agency. It identifies dominant themes and limitations in current research, highlighting particularly the need for more process-oriented and participatory perspectives. By critically analysing these bodies of knowledge, the chapter establishes the scholarly foundation for the research question and positions the study within ongoing debates in the field.

Chapter 3 outlines the theoretical foundations of the study, beginning with a clarification of my ontological and epistemological stance. It introduces CHAT, the theory of expansive learning and key theoretical concepts, with a focus on Transformative Agency, Expressions of Transformative Agency, Turning Points, and the model of Transformative Agency through Double Stimulation (TADS). The chapter positions the study within recent discussions on theory use in sustainability research and contrasts these with alternative theoretical frameworks.

Chapter 4 details the research design shaped by the study's theoretical and methodological foundations, focusing on the implementation of the formative intervention using the CL approach. The chapter explains the intervention's design, participant recruitment, data collection and analysis methods, and discusses ethical considerations.

Chapter 5 traces the collaborative work across the seven sessions of the Sustainability Change Laboratory (SCL). Each session is briefly reported, with outcomes shared in both visual and narrative form to illustrate the process and key themes addressed. The chapter provides context for the focused analysis of transformative agency development in the following chapter.

Chapter 6 offers a detailed analysis of how transformative agency developed throughout the SCL. It presents the results of a three-stage data analysis: quantifying discursive expressions of agency, identifying key turning points, and applying the TADS model to trace evolving motives and mediated actions.

Chapter 7 interprets the research findings in relation to the research question. It connects the empirical outcomes of the SCL to identified gaps in the literature, offering contributions to knowledge in three areas: sustainability integration, stakeholder participation, and sustainability agency. By applying the analytical lens of motives, mediation, and motion, the chapter advances a process-oriented understanding of sustainability agency as transformative agency.

Chapter 8 draws the thesis to its conclusion by discussing the limitations of the study and its implications for policy, practice and future research.

2 Chapter 2: Literature Review

2.1 Introduction

The purpose of this thesis is to contribute to scholarship investigating how transformative agency can be fostered and cultivated to progress sustainability integration in higher education. Examining the relevant body of knowledge aims to shape and sharpen this research focus, ultimately identifying shortcomings and opportunities which allow me to contribute to the ongoing discourse in this field.

This chapter provides a critical analysis of the existing body of knowledge relating to sustainability integration in HE as per the definition discussed in section 1.1. By identifying central themes, challenges and emerging trends in the scholarly literature and highlighting shortcomings in current knowledge, the chapter establishes the foundation this thesis builds on and aims to contribute to. The review critically analyses key areas of the extensive body of research that explores how higher education institutions are tackling sustainability integration with particular attention to approaches that emphasise future-oriented, participative and developmental perspectives, focussing individual and collective learning, capacity building, stakeholder participation and transformative agency as key themes.

This focus is based on my interest in fostering organisational development and learning in the space of sustainability integration, which is a key part of my professional role. The aim is to establish the status of current thinking and knowledge about the conditions impacting on sustainability transformation in higher education and develop an understanding of critical limitations in the relevant body of knowledge from which the question of how such transformative efforts can be fostered and cultivated can be advanced.

The chapter is organised as follows:

Section 2.2 provides a description of the approach I have taken in selecting the literature to be reviewed for each of the following sections. This includes an explanation of the scope determined for each area as well as the search and analysis strategies employed.

Section 2.3 reviews current literature relating to approaches to sustainability integration in higher education institutions with a special focus on research exploring common barriers, proposed frameworks, and the role of organisational learning and capacity building in this endeavour. This focus was chosen in order to establish and critically review current scholarly thinking about how sustainability integration in HE is being and should be advanced, which is the key issue underlying this study.

Next, section 2.4 analyses the scholarly discourse about stakeholder participation in HE sustainability integration in more detail, focussing on staff and student engagement and the role of leadership. This body of work is important as it helps understand conditions and motives of actors in sustainability transformation, especially staff and students, and provides insight into existing factors that enhance or hinder their individual and collective engagement in sustainability efforts, a second crucial aspect my research aims to contribute to.

Section 2.5 reviews the literature exploring sustainability agency as a fledgling notion currently being discussed and understood in the literature in various ways. I will connect this notion to the concept of transformative agency, which is discussed in detail in chapter 3.

Last, a chapter summary in section 2.6 offers a synthesis of the main arguments I have outlined and presents the research question derived from these, including a discussion of the implications of the literature review for the research design and approach adopted in this project.

I note that the literature reviewed here does not include a discussion of key theoretical concepts relating to the notion of Transformative Agency as it is

theorized in Cultural-Historical Activity Theory, nor does it include a discussion of Change Laboratory and review of studies employing this methodology as a promising approach to fostering the development of Transformative Agency. These aspects are instead addressed in chapter 3.

2.2 Defining the scope of the review

Due to the vital importance of sustainable development and its integration in higher education, there is a burgeoning body of literature dealing with a wide range of topic areas related to Higher Education for Sustainable Development (HESD). Bibliometric reviews show that in the past decade, HEIs have started responding more broadly to the call to contribute to Agenda 2030 as discussed in chapter 1, and scholarly interest in embedding sustainability in higher education has grown substantially (Basheer et al., 2024; Umar et al., 2024).

A search for the keyword string “Higher Education” AND “Sustainab*” results in over 14,000 hits on Scopus, and bibliometric reviews highlight the exponential growth in the number of publications since 2015, with Machado and Davim (2022) claiming an annual increase in documents dealing with sustainability in higher education on SCOPUS from 386 in 2017 to 660 in 2021. In a tertiary review, Aghajani et al. (2024) analysed 69 systematic literature reviews dealing with topics related to sustainability in higher education, identifying the following most prominent areas of interest: institutional frameworks, campus operations, education for sustainable development, research, outreach and collaboration, and on-campus experiences.

The vast number of publications in the field rendered selecting relevant literature underpinning this study challenging, and it was paramount to be strategic in determining the scope of my literature review. This section provides an explanation of the decisions I took in this process and describes the search strategies I used to find relevant literature. I also provide insight into the techniques I used when analysing the selected sources. This was an iterative

process, where newly discovered knowledge led to further searches and new sources continued to shape the scope of the review until I was satisfied that the body of literature reviewed was comprehensive enough to contribute meaningful insights into the field and establish the body of work my study is based on and intends to contribute to.

The selection of the research areas to be included evolved gradually. My interest in sustainability agency was peaked early through my readings about CHAT and expansive learning during the taught modules of my Ph.D. programme. Especially learning about fourth generation CHAT, I noted both a strong alignment between the concept of transformative agency and sustainability efforts, and a gaping void of research bringing the two areas together, or indeed of studies exploring agency in HESD. In order to situate my research in the current body of knowledge, I surveyed the literature on sustainability integration in HE (Area 1), identifying key approaches, frameworks, barriers and drivers of sustainability integration. My readings in this area, paired with my interest in agency, led me to seek a deeper understanding of the way stakeholders are engaged in this process, and literature about this was explored in Area 2. Also within this body of research, the concept of agency is mentioned rarely and only superficially. The absence of conceptualizations of sustainability agency in the HE literature triggered my search for specific literature about agency in other sustainability transformation contexts. This led me to a discipline beyond HE, transformation studies, where the concept of agency has seen a more prominent treatment. This stream of literature, combined with the few studies starting to address agency in the HE context, formed Area 3. Table 2.1 provides an overview of the research focus areas included and the purpose of reviewing them.

Focus Area	Purpose
Area 1: Sustainability integration in HE	Establish the extant body of literature about existing approaches, strategies and frameworks HEIs have employed to achieve sustainability integration, including barriers and drivers identified.
Area 2: Roles and engagement of stakeholders involved in sustainability integration in HE	Determine the current state of research about the roles key stakeholders (with a focus on staff and students) play in HESD and how they are and can be engaged, including the role of leadership in this context.
Area 3: Definitions, concepts and theories of agency relating to sustainability (Sustainability Agency)	Establish the body of knowledge about the conception of agency in the scholarly discourse about HESD, how it is understood and defined, what theoretical approaches underpin this discussion, and what interventions have been identified in the literature that might foster such agency.

Table 2.1: Focus areas of literature review and their purpose

In summary, the scope of this review encompasses the literature relating to approaches to sustainability integration in HEIs, the engagement of stakeholders in this process, and the conceptualization of these groups' agency, evolving as "sustainability agency" in the scholarly discourse. The next section describes the search strategies used to determine the papers to be included in the review and the strategies employed during analysis.

2.2.1 Search and analysis strategies

Due to the extensive body of literature available in focus area 1, I decided to start my search by leveraging systematic literature reviews surveying the topic of sustainability integration in higher education. Systematic literature reviews provide a methodologically rigorous synthesis of existing knowledge, allowing researchers to efficiently identify key literature, prevailing trends, methodological approaches, and critical gaps (Snyder, 2019). Using the search string *Sustainability OR "Sustainable Development" AND Integration AND "Higher Education" AND "Systematic Review" AND "Systematic Literature Review"*

resulted in 165 results on Scopus, and I narrowed my search by scanning titles and abstracts using the following criteria:

Inclusion criteria:

- Systematic literature review of aspects relating to sustainability integration in higher education
- Study conceptualises sustainability holistically (social, environmental and economic dimensions)

Exclusion criteria:

- Context not HE
- Narrow focus exclusively on a specific discipline lacking insights relevant to the broader integration of sustainability in higher education
- Narrow focus on regions or countries unless they provide comparative perspectives that offer insights into broader trends
- Studies older than 15 years (pre 2010)
- Studies in languages other than English

This strategy resulted in the selection of 21 papers. Full-text reading of these reviews allowed me to gain an overview of the existing literature in the field and the key topics of investigation as well as offering analysis of the most seminal papers in those areas. Based on these findings and the inclusion and exclusion criteria mentioned above, I selected key readings for the topic areas identified, i.e. sustainability integration approaches, barriers and drivers, and frameworks to facilitate sustainability integration (Research Area 1) as well as stakeholder engagement with a focus on faculty, students and leadership (Research Area 2). I also used a snowballing technique backwards and forwards, revising past papers cited in relevant articles and searching for later articles referring back to those to identify further literature relevant to the criteria above.

In order to cover the most recent publications which are not included in literature reviews, I also conducted title-abstract-keyword searches on Scopus, using the search strings presented in Table 2.2 for Area 1 and Area 2. Due to the large number of publications resulting from these searches, I limited the search parameters to the subject area *Social Sciences*, the document type to *Articles* and *Book Chapters*, the language to *English* and the timeframe to 2020-2025. The limitation to this timeframe allowed me to find the newer literature in addition to the seminal older papers (pre 2020) which I had already identified through the systematic reviews and made the number of results manageable. Still, these searches resulted in several hundred hits, which I revised systematically using the selection criteria mentioned first by title and then by abstract in order to select the most relevant articles.

Area 1	“Higher Education” OR University AND Sustainability OR “Sustainable Development” * AND integration	AND Approaches AND Frameworks AND Barriers AND Drivers
Area 2	“Higher Education” OR University AND Sustainability OR “Sustainable Development” AND engagement	AND Stakeholder AND “Student” AND “Faculty” AND Leadership

Table 2.2: Search strings for focus areas 1 and 2

This approach, which combined the analysis of systematic literature reviews and targeted keyword searches, worked well for these two areas of literature, where a proliferation of papers made it challenging to narrow the selection to the most pertinent papers. However, it was not suitable for the third area as the concept of sustainability agency is relatively new in the HE context and publications are

sparse, with no systematic reviews available. A Scopus search in abstract, title and keywords using the string “Sustainability Agency” AND University OR “Higher Education” resulted in only two documents, and only one of those was relevant. On the other hand, searching for *Sustainab* AND Agency AND “Higher Education” OR University* resulted in 1,868 documents, with most documents referring to “agency” in other contexts, such as in the sense of a governmental or administrative unit. A search for “Sustainability Agency” without limiting the context resulted in 48 hits, with only 7 documents identified as relating to HE. The remaining results, however, alerted me to the fact that there is interest in sustainability agency in another discipline: sustainability transition studies. Scanning the papers discovered in this search, I decided to include a review of the conceptual understanding of sustainability agency in this area as it seemed highly relevant to an attempt to conceptualise agency in the context of sustainable development. Based on these initial search results and using Scopus and Research Rabbit, I then used a snowballing technique backwards and forwards, revising past papers cited in relevant articles and searching for later articles referring back to those.

Table 2.3 shows the total number of papers selected for close reading in each focus area.

Focus Area	No of papers
Focus Area 1: Sustainability Integration in Higher Education	67
Focus Area 2: Stakeholder Engagement	58
Focus Area 3: Sustainability Agency	20
All Focus Areas	145

Table 2.3: Number of papers identified in focus areas 1, 2 and 3

The analysis of the literature was carried out systematically to ensure both comprehensive coverage and analytical rigor. Following the selection of articles for full-text reading, all documents were downloaded, organized, and managed

using the literature management software Citavi. This platform enabled efficient tracking, categorization, and annotation of sources throughout the review process. During the initial reading phase, summaries were produced for each article, emphasizing salient points and aspects pertinent to sustainability integration in HE.

Based on this first step, thematic sub-areas were identified and organized, as presented in Table 2.4.

Focus Area	Thematic Sub-Areas	No of Papers
Focus Area 1: Sustainability Integration in Higher Education	SDG Integration	18
	Whole of Institution Approach	7
	Frameworks	11
	Barriers and Drivers	16
	Organisational Learning for HESD	15
	Total	67
Focus Area 2: Stakeholder Engagement	Stakeholder Engagement in HESD (general)	10
	Staff Perspective	16
	Student Perspective	20
	Leadership	12
	Total	58
Focus Area 3: Sustainability Agency	Sustainability Agency – Transition Studies	13
	Sustainability Agency - Education	7
	Total	20
All Focus Areas		145

Table 2.4: Sub-areas and number of papers for each focus area

Following this high-level categorization, an in-depth qualitative analysis was conducted using the software ATLAS.ti. The full-text articles were imported into the system, where the memo function was employed to summarize key aspects of each article, and the coding function was used to highlight salient sections that could be considered for direct quotation in later stages of writing. Throughout the analysis, particular attention was given to examining how the selected studies

addressed the role of agency and how the papers dealt with systemic contradictions and tensions. This analytical orientation guided both the thematic categorization and the critical engagement with the literature. Limitations in the scope, focus, and theoretical framing of the reviewed works were also systematically noted for further reflection and discussion at later stages of the research.

This section has provided an overview of the scope and search strategy employed in this literature review. The following sections present the results of the critical review.

2.3 Sustainability integration in Higher Education

The review of the extant literature about sustainability integration, which presents the foundation for the project described here, encompassed 67 papers overall as shown in Figure 2.1.

SDG Integration (18)	Whole of Institution Approach (7)
Alcántara-Rubio et al., 2022; Almazroa et al., 2024; Amorós Molina et al., 2023; Blythe et al., 2018; Borsatto et al., 2024; Chankseliani & McCowan, 2021; Cuesta-Claros et al., 2023; Douglas et al., 2024; Ferrer-Estévez & Chalmeta, 2021; Franco et al., 2019; Kopnina, 2020; Leal Filho et al., 2019; Mallow et al., 2020; Menon & Suresh, 2020; Murillo-Vargas et al., 2020; Purcell et al., 2019; Serafini et al., 2022; Solís Espallargas et al., 2023	Appleton, 2017; Holst, 2022; Kohl et al., 2022; Mccmillin & Dyball, 2009; Menon & Suresh, 2020; Price et al., 2021; Wicke et al., 2024 Frameworks (11) Adams et al., 2018; Awuzie & Abuzeinab, 2019; Baker-Shelley et al., 2017, 2020; Berchin et al., 2017; Cheeseman et al., 2019; Findler et al., 2019; Holm et al., 2015; Leal Filho et al., 2021; Pizzutilo & Venezia, 2021; Silvestre et al., 2022
Barriers and Drivers (16)	Organisational Learning in HESD (15)
Akins et al., 2019; Aleixo et al., 2018; Arora et al., 2021; Barth, 2013; Blanco-Portela et al., 2017; Blasco et al., 2021; Bohunovsky et al., 2023; Disterheft et al., 2015; Gwilliam et al., 2023; Hoover & Harder, 2015; Hueske & Guenther, 2021; Leal Filho et al., 2017; Price et al., 2021; Veiga Ávila et al., 2019; Verhulst & Lambrechts, 2015; Weiss et al., 2021	Adams et al., 2018; Bien & Sassen, 2020; Cebrián et al., 2013, 2015; Giesenbauer & Müller-Christ, 2020; Holst, 2022; Hoover & Harder, 2015; Mader et al., 2013; Mulà et al., 2017; Niedlich et al., 2020; Rieg et al., 2021; Scahill & Bligh, 2022; Trevisan et al., 2024; Wals & Schwarzin, 2012; Warr Pedersen, 2017

Figure 2.1: Dashboard showing papers reviewed in Area 1

Based on the motivation discussed in chapter 1, the intention in reviewing this body of knowledge was to determine how the extant literature frames such integration approaches in HEIs, what frameworks have been developed that support this integration, and what the barriers and drivers identified are. Understanding these aspects is imperative in order to determine what established knowledge about these aspects and its limitations are and how my research can make a contribution.

Overall, the literature identifies a growing alignment between university efforts and Agenda 2030 as discussed in section 1.1. There is a strong focus on the Sustainable Development Goals (SDGs, 18 papers) as a guiding framework for

embedding sustainability in HEIs, evident for example in HEIs including sustainable development in their mission, vision and strategy and mapping their contributions to the SDGs in teaching, research and community engagement. The complex nature of sustainability integration and the resulting need for a systemic approach that encompasses the entirety of a university is addressed in a second body of literature (7 papers) discussing the Whole-of-Institution approach to sustainability integration. The papers in this stream emphasize the importance of aligning teaching, curricula, community engagement but also operations and governance with sustainability principles with the aim to shift sustainability integration from a peripheral initiative to a core value deeply ingrained in the organisational culture. However, the literature highlights uneven uptake and gaps of integration efforts, with significant obstacles remaining. These are investigated in a further body of knowledge (16 papers) that deals specifically with the factors affecting sustainability integration in HE, often in the form of comprehensive lists depicting internal and external drivers and barriers. To navigate the complex challenges described in this stream of literature, numerous frameworks have been proposed, which are also discussed (11 papers), including tools to track the SDGs, models attempting to illustrate the systemic process of sustainability integration, and frameworks describing sustainability competencies for students and faculty. Another important stream of literature is concerned with organisational learning (15 papers) as a critical mechanism for embedding sustainability, emphasizing the role of faculty training and highlighting reflective practice, interdisciplinary collaboration, and dialogue as key strategies leading to organisational and culture change.

The following sections provide a critical analysis of the pivotal literature discussing approaches to sustainability integration in HE in section 2.3.1, key barriers causing the sluggish progress of sustainability integration, drivers accelerating it, and frameworks developed to guide sustainability implementation in section 2.3.2, followed by a discussion of the literature framing sustainability transformation as organisational learning and change in section 2.3.3.

2.3.1 Approaches to sustainability integration

The literature features a range of publications discussing different approaches to sustainability integration. This section reviews the literature about two of the more prominent approaches: SDG integration and the Whole-of-Institution approach.

A growing cluster of studies (18 papers) refers to the integration of the Sustainable Development Goals (SDGs, see chapter 1) into HE. Many (but not all) scholars agree that the integration of the SDGs in higher education is a key strategy to align their sustainability activities with a global agenda (Blasco et al., 2021; Leal Filho, Shiel, et al., 2019; Purcell et al., 2019). Leal Filho, Shiel, et al. (2019) maintain that

the university education process (curricular, extra-curricular and co-curricular) should address the global aims (and all the goals) directly; all programmes need to enable learners to consider the issues raised by sustainability, not only in the context of their disciplines but also at a more general level, as citizens who will be impacted and have impact. (p.287)

Scholars highlight the potential of the SDGs as a powerful communications tool with transformative capacity (Cuesta-Claros et al., 2023), and there is extensive reporting on the use of the SDGs as overarching, globally accepted framework providing orientation and structure for universities' sustainability efforts (Almazroa et al., 2024; Murillo-Vargas et al., 2020; Solís Espallargas et al., 2023). The literature features a range of approaches employed to embed the SDGs in university activities such as curricular integration (Cardiff et al., 2024), research initiatives (Sahle et al., 2025), policy and governance (Cheeseman et al., 2019; Leal Filho, Frankenberger, et al., 2021; Leal Filho, Lange Salvia, et al., 2021), community engagement (Borsatto et al., 2024) and across all of these activities (Menon & Suresh, 2020; Serafini et al., 2022). Authors acknowledge both the value of the goals as an internationally recognized and comprehensive framework providing orientation, and the challenges associated with their integration in HEIs. Criticism of this approach includes the breadth of the SDGs (Leal Filho, Shiel, et al., 2019), their western orientation that neglects non-

western and indigenous knowledge (Price et al., 2021) and the embedded continuation of hegemonistic economic paradigms such as economic growth and consumerism (Kopnina, 2020). Other scholars question the ability of higher education to fulfil their role in truly contributing to sustainability transitions:

“To what extent are higher education institutions and systems equipped to take on this new role, in fostering inclusive societies, addressing global challenges and responding to crises? And is the vision of higher education inclusive of all communities, their epistemologies, values and the meanings attached to education? Can an institution that has historically functioned to reproduce elites, work to combat the roots of structural and cultural violence?” (Chankseliani & McCowan, 2021)

Overall, the reviewed literature provides insight into the status of SDG integration in different activity areas of HE and progress being made globally (Amorós Molina et al., 2023). However, only few scholars critically interrogate the underlying assumptions or contextual difficulties of SDG implementation, and there is a strong trend to approach SDG integration as a technical and structural task, using mappings and alignment with university activities, rather than as a deeply political and epistemological endeavour as proposed by Kopnina (2020) and Blythe et al. (2018). Given this focus, the literature lacks attention to the underlying tensions and contradictions inherent in the goals themselves and in local contexts attempting to operationalize them.

A second cluster of studies (7 papers) indicates an interest in the ways sustainability is integrated in higher education and emphasizes the need for holistic perspectives. The concept of a “whole-of-institution-approach” (WIA) (Appleton, 2017; Kohl et al., 2022) is used to denote an integrative method where curriculum, research and innovation, campus operation and governance, community engagement and partnerships in sustainability transformation efforts are considered as interconnected and mutually reinforcing elements in sustainability transitions and pursued through coordinated, institution-wide strategies (Christou et al., 2024; Menon & Suresh, 2020). These approaches are discussed from various perspectives, highlighting the importance of ongoing learning processes, both individual and institutional, in order to integrate

sustainability as a core principle (McMillin & Dyball, 2009). Others foreground formal and informal learning connected to the social and physical surroundings as a means to align both the visible and hidden curricula with sustainability (Douglas et al., 2024; Gwilliam et al., 2023). Scholars argue that through WIAs, a genuine sustainable learning environment can be created where all participants are empowered with the skills and knowledge needed to design and shape sustainable futures (Holst, 2022).

The studies in this strand of literature focus strongly on the importance of a holistic approach, progressing the understanding of sustainability integration as an ongoing process related to learning and development. However, this body of work lacks closer examination of the internal dynamics occurring within HEIs at the micro-level. There is minimal investigation of how individuals and groups enact the systemic changes promoted in WIAs and how they unfold, let alone how individual and collective agency is formed or negotiated in these processes. The literature tends to present WIA as a strategic or structural blueprint with less attention to the messy, iterative, and contested nature of organizational change. As a result, deeper exploration of how agency unfolds and develops within institutions, including actors' motivation, resistance, learning, and collaboration, remains underdeveloped.

Collectively, these studies counter the notion that sustainability transformation can simply be implemented using ready-made templates, one-size-fits-all approaches, or as isolated projects. Whilst some papers focus on top-down implementation which assumes that the alignment with the SDGs will automatically lead to transformative change, others take a more reflective stance and provide valuable insights into the structural and strategic integration of sustainability in HE. However, there are significant limitations in the exploration of human agency in the transformative processes occurring. Scholars in this strand of literature are not interested in the micro-level processes through which individuals and collectives develop agency, negotiate institutional constraints and respond to tensions between competing values and objectives. They also neglect

historically developed contradictions and power dynamics playing out in these processes, including the issues arising through political and normative dimensions of sustainability. Research approaches explicitly engaging with contradictions and intent on fostering expansive, collective learning such as that employed in this project can offer a promising and underutilized lens for investigating how sustainability transformations occur in HE settings. The next section considers the literature about the barriers and drivers hampering and supporting such integration efforts.

2.3.2 Barriers, drivers, and frameworks for sustainability integration

The concept of drivers and barriers is very prominent in discussions of sustainability integration across sectors (Wagner, 2015), and has proven popular in higher education specifically. There is a substantial body of literature (16 papers) describing barriers and drivers affecting integration of sustainability in higher education (Akins et al., 2019; Blanco-Portela et al., 2017; Hueske & Guenther, 2021), which is discussed in this section. The analysis of barriers and drivers aims to create a better understanding of change processes towards sustainability transformation, as Hueske and Guenther (2021) explain:

barriers and drivers are more than just antitheses of each other - rather, both perspectives supplement each other [...]. Identifying barriers and drivers contributes to understanding why current strategies are less or more successful. Instead of proposing new strategies, barriers and drivers provide insights as to why the transformation fails or succeeds, and how to improve their chances of success. (p.3)

Barriers are discussed at different levels, with the literature identifying a range of obstacles in varying categories, including individual aspects such as limited awareness, concern, knowledge and understanding of sustainability amongst HE stakeholders (Leal Filho et al., 2017) as well as capability related obstacles (Figueiró & Raufflet, 2015). Scholars framing sustainability integration as organisational change processes emphasize resistance to change (Figueiró & Raufflet, 2015) and internal push-back (Blanco-Portela et al., 2017) as further

obstacles. Another set of barriers identified refers to managerial issues, where authors stress a lack of prioritization and commitment on the side of management (Ceulemans et al., 2011), structural inefficiencies, as well as insufficient provision of financial and infrastructural resources and support of sustainability initiatives (Blanco-Portela et al., 2017; Verhulst & Lambrechts, 2015). Institutional barriers are also highlighted in the literature, such as traditional academic culture and disciplinary silos preventing collaboration and interdisciplinarity (Ceulemans et al., 2011), inflexible or lacking institutional and governance structures (Blanco-Portela et al., 2017), lack of technology, and unsustainable buildings (Leal Filho et al., 2017).

Alongside these barriers, possible drivers of sustainability integration are also discussed in the literature (Blasco et al., 2021; Hueske & Guenther, 2021). Scholars agree on the importance of stakeholder engagement and communication, structural elements including interdisciplinary collaboration and teaching, the provision of institutional structures and resources for sustainability, the integration into vision, mission, strategy, and external drivers such as certifications, pressure from stakeholders, financing, and reputation as key drivers of sustainability integration (Blanco-Portela et al., 2017; Blasco et al., 2021). Other scholars emphasize the role of external drivers such as government agencies, accreditation bodies, ratings and rankings increasingly requiring HEIs to report on their contribution to the SDGs (La Poza et al., 2021), whereas Arora et al. (2021) investigate which of the pillars of sustainability (environment, social, economic) are the most powerful drivers, finding that environmental concerns are most influential.

Several studies (11 papers) present frameworks and models built on barriers and drivers to support HEIs in their process of transformation. Hueske and Guenther (2021) for example propose a multi-level understanding of change, considering barriers and drivers at external, organizational, group, and individual levels. Azizi (2023) proposes a process-oriented model that evaluates change drivers based on established frameworks of barriers and empowerment aspects, whereas

Silvestre et al. (2022) provide an integrated institutional framework that supports sustainability integration by combining structured diagnosis of sustainability value creation with a cyclical process for embedding, assessing, and improving sustainability practices. Other frameworks are conceptualized from a range of different perspectives and provide different approaches such as maturity models (Baker-Shelley et al., 2020; Pizzutilo & Venezia, 2021), sustainability assessment (Morrison-Saunders & Therivel, 2006), communication strategies (Akins et al., 2019; Awuzie & Abuzeinab, 2019), frameworks to analyse sustainability integration in study programs (Obrecht et al., 2022), impact mapping (Findler et al., 2019), institutional action areas (Berchin et al., 2017), and guidance for the systematic integration of the Sustainable Development Goals (Ferrer-Estévez & Chalmers, 2021; Franco et al., 2019; Leal Filho, Lange Salvia, et al., 2021).

The barriers and drivers identified in these studies and the resulting frameworks provide an important basis for understanding obstacles and success factors when framing sustainability change efforts, however this strand of literature displays similar limitations to those discussed in section 2.3.1. The underlying conception of the approaches to sustainability integration is seen by critics as overly technological, operational and top-down, neglecting strategic and reflexive perspectives (Baker-Shelley et al., 2017) and failing to explain how the necessary change processes work (Verhulst & Lambrechts, 2015). Barth (2013) summarizes these shortcomings as follows:

implementing sustainability in institutions of higher education is largely seen as a process that can be planned and managed in a top-down manner with a basic bottom-up commitment and that needs leadership support as conditio sine qua non. Such a view of one model of success does not do justice to the manifold activities which are initiated by a large number of different stakeholders in various ways. Second, such approaches usually treat drivers and barriers as static constructs that influence the implementation process. Consequently, it is not clarified how they influence each other, how they are linked and how they may change during the implementation process. (p.161)

In summary, while the extant literature about barriers and drivers offers valuable insights into the challenges of sustainability integration, and recent literature provides frameworks and models to support this effort, the descriptive and analytical approaches conceptualizing challenges and drivers as static conditions impeding structural and strategic alignment neglect the complexities of the expansive learning and cultural change inherent in sustainability transformations. Reflecting the limitations of the literature about SDG integration and WIA discussed above, shortcomings in this body of literature remain in understanding the underlying, often historically conditioned contradictions and tensions influencing barriers and drivers, and the dynamics arising from these in complex HE systems where sustainability integration occurs, which is one aspect addressed in this research project.

2.3.3 Sustainability transformation as organisational change and capability development

In recognition of the complexity and limitations of static approaches to sustainability integration discussed in section 2.2.2., a growing body of literature (15 papers) is emerging that conceives of sustainability transformation as an ongoing change process affecting and being affected by the culture of organizations, fostering collaboration and shared leadership, and relying on learning, which we will review in this section. Proponents of this stance take into consideration diverse aspects of change processes and emphasizes especially human factors such as perceptions, attitudes and behaviours, and institutional aspects (Rieg et al., 2021). Strands of work within this theme put forward arguments which emphasise changes to organisational culture, organisational learning, and governance.

One area of research within this theme focuses on changes to organisational culture. Adams et al. (2018) for example frame sustainability transformation as organisational culture change, arguing that the culture of an organisation shapes

its identity and enables consistent and unified actions. They define sustainability transformation as

a journey recognisable as a set of transformatory stages in which the behaviour and attitudes of groups of people within an organization become increasingly aligned around and consistent with the principles embodied in and implied by sustainable development. (p. 437)

In a similar vein, Niedlich et al. (2020) identify four fundamental dimensions of organizational culture that influence sustainability governance: responsibility for sustainable development, institutional purpose, conception of sustainability, and the scope of organizational change.

Others argue that successful sustainability integration requires strong leadership alongside collaborative and distributed decision-making structures and long-term commitment. Mader et al. (2013) for instance emphasize the necessity of a collective vision and posit that sustainability integration is most effective when it is based on joint responsibility and distributed leadership, ensuring that decision-making is participatory rather than hierarchical. Similarly, Holst (2022) advocates for principles of coherence, participation, and responsibility, reinforcing the idea that sustainability initiatives must be embedded within institutional structures to ensure long-term success. This supports the notion of the holistic approach proposed by Niedlich et al. (2020), who emphasize the need for alignment across all levels of an institution to create a unified and enduring sustainability strategy.

The role of organizational learning in sustainability transformation presents another recurring theme in the literature, with scholars arguing that institutions must cultivate an environment that encourages continuous learning, adaptation, discourse, and reflection on sustainability practices (Bien & Sassen, 2020; Giesenbauer & Müller-Christ, 2020). Mader et al. (2013) highlight the significance of systemic understanding, where members of an institution recognize the interconnected impact of sustainability efforts across different domains. Holst (2022) supports this perspective, emphasizing continuous learning as a core principle for sustainability transformation. Niedlich et al. (2020) further reinforce

this idea by describing sustainability integration as an evolving process that requires adaptive strategies and capability building. In a similar vein, Scahill and Bligh (2022) stress “the importance of associating sustainability in higher education [...] with a concept of change and development, rather than (as is more common) one of ‘implementation’ or ‘promotion’” (p.100).

There is a strand of literature in this body of work that references Transformative Learning Theory (TLT) for its potential to challenge existing paradigms and drive sustainability-oriented change (Bell, 2016; Sterling, 2011). Efforts to bridge TLT with organizational learning frameworks highlight the role of collective learning, shared vision, and systems thinking in embedding sustainability (Cebrián et al., 2013). Recent studies expand the application of TLT beyond individual learning to institutional change, incorporating structural, social, and conflict perspectives (Boström et al., 2018). However, overall this body of literature remains undertheorized, signalling a need for more stringent theoretical development to support systemic change in higher education (Probst, 2022; Trevisan et al., 2024). Even where TLT is used, it is often applied without direct engagement with its theoretical roots (Rodríguez Aboytes & Barth, 2020) and studies advancing theoretical framing of sustainability transitions in HE are rare.

2.3.4 Section summary

The body of research reviewed in section 2.3 underscores that sustainability transformation in higher education is not merely a structural or policy-driven endeavour but requires institutions to foster a collective vision, shared responsibility, systemic understanding, and transdisciplinary engagement, supported by long-term commitment and institutional coherence. Yet despite widespread agreement on the need for profound and system-wide learning and capacity building, and acknowledgement of the complexity of this endeavour, studies how this transformation can be stimulated and cultivated in practice and framed theoretically are only emerging. The study at hand aims to respond to this limitation by exploring in depth how collectives engage in reflective and discursive

activities, and how these can be orchestrated, supported, and traced. Given this focus on individual and collective engagement and empowerment, the need to examine the literature dealing with stakeholder groups involved in sustainability integration arises, which is the subject of the next section.

2.4 Stakeholder participation in HE sustainability integration

Stakeholder engagement plays a crucial role in sustainability integration in higher education (Crocco et al., 2024; Ferrero-Ferrero et al., 2018), and the present study was part of a wider attempt to include diverse stakeholders in this effort. It is therefore important to critically review what the literature has to say about such engagement, which is the purpose of this section. Overall, 58 papers were considered, which are presented in Figure 2.2.

Stakeholder Engagement in HESD (general) (10)	Staff Perspective (16)
Aleixo et al., 2018; Brunstein & King, 2018; Chakraborty et al., 2019; Crocco et al., 2024; Ferrero-Ferrero et al., 2018; Lange, 2013; Leal Filho & Brandli, 2016; Mazon et al., 2020; Too & Bajracharya, 2015; Vargas et al., 2019	Bacelar-Nicolau et al., 2023; Bellou et al., 2017; Brinkhurst et al., 2011; Cebrián et al., 2015; Christie et al., 2015; Corres et al., 2020; Melles, 2019; Moganadas et al., 2022; Mulà et al., 2017; Murillo-Vargas et al., 2020; O'Grady, 2023; Sammalisto et al., 2015; Slager et al., 2020; Sylvestre et al., 2013; Vare et al., 2019; Wakkee et al., 2019
Student Perspective (20)	Leadership (12)
Barth & Timm, 2011; Block et al., 2016; Budowle et al., 2021; Butt et al., 2014; Drupp et al., 2013; Guerra et al., 2022, 2024; Hamann et al., 2021; Hamilton & Spalding, 2012; Higgins et al., 2013; Leal Filho et al., 2024; Leichenko et al., 2022; Mittal & Bansal, 2024; Murray, 2018; Núñez et al., 2024; Servant-Miklos et al., 2023; Trencher et al., 2015; Uzorka et al., 2024; Vare, 2021; Weiss & Barth, 2019	Augn, 2024; Aung & Hallinger, 2023; Avissar et al., 2018; Azizi, 2023; Brinkhurst et al., 2011; Geels, 2021; Hallinger & Suriyankietkaew, 2018; Leal Filho et al., 2020; Mader et al., 2013; Price et al., 2021; Sajjad et al., 2024; Sanchez-Carrillo et al., 2021; Wright & Horst, 2013

Figure 2.2: Dashboard showing papers reviewed in Area 2

Given the research aim to explore institutional change and the agency of the people involved in this, we will focus here on the literature concerned with internal stakeholders rather than with the influence of external stakeholder groups such as government agencies, non-governmental organisations, business and industry, ranking or accreditation agencies, other universities, donors, etc. which has been discussed elsewhere (Chakraborty et al., 2019; Lange, 2013; Leal Filho & Brandli, 2016).

Overall, this body of literature recognises that universities are dynamic organisations where diverse stakeholders, especially students, academic and professional staff, managers and leaders (and external partners) shape and influence sustainability agendas and practices (Crocco et al., 2024; Kohl et al., 2022; Vargas et al., 2019). Scholars recognize that meaningful engagement can foster collective learning, enabling institutions to challenge existing norms, shift mind-sets, and integrate sustainability into their core identity. As argued in section 2.3, sustainability transformation requires more than structural or technical solutions. The strand of literature reviewed here recognizes that sustainability integration in HE involves a deep cultural shift where sustainability becomes embedded in institutional values, governance, and everyday practices (Too & Bajracharya, 2015; Wright & Horst, 2013). Scholars argue that by empowering stakeholders, universities can cultivate shared responsibility and adaptive learning, strengthening their capacity for long-term change (Trevisan et al., 2024) and for tackling “wicked” sustainability issues (Wals & Schwarzin, 2012).

Whilst some scholars investigating stakeholder-centered approaches to sustainability integration highlight benefits such as improved dialogue, heightened awareness of sustainability issues, and greater empowerment (Disterheft et al., 2015), others emphasize key challenges, including insufficient involvement of key groups such as educators and students, inadequate communication and a lack of capacity among stakeholders (Blanco-Portela et al., 2017; Franco et al., 2019). Scholars also identify challenges in understanding the dynamic nature of stakeholder contributions and their broader impact (Disterheft et al., 2015). This weakness in the literature is confirmed by Hoover & Harder (2015):

We need more individual and collective reflexivity in our institutions and research through genuine dialogue reflecting on who is engaged with change processes and why, and acknowledging the multiple sustainability ‘cultures’ within a university. In addition to supporting individuals, it would be useful to start to address hidden contradictions and tensions that impact on individual and collective involvement. The

'human' dimensions of organizational change processes must also be accompanied by flexible and human-centered structures and management approaches, and a move towards 'double loop' organizational learning. (p.187)

The following sections explore the literature dealing with central issues regarding stakeholder engagement, foregrounding scholarly discussion of internal stakeholder groups, especially university staff and students as the most relevant to the project described, and the role of leadership in HE sustainability integration.

2.4.1 Faculty and staff engagement

An important strand of literature (16 papers) emphasizes the role of university academic and general staff in HE sustainability transformation, first and foremost by integrating sustainability into curricula and research (Christie et al., 2015; Moganadas et al., 2022), but also by shaping institutional agendas and leading sustainability initiatives that drive cultural change (Aleixo et al., 2018). This section discusses this body of knowledge, exploring the key role of faculty, academic identity, professional development, barriers, and strategies to overcome these. It is noteworthy that the literature reviewed foregrounds academic staff and their key role in sustainability integration, whilst the role non-academic staff play in this endeavour hardly features, despite their critical contribution to sustainability integration via technical expertise and support in management and administration (Aleixo et al., 2018).

The literature places strong emphasis on the central role of faculty in HESD. Brinkhurst et al. (2011) for example maintain that

faculty and staff are the internal agents of change on university campuses. Faculty and staff are the stakeholder who have the potential to change universities from the inside out, given their understanding of how universities function, their diverse technical expertise, and their connection between the institutional top and bottom. They represent a powerful middle-out transformative force, when this capacity is enabled. (p. 340)

Contending that faculty can act as “social intrapreneurs” (Brinkhurst et al., 2011) or “entrepreneurial scholars” (Wakkee et al., 2019) who have diverse and unique positions to act as drivers of change towards sustainability, the literature conceives them in different roles: as curriculum innovators who can infuse sustainability creatively into curricula across disciplines (Brinkhurst et al., 2011; Cebrián et al., 2015), as change agents who promote sustainability in teaching and research and influence broader strategies (Brunstein & King, 2018; Hoover & Harder, 2015) and as mediators between top-down policy and bottom-up initiatives (Brinkhurst et al., 2011; Murillo-Vargas et al., 2020).

This strand of literature posits that faculty arguably hold a high stake in sustainability transformation, also because these individuals’ identity is regarded as strongly shaped by their academic role. Scholars argue that if both personal ethos and disciplinary values are aligned with sustainability, faculty embrace sustainability more strongly (Cebrián et al., 2015; Rieckmann & Barth, 2022) and may even experience a shift in their professional identity towards more interdisciplinary, reflective or facilitative roles (Mulà et al., 2017; O’Grady, 2023; Scherak & Rieckmann, 2022). Authors highlight that institutional recognition and support for sustainability engagement, for example through sustainability centres (Slager et al., 2020), as well as partnership with others, including students, can help enforce this identity alignment (Brinkhurst et al., 2011; Hoover & Harder, 2015). Melles (2019) finds that personal ethics and experiences play a significant role in faculty accounts of sustainable development.

On the other hand, the literature also discusses the risk of tensions and fractures in identity if there is no or little institutional support for sustainability integration. Cebrián et al. (2015) for example contend that faculty committed to sustainability whose efforts are not recognised or supported feel marginalized or isolated, whereas Brunstein and King (2018) identify possible dilemmas for staff in this situation, possibly leading to subversive practices, informal experimentation, or “micro-resistance” (Hoover & Harder, 2015). Menon and Suresh (2020) discuss

how lack of institutional incentives leads to burnout or strategic withdrawal, where faculty revert to disciplinary or “safe” identities.

Several scholars emphasize the need to prioritize professional development for faculty as a key driver of sustainability transformation. However there is clear agreement that one-off workshops are not sufficient (Mulà et al., 2017) and continuous professional development is seen as crucial for equipping faculty with the skills needed for sustainability integration. This involves mentoring, social learning, and competency-based training that fosters leadership, interdisciplinary collaboration, and critical reflection (Mulà et al., 2017; Scherak & Rieckmann, 2022). Training is also seen as an important strategy for general staff to raise environmental awareness and build capacity (Bacelar-Nicolau et al., 2023; Bellou et al., 2017).

Professional development opportunities are described as providing a space for reflective practice, allowing faculty to consider their own assumptions and transform pedagogy (Brunstein & King, 2018), and encouraging collaborative learning and communities of practice among educators (Disterheft et al., 2015; Mulà et al., 2017). Whilst there are several studies concerned with the design, implementation and evaluation of a range of different staff development formats (Corres et al., 2020; Vare et al., 2019), research interventions that are framed as capacity building opportunities for sustainability learning such as the Sustainability Change Laboratory and particularly studies investigating the concept of agency in this context are virtually non-existent with the exception of Scahill and Bligh (2022).

Many of the barriers to sustainability integration discussed in section 2.3.2 are also reflected in this body of work, albeit more specifically related to faculty engagement. Structural barriers such as crowded curricula, limited resources and lack of incentives or recognition (Wicke et al., 2024) as well as time constraints and workload pressures (Cebrián et al., 2015; Menon & Suresh, 2020) and lecturers’ temporary or contractual status (Chakraborty et al., 2019) often prevent faculty from fully engaging with sustainability. Other research

highlights challenges associated with faculty engagement from an institutional point of view, ranging from limited awareness to conceptual plurality (Sylvestre et al., 2013), low participation in academic development initiatives and limited appeal in groups beyond already-engaged faculty (Scherak & Rieckmann, 2022), and perceptions of sustainability as an imposed agenda disconnected from disciplinary priorities (Cebrián et al., 2015).

Scholars propose a range of strategies to overcome these obstacles. Interdisciplinary collaboration and peer learning are seen as key to fostering faculty engagement in sustainability as they provide spaces for peer support, exchange, and collective learning, which are critical for empowering faculty to take ownership of sustainability efforts (Warr Pedersen, 2017). Some studies argue that universities need to evolve into learning communities that encourage dialogical interaction and reflective practice to create a supportive environment (Wals & Schwarzin, 2012). The importance of collective reflection is highlighted as a continuous and institutionalized process engaging both faculty and students (Mulà et al., 2017) to drive transformative learning toward sustainable development and address collective dilemmas (Brunstein & King, 2018). Rieckmann and Barth (2022) posit that the complex competencies required for sustainability education can only be developed with continuous learning, institutional support, and incentives to create a culture where sustainability is embedded in teaching and professional development. Wals and Schwarzin (2012) acknowledge the difficulty of such endeavours:

“When a (management) team decides to take a community and learning-oriented approach, we cannot assume that the people who make up the organization or community will be able to simply put on their “reflexive hats”. Groups actually need to learn to become a learning community. [...] this depends on the ability and willingness of its members to reflect.” (p.16).

In summary, there is agreement that faculty are pivotal in higher education’s sustainability transformation, yet the literature shows that engagement remains thwarted by structural, institutional, conceptual and pedagogical barriers. The literature agrees on the need for universities to invest in long-term and innovative

forms of staff development, create incentives, provide the necessary resources, and foster institutional commitment to sustainability as a core academic priority (Cebrián et al., 2015). This research highlights the need for a shift from individual and one-off professional development and training to a broader institutional learning culture, where faculty receive sustained support through interdisciplinary collaboration, professional development, peer-learning, reflection and systemic integration of sustainability across all aspects of academic work.

Surprisingly, the notion of agency is rarely mentioned, let alone explicitly defined or theorized in this body of work. While several of the scholars refer to faculty (Cebrián et al., 2015; Sammalisto et al., 2015; Wakkee et al., 2019) and non-academic staff (Bacelar-Nicolau et al., 2023) as agents of change and thus seem to assume that agency exists and matters, exploration of what this agency entails or how it unfolds is absent. The literature about organisational development and capacity building mentions or implies agency in passing, but it foregrounds competency development (Scherak & Rieckmann, 2022) and regards agency more as an outcome (Cebrián et al., 2015) rather than a transformative force or contested concept. These limitations provide opportunities for further research to explore the concept of agency in the context of staff engagement for sustainability integration not from a behavioural or trait perspective, but as a relational and processual concept that emerges through stakeholders identifying, navigating and negotiating contradictions and tensions in joint activity systems.

This section has reviewed key aspects relating to academic staff engagement in sustainability integration, highlighting their central role in promoting and driving university sustainability initiatives. The literature emphasizes the importance of ongoing staff development and support, and identifies obstacles and drivers for staff engagement. It is noteworthy that the literature reviewed implies the role and importance of agency, but only a handful of scholars explicitly discuss or explore the concept, mostly as an outcome only, ignoring the complexities inherent in the emergence of agency, the means of fostering individual and

collective agency development, and theoretical and conceptual approaches to explain and empirically trace agency development.

2.4.2 Student engagement

This section reviews the body of literature (20 studies) examining the engagement of students as key stakeholders in higher education sustainability efforts, including different ways students are engaged in university sustainability initiatives, students' motivations, and barriers to sustainability engagement. Student empowerment is discussed as an important factor, and emerging research focussing on student agency in this context is reviewed.

In the scholarly discourse about student engagement, two perspectives can be identified. One focuses on university-led initiatives aimed at promoting student participation, particularly through curricular and co-curricular activities related to sustainability, as well as involvement in campus sustainability projects or events. The other emphasizes student-led initiatives, where engagement arises from within the student body, often with the objective of pressuring the university to take greater action on sustainability-related issues (Murray, 2018).

Regarding the first perspective, framed as "Education for Sustainable Development" (ESD), much of the literature dealing with universities' efforts to foster students' sustainability learning is related to the necessary transformation in pedagogical approaches, where transmissive teaching models are replaced by educational strategies that foster transformative sustainability learning such as problem-based learning, service learning, experiential learning, case-based learning and cross-disciplinary learning (Scarff Seatter & Ceulemans, 2017; Schnitzler, 2019). Another stream of literature deals with the integration of sustainability into academic programmes and curricula (Weiss & Barth, 2019) and the outcomes in terms of students' sustainability competencies (Barth & Timm, 2011; Núñez et al., 2024) and awareness (Servant-Miklos et al., 2023). An in-depth exploration of these extensive and well-established bodies of

literature on pedagogical transformation and curriculum integration in sustainability education is beyond the scope of this study as this would require a dedicated and more expansive treatment than what this section can provide. For a detailed overview of key studies on student-centred and active learning approaches aimed at supporting student engagement and developing sustainability competencies, I refer the reader to the meta-analysis of literature reviews by Aghajani et al. (2024). This chapter focuses instead on perspectives of student engagement in sustainability beyond their academic programmes.

The literature reports multi-faceted areas where students become active contributors to sustainability transformation at universities on their own accord. Murray (2018) identified seven types of student-led sustainability initiatives, with pursuits targeting behavioural change the most frequent, followed by policy change, education, campus gardens and greening buildings, and conservation initiatives and audits among the least reported. Other studies confirm that student-led initiatives play a significant role in sustainability efforts (Drupp et al., 2013), especially in the context of campus-related environmental projects such as sustainable mobility, waste recycling or energy reduction initiatives, advocacy campaigns, community gardens, renewable energy projects and sustainable food initiatives (Mittal & Bansal, 2024a). Such student initiatives are often organised in the form of Green Offices (Leal Filho, Will, et al., 2019) and other forms of student associations (Chakraborty et al., 2019). There are also accounts of students bridging academic learning and student-driven perspectives, for example when they act as co-creators of curricular and co-/extracurricular sustainability courses (Hamilton & Spalding, 2012), as institutional innovators and boundary agents (Budowle et al., 2021; Drupp et al., 2013) sustainability volunteers (Hamann et al., 2021), or as co-creators in sustainability related research (Trencher et al., 2015) and sustainability change projects (Block et al., 2016).

Scholarly discourse identifies various motivations driving students to participate in sustainability initiatives, including a desire to contribute to environmental

preservation, address social issues such as poverty and inequality, and develop both professional and personal skills. Additionally, students are often motivated by the opportunity to build social connections, meet new people, and make a positive impact in their communities (Leal Filho et al., 2024). Murray (2018) also posits that student activism has long driven social change, noting a resurgence today fuelled by environmental concerns and social disruption, manifesting in campus sit-ins, petitions, demonstrations, and other activist strategies. Such engagement has exerted significant pressure on university, contributing for example to fossil-fuel divestment and green campus initiatives (Mittal & Bansal, 2024a). Involvement in university sustainability initiatives is seen as an essential aspect of nurturing and cultivating a sense of ownership and responsibility for sustainability among students (Uzorka et al., 2024).

Despite these motivations, the literature reports on several barriers that hinder students' engagement in sustainability initiatives. Leal Filho et al. (2024) identified lack of time as the most prominent obstacle, followed by a lack of integration between sustainability initiatives and academic courses and insufficient knowledge about sustainability, both among students and educators. Higgins et al. (2013) reveal a lack of incentives for engagement, institutional support or even hostility towards student initiatives, and lack of funding as key barriers. Butt et al. (2014) further report that, although sustainability engagement opportunities are available, participation is often low, with sustainability initiatives primarily driven by staff rather than students. These findings challenge the assumption that students are inherently keen on sustainability, highlighting the need for universities to better understand student attitudes and tailor initiatives accordingly. Higgins et al. (2013) also point to the transient nature of university life, where students' time at the institution is relatively short, often resulting in limited and short-term involvement in sustainability initiatives, and preventing the development of sustained efforts.

In contrast to the literature discussing university staff engagement, this body of research discusses the concept of agency more explicitly, often in the context of

student empowerment. Murray (2018) highlights the importance of true collaboration with and empowerment of students in order to enable them to contribute meaningfully to the development of a sustainable future, thereby reinforcing their agency and the role they can play in fostering systemic change within their universities. In a similar vein, Higgins et al. (2013) draw attention to the importance of recognizing individual and collective agency, concluding that

if universities are to successfully engage students they must acknowledge their potential as agents of change who have different spheres of influence. Students' opportunities for engagement are spatially diverse (involving university life but also off-campus life) and determined by individual and collective agency (the capability to take action that will have a social and/or environmental impact). This means universities do not simply lecture about the importance of sustainability while assuming students are 'citizens in waiting'. Rather, everyone in universities can engage in transformative approaches to citizenship that begin now and involve capacity building and action. (Higgins et al., 2013)

Guerra et al. (2022), in one of the few papers centring agency and drawing attention to the need for studies exploring the concept more explicitly, emphasize student engagement as significant in shaping student agency and identity, both of which are seen as critical in preparing future professionals and citizens to act in alignment with sustainability principles. Budowle et al. (2021) conceptualize student agency as the socio-culturally mediated capacity to act, emphasizing the importance of power dynamics and the actors driving change within higher education institutions' roles in regional sustainability transitions. Similarly, Vare (2021) conceptualizes student agency as the capacity of students to initiate and lead meaningful change within their communities through active participation in sustainability projects. There is also recognition of the limitations of promoting agency. Mazon et al. (2020) for example claim that

unlike what is discussed in the literature, the sustainability promotion models in universities generally occur in a top-down manner, where students are receptors and not active agents in promoting sustainability. (p.1430)

These studies can be seen as essential steps forward in conceptualizing agency in the context of HESD. By starting to centre agency rather than treat the concept implicitly, they provide an important basis for further discussion. However, the scholars in this strand of literature tend to view agency from an outcome or trait perspective, with conceptualizations remaining fragmented in terms of focus and the theoretical underpinnings employed. While they acknowledge critical aspects such as power dynamics and participation, investigations in how agency actually unfolds - an important prerequisite to understanding how it can be nurtured - are limited, providing opportunities for alternative conceptualizations and further empirical investigations.

In summary, the literature converges on the view that student engagement and empowerment is an essential aspect of university's sustainability transformations, with scholars presenting diverse ways in which students contribute to sustainability initiatives. While the literature points to key challenges of student sustainability engagement, it leaves space for further exploration into how these barriers can be overcome to empower students to become transformative agents of sustainability. Overall, this body of work is more aware of the importance of student agency and explores the concept more explicitly, mostly viewing agency from a capability perspective. Research investigating process-oriented conceptualizations and the ways in which individual and collective agency can be nurtured and empirically traced, however, is rare.

This section has addressed engagement of students in sustainability integration, highlighting diverse formats, motivations and challenges and identifying limitations in the literature addressing student agency in this context. The next section considers the role of leadership in SHE, drawing attention to another key stakeholder group, HE leaders and administrators, but also to the concept of leadership more generally.

2.4.3 The role of leadership

There is strong agreement in the literature (12 papers reviewed) that effective leadership in HEIs is essential for driving sustainability transformation (Weiss et al., 2021), however research on sustainability leadership – and the role of leaders as stakeholders - in universities remains limited (Azizi, 2023; Sajjad et al., 2024). This reflects the findings of a systematic review of sustainability leadership in a wider context by Hallinger and Suriyankietkaew (2018), who state that “sustainable leadership has yet to gain a firm foothold in the mainstream of either the leadership or sustainability literatures” (p. 17). This section provides a brief overview of the existing literature, expounding how sustainability leadership is conceptualized, what challenges are identified, including those arising from the peculiarities of the HE context, and highlighting knowledge limitations.

The extant literature describes sustainability leadership in HE from different perspectives, including requirements, practices and responsibilities involved. Given the complexity of sustainability challenges, scholars emphasize the need for long-term thinking, adaptability, and innovation in sustainability leadership (Leal Filho et al., 2020). Key contributions within this literature define sustainability leadership practices such as developing a vision, transforming facilities and operations, integrating sustainability into research and educational programmes including staff training, developing a sustainability culture, and fostering community, allocating resources, restructure governance, and measure impact aligned with the SDGs (Augn, 2024; Leal Filho et al., 2020). The literature also highlights the multiple dimensions of responsibility that HEIs bear in integrating sustainability within their own operations but also equipping students with the competencies to navigate and address global sustainability challenges (Price et al., 2021) and their social impact (Sanchez-Carrillo et al., 2021).

Leadership challenges are addressed in the literature, with scholars positing that without strong leadership commitment, sustainability efforts risk becoming fragmented, particularly in the face of financial and administrative constraints, and arguing that sustainability leadership must be responsive to external

pressures, including shifting policy landscapes, societal expectations, and funding limitations (Leal Filho et al., 2020). Other leadership challenges are highlighted by Purcell et al. (2019), who maintain that tensions between institutional goals, culture, and organizational drivers impact resources and efforts, and that transformation takes time, requiring community engagement at multiple levels while balancing short-term expectations:

Perhaps the greatest challenge for leadership is to foster an innovative approach throughout the organization, and thereby potentially be perceived as a challenge to the rightful academic independence of departments. This requires sustainability to move center stage to inform the strategic mission of the university to accelerate change and co-create the future. A transformation of this magnitude requires time for the community to do its work at the individual, group and community levels in terms of socializing the change and this is probably one of the biggest challenges to face. (Purcell et al., 2018, p.1354)

Perhaps not surprisingly in this context, scholarly discourse on sustainability leadership in HE denotes a shift from traditional hierarchical models to more collaborative and distributed approaches (Avisar et al., 2018; Price et al., 2021). The body of literature in this area highlights sustainability leadership as fundamentally different from authority-based leadership, emphasizing inclusivity, interdisciplinary collaboration, and the co-generation of knowledge rather than hierarchical decision-making (Price et al., 2021). This is in line with a more general definition of sustainability leadership as

enacted through collective or distributed efforts aimed at shaping the organizational culture, leading people for both performance and job satisfaction, and redesigning working systems to achieve new goals [...]. Sustainable leadership seeks to engage a broad set of stakeholders, both inside and outside of the organization. (Hallinger & Suriyankietkaew, 2018, p.4)

Hallinger and Suriyankietkaew's (2018) proposition also aligns with the view that due to the pluralistic nature of universities, where especially faculty play a central role, leadership must be driven by the articulation of a compelling change narrative rather than more directive strategies (Purcell et al., 2019). Studies in

this stream argue that sustainability leadership is not confined to those in formal leadership positions but can be exercised by anyone fostering sustainability within their institutional or community context (Avissar et al., 2018). Price et al. (2021) advocate for a nested leadership model, which conceptualizes sustainability leadership as a multi-level phenomenon extending from senior executives to faculty members, administrative staff, and students. The authors suggest that leadership at various levels creates a cascading effect, influencing sustainability efforts throughout an institution. Other studies, such as Avissar et al. (2018), suggest that distributed leadership, emerging from situational contexts and leader-follower interactions, may offer a more adaptive approach to sustainability integration in universities, also including students as leaders (Trencher et al., 2015).

Despite the increasing scholarly attention to sustainability leadership, critical limitations persist in both theory and practice. A major concern raised in the literature is the disconnect between leadership theories and their practical application in higher education institutions (Aung & Hallinger, 2023), with many universities struggling to implement structured organizational change (Azizi, 2023) and lacking frameworks for guiding these transitions (Leal Filho et al., 2020). While studies highlight the need for distributed leadership, they often overlook how university members, including faculty, staff, and students, exercise agency in driving sustainability from the ground up (Geels, 2021). Given the complexity of sustainability challenges and the institutional resistance to change (Purcell et al., 2019), further research is needed to understand how individuals and collectives navigate constraints, mobilize resources, and foster sustainability within their spheres of influence. Addressing these shortcomings can provide a more nuanced understanding of how sustainability is enacted in HEIs and is one of the aims of this project.

2.4.4 Section summary

Section 2.4 has explored the body of knowledge investigating engagement of different stakeholders in HE sustainability integration, focussing on staff and students as the groups most central to sustainability transitions, and highlighting the complex nature of leadership in this effort.

Studies consistently highlight faculty as central agents of transformation through curriculum design, research, and institutional initiatives, while also noting barriers such as workload pressures, limited incentives, and lack of institutional support. The literature points to professional development, collaboration, and institutional commitment as critical enablers, yet it tends to treat agency as implicit or as a by-product of competency development, leaving its relational and processual dimensions underexplored.

Research on student engagement portrays students as active contributors to sustainability efforts through both institution-led and grassroots initiatives, motivated by social, environmental, and personal drivers. These studies more explicitly discuss student agency, often framing it in terms of empowerment and capacity for systemic change, though conceptualizations remain fragmented and outcome-oriented.

Leadership is another focus of the literature, with scholarship identifying a shift from hierarchical models toward distributed and collaborative approaches. However, gaps remain in connecting leadership theory to practice and in examining how agency and leadership interact in enabling sustainability transformations in higher education.

The next section builds on these findings and discusses the emerging notion of stakeholders' sustainability agency.

2.5 Sustainability Agency: An emerging concept

As evident in the literature review in previous sections, scholarship on sustainability transformation in higher education underscores the importance of engaging key stakeholder groups as active agents of sustainability initiatives. This focus draws attention to the concept of agency to understand how students, staff and other stakeholders contribute to the co-creation of sustainable futures, and there is a fledgling concept of “sustainability agency” starting to emerge in the literature. In contrast to the aspects featured in the bodies of knowledge discussed above, however, this concept has only received attention in a handful of studies in the context of HE. As outlined in section 2.2.1, my research led me to discover a more robust exploration of sustainability agency in a different disciplinary field, sustainability transition studies. There is an interesting – albeit not very mature – strand of literature in this disciplinary context with scholars attributing high importance to investigating the concept of sustainability agency, which is seen as having been neglected so far.

This section therefore differs from preceding sections in important ways. First, it goes beyond the context of HE, investigating a strand of literature in sustainability transition studies. Second, the literature reviewed here is sparse compared to the ample publications available in the bodies of knowledge reviewed so far. The aspects discussed below therefore had to be teased out from the small number of studies identified. Third, this section engages with the fledgling concept of sustainability agency specifically. We will consider further perspectives regarding the concept of transformative agency in chapter 3.

This section is structured in two parts. Section 2.5.1 presents existing conceptualizations of sustainability agency as proposed in transition studies literature, followed by a discussion of the few studies developing the concept in the context of HE in section 2.5.2. Figure 2.3 shows an overview of the papers discussed for each area.

Sustainability Agency – Transition Studies (13)	Sustainability Agency – Education (7)
Charli-Joseph et al., 2023; Fischer & Newig, 2016; Francesconi et al., 2021; Haan & Rotmans, 2018; Huttunen et al., 2021; Koistinen & Teerikangas, 2021; Oinonen & Paloniemi, 2023; Otto et al., 2020; Peiró et al., 2021; Pelenc et al., 2015; Pesch, 2015; Roeck & van Poeck, 2023; Teerikangas et al., 2021	Koskela & Paloniemi, 2023; McGeown & Barry, 2023; Probst et al., 2019; Rap et al., 2022; Salovaara et al., 2024; Sidiropoulos, 2022; Weder et al., 2022;

Figure 2.3: Dashboard showing papers reviewed in Area 3

2.5.1 The concept of “Sustainability Agency” in Transition Studies

Defined broadly as “intentional, proactive individual or collective-level action geared toward sustainable futures” (Teerikangas et al., 2021), sustainability agency has gained traction in research areas concerned with sustainability transitions. In this body of knowledge (13 papers reviewed), a shift in focus from technological and systems-based approaches toward human-centred approaches is seen as necessary across all prevailing transition concepts (Haan & Rotmans, 2018). Whilst authors acknowledge that agency is included in the extant body of research in sustainability transitions, it is seen as mostly implicitly covered (Fischer & Newig, 2016) rather than having “explanatory primacy” (Haan & Rotmans, 2018), which is regarded as “awkward for a branch of research that is especially interested in developing insights about how to facilitate large-scale societal transformations” (Pesch, 2015, p.279). The literature reviewed here does give agency this “explanatory primacy”, with scholars interested in actors and agency as important components in a holistic understanding of transformation (Fischer & Newig, 2016; Gonzalez-Porrás. L. et al., 2021; Haan & Rotmans, 2018) and in the capacity of individuals and groups within institutions and communities to initiate, influence, and sustain systemic change toward ecological integrity, social justice, and economic viability (Pelenc et al., 2015).

This section explores how scholars in the field conceptualise sustainability agency and its development and highlights the limitations identified in this stream of work.

Across the articles reviewed, there is growing recognition that agency is central to sustainability transformation, but how agency is conceptualized and how it can be fostered varies considerably. Overall, collective agency in different guises is seen as having primacy over individual agency (Francesconi et al., 2021). Scholars have approached sustainability agency as relational (Huttunen et al., 2021), habitual (Roeck & van Poeck, 2023), collective (Charli-Joseph et al., 2023), discursive (Pesch, 2015), alliance-based (Haan & Rotmans, 2018), competence-driven (Peiró et al., 2021), and typological (Fischer & Newig, 2016). What unites these perspectives is a shift away from linear, structuralist views and toward dynamic, practice-embedded understandings that foreground actors' roles in enabling change. This body of knowledge emphasizes the processual nature of the development of agency, which is not seen as a capability that people possess, but as emerging through situated, relational, and meaning-making practices deeply embedded in broader systems (Charli-Joseph et al., 2023). This view is evident in the findings of Fischer and Newig (2016) who emphasize the increasingly important role of networks as connectors and information channels in transitions where actor roles change, and illustrated impressively in the case study of the *Fridays for Future* movement (Francesconi et al., 2021), a global youth-led movement where students across the planet strike from school to demand urgent climate action from governments.

The literature in this stream emphasizes that agency must be intentionally cultivated rather than assumed, but the kinds of interventions employed to foster agency depend on how it is understood. Haan and Rotmans (2018) and Fischer and Newig (2016) offer actor configurations and typologies, which can help understand transition actor roles and guide support mechanisms. Charli-Joseph et al. (2023) highlight the importance of “safe-enough” participatory spaces that allow actors engaged in their transformation lab to collectively reframe values

and narratives. Pesch (2015) and Roeck and van Poeck (2023) provide analytical tools aiming to help reveal how agency becomes constrained or activated within particular contexts. Across these works, fostering agency involves enabling actors to rethink routines, reframe and reconstruct narratives, learn, and engage in new relational formations with a view to co-creating positive futures.

While diverse in approach, these conceptualizations of agency share key similarities. All reject purely structural or deterministic explanations of transition in favour of more fluid, emergent understandings of change. Most foreground contextual embeddedness, whether through networks (Haan & Rotmans, 2018), habits (Roeck & van Poeck, 2023), or practices (Huttunen et al., 2021) and emphasize that agency is co-constituted within systems, not external to them. At the same time, there are important differences. Some scholars aim to operationalize agency into measurable frameworks or typologies (Fischer & Newig, 2016; Oinonen & Paloniemi, 2023; Peiró et al., 2021), while others lean more toward interpretive, meaning-based approaches (Charli-Joseph et al., 2023; Pesch, 2015; Roeck & van Poeck, 2023). While these divergences point to the conceptual richness of the field, they also signal a lack of coherence that can make cross-study comparisons or practical application difficult.

This points to one of the core limitations identified in this strand of literature: agency remains under-theorized, poorly conceptualized, and inconsistently integrated into sustainability transitions research. Pesch (2015) explicitly critiques the absence of a robust agency-based framework in transition theory, proposing “discursive fields” as a remedy. Roeck and van Poeck (2023) echo this concern, noting that dominant models often gloss over how structures and actors co-create one another. Fischer and Newig (2016), Otto et al. (2020) and Huttunen et al. (2021) also note that while agency is often mentioned, it is rarely systematically mapped or understood in terms of how it unfolds over time and across different systems. Charli-Joseph et al. (2023) highlight the difficulty in measuring transformative change, arguing that

when the actual material outcomes of change in a social–ecological system are still of in the future, the first evidence of transformative potential may be in the formation of collective agency [...]. Given the significant uncertainty in anticipating when any social change process will coalesce and what outcomes will emerge, attention to process may be far more important than a focus on measuring concrete outcomes at an (arbitrary) moment in time. (Charli-Joseph et al., 2023, p. 1229).

These critiques underscore the need to re-centre agency not just as a variable within transition models, but as a core mechanism of change itself, and to pay attention to the process of agency development rather than the outcomes.

In sum, this body of knowledge regards sustainability agency as a foundational albeit still evolving concept in transitions research. The reviewed literature contributes to a broader rethinking of agency as something enacted, cultivated, and situated within complex socio-technical systems. Whether through practices, discourses, habits, or competencies, the scholars cited converge on a common insight: sustainability transitions depend not only on changing structures, but on enabling people to imagine and enact different futures. This reconceptualization marks an important step forward, but also highlights the challenge of bridging conceptual clarity with practical tools for the activation of agency as well as its analysis. Future research will need to integrate these diverse approaches more coherently, and explore how sustainability agency can be scaled, supported, and sustained in the face of growing systemic challenges. Authors such as Pesch (2015) with the discursive fields approach or Charli-Joseph et al. (2023) have made promising steps in this direction. This effort requires more coherent ways of understanding and empirically tracing sustainability agency.

2.5.2 The concept of “Sustainability Agency” in the HE context

Explicit discussion of sustainability agency in HESD research is in its infancy, with only few publications (7 papers) identified that explicitly define and develop the concept. This section reviews these papers, discussing and comparing how

they conceptualize agency and its development, and identifying similarities and differences as well as limitations.

Compared to the studies discussed in Section 2.5.1, the papers reviewed here are more specific to higher education and are predominantly written from the perspective of educational scientists or practitioners. They place stronger emphasis on learning processes and competence development in relation to sustainability agency.

Within the broader field of HESD, the notion of sustainability agency has received limited in-depth attention, although the term “agency” appears frequently in the literature, often linked with related ideas such as hope (Evans, 2015), knowledge and action (Cotton et al., 2016), or competence (Sass et al., 2020), and mostly without providing a definition or theoretical grounding of the term.

Within the significant body of work discussing competency-based approaches to sustainability education, where scholars (Brundiers et al., 2021; Wiek et al., 2011), converge on a range of well-defined competences necessary to equip students - as future professionals, leaders and global citizens - with the capacity to act as change agents in sustainability transitions (Burns et al., 2016; Redman & Wiek, 2021), sustainability agency can implicitly be understood as a multidimensional construct encompassing knowledge, skills, attitudes and motivation necessary to take sustainability action. However, this strand of literature barely mentions agency. Where scholars do refer to agency, it is in passing, or in formations such as “Action Competence in Sustainable Development” (Sass et al., 2020), or “Competences for Transformative Action” (Frisk & Larson, 2011).

In recent years, a small number of studies have adopted the term “sustainability agency” and a scholarly discourse about the concept is starting to emerge. Across the seven articles centring sustainability agency identified, the term is conceptualized in diverse yet overlapping ways. Koskela and Paloniemi (2023) frame sustainability agency as a dynamic interplay between personal, behavioral,

and environmental influences, emphasizing intentionality, forethought, self-reflection, and self-reactiveness as core mechanisms. Drawing on Bandura, they define sustainability agency as

a. the desire and associated competencies to take individual, proxy or collective actions in personal life, in a community or in society, to contribute to sustainability transformations locally, regionally, nationally or globally

b. the intentions to continuously motivate personal and collective learning for sustainability, aiming to adjust actions and behaviours in the light of previous experiences, the information available, and changing circumstances.” (Koskela & Paloniemi, 2023)

Salovaara et al. (2024), referring to the context of university staff, explore sustainability agency as both “potential and constraint”, arguing that while individuals are framed rhetorically as transformative agents, as “heroic change-makers, and activists on whom the responsibility lies, and our hopes rely” (p.3), actual opportunities to enact change are often limited by institutional structures. Idahosa et al. (2025), whose study is situated in South African HE, describe sustainability agency as going “beyond the call of duty”, an emergent form of ethical commitment that motivates students and educators to take sustainability-related action despite institutional inertia, discrimination, social injustice, or exclusion. Probst et al. (2019), Rap et al. (2022) and Sidiropoulos (2022), all focussing on students, take a developmental perspective, conceptualizing sustainability agency as a combination of sustainability attitudes, competencies, and willingness to act that can be cultivated through meaningful educational experiences.

All seven studies emphasize that HEIs are crucial spaces for developing and enacting sustainability agency. For Koskela and Paloniemi (2023), HEIs serve as arenas where students learn to recognize themselves as capable agents of change, particularly when pedagogy aligns with learners' lived experiences. Similarly, Probst et al. (2019) find that immersive, transformative learning experiences foster agency by enhancing students' sense of efficacy, systems

thinking, and willingness to act. Idahosa et al. (2025) and Salovaara et al. (2024) highlight a more ambivalent role: while universities claim to empower sustainability leaders, their structures often remain resistant to actual transformation. Faculty and staff, as Salovaara et al. (2024) argue, are not just intermediaries but potential agents themselves, whose sustainability agency can ripple across institutional and curricular levels.

A key theme is that agency must be intentionally supported through pedagogical, structural, and relational interventions. Probst et al. (2019) show that experiential learning, emotional engagement, and critical reflection are powerful levers for activating student agency. Similarly, Sidiropoulos (2022) finds that interdisciplinary curricula and applied projects help students translate knowledge into action. Koskela and Paloniemi (2023) suggest designing learning environments that promote autonomy, challenge existing values, and enable self-reflection. Rap et al. (2022) demonstrate how working with real-world data and scientific argumentation can strengthen agency toward sustainability, and Weder et al. (2022) argue that the COVID-19 pandemic provided some opportunities for social learning of sustainability in higher-education settings but suggest that universities must adopt more intentional pedagogical strategies if they aim to cultivate lasting sustainability agency among students. Salovaara et al. (2024) and Idahosa et al. (2025) caution that agency is often romanticized without addressing systemic constraints. They argue that to truly foster agency, institutions must also reform policies, roles, and reward structures to create space for action, especially for faculty and staff (Salovaara et al., 2024).

While all articles share the view that agency is central to sustainability transformation, they diverge in emphasis. Koskela and Paloniemi (2023) and Probst et al. (2019) focus on individual psychological and learning processes, while others foreground the socio-political and institutional conditions of agency (Idahosa et al., 2025; Salovaara et al., 2024). Most authors agree that sustainability agency is relational and shaped by context. Whether agency should be cultivated primarily through education (Probst et al., 2019; Sidiropoulos,

2022), or through institutional change (Idahosa et al., 2025; Salovaara & Hagolani-Albov, 2024) depends on the stakeholder group addressed by the authors. Salovaara et al. (2024) critique a "heroic individual" narrative, while Idahosa et al. (2025) call for greater attention to ethical and emotional dimensions of agency.

While these studies show that progress is being made in centring agency in HE sustainability integration, the conceptualization of agency is fragmented and ill-defined in terms of underlying theories. In contrast to the evolving concept of sustainability agency in transitions studies as discussed in section 2.5.1, there is as yet little convergence in this emerging strand of literature, which is perhaps not surprising given the recent publication dates of the studies discussed. Overall, these studies reveal the dichotomy between the understanding of sustainability agency as an individual capacity and the influence of social structures on the enactment of agency. What is common to both perspectives is a lack of attention to how sustainability agency actually develops and how its development can be fostered and cultivated. This question is implicitly dealt with in the body of work conceptualizing sustainability competences.

2.5.3 Section summary

Section 2.5 has discussed an emergent nucleus of literature progressing critical analysis and conceptualization of sustainability agency, bringing together two different contexts where this is occurring, sustainability transition studies and HE. Despite growing interest in the concept, there is a dearth of studies investigating the concept from a developmental point of view based on a strong theoretical background. The reviewed literature highlights significant limitations in the conceptualization of sustainability agency within both transition studies and HE. While agency is increasingly recognized as crucial to sustainability transformations, it remains under-theorized, inconsistently defined, and fragmented. In transition studies, scholars diverge between measurable typologies and interpretive, process-based understandings, with limited

systematic mapping of agency development. In the HE context, explicit theorizing of agency is still emerging, often focusing narrowly on individual capacities. Across both fields, there is a lack of coherent frameworks explaining how sustainability agency evolves, how it can be intentionally supported, and how it can be empirically investigated.

The next section summarizes the findings of the literature review and summarizes the limitations determined throughout this chapter.

2.6 Chapter summary

This chapter has reviewed the literature relevant to this research project, including approaches, barriers and drivers impacting on sustainability integration, stakeholder engagement and the role of leadership, and the fledgling concept of sustainability agency.

The extant research provides a strong foundation for understanding sustainability transformation in HEIs, emphasizing the need for holistic, systemic, and learning-oriented approaches. Studies mapping challenges and enabling forces provide valuable insight into structural and cultural barriers as well as offering frameworks and models to embed sustainability in HEIs from the perspective of cultural change and capacity building. Despite the important insights provided by the literature reviewed, a number of limitations have been identified. Challenges to sustainability integration are frequently conceptualized as static conditions, necessitating deeper exploration into the dynamic interactions of barriers and drivers, underlying contradictions and tensions, and the cultivation of expansive learning and capacity-building processes within higher education settings. In particular, studies exploring how sustainability transformation can be practically framed and stimulated remain limited.

The literature underscores the importance of stakeholder engagement, highlighting especially the role of academic staff and students in sustainability integration and providing a solid basis for understanding ways that students and

staff contribute to sustainability. This discussion includes the challenges and barriers inhibiting this engagement. Whilst a focus on distributed, collective and inclusive leadership models can be identified in the literature, there is a dearth of studies exploring how university members and collectives can be supported in developing and exercising agency, and how this can be traced and theoretically framed. Although the literature emphasizes stakeholder engagement, it lacks in-depth exploration of how these actors can be meaningfully supported in developing and exercising individual and collective agency.

As the review in section 2.5 shows, the concept of “sustainability agency” has begun to gain attention, yet despite these advances a significant deficit in conceptualizing and theorizing sustainability agency in HE remains. While some scholars have examined individual facets of sustainability agency, the literature lacks investigations that enable a better understanding of the processes of developing sustainability agency and a theory-led methodology to investigate such processes. In particular, explorations of how stakeholders’ contributions to transformative processes and agency can be identified, rigorously traced and fostered are missing, as is attention to collective agency.

In summary, although existing research highlights significant progress and provides valuable insights into sustainability transformation in HEIs, several significant limitations have been identified. Many studies adopt overly technical or structural perspectives, neglecting the messy, political and epistemological realities of sustainability change processes. There is little exploration of micro-level dynamics, human agency and the contradictions, tensions and power struggles involved in transformative efforts. In particular, there is limited exploration of how university stakeholders can be supported in developing and exercising collective sustainability agency. Finally, sustainability agency research, though advancing conceptualizations, remains fragmented and lacks coherent, process-oriented and theory based frameworks to understand how agency develops, unfolds, and can be sustained over time. Table 2.3 provides an overview of the key critiques identified in this literature review.

Key Criticism	Explanation
Technical / structural focus	Approaches view sustainability integration as a managerial or technical task, ignoring deeper political and epistemological issues, and emergent, contested aspects.
Static treatment of barriers and drivers	Studies treat barriers and drivers as fixed, rather than dynamic and evolving during the change process.
Neglect of micro-level dynamics and limited process-oriented research	Lack of attention to how individuals and groups navigate and negotiate sustainability transformations within institutions, and how transformative change unfolds and develops dynamically over time.
Insufficient attention to contradictions and tensions	Limited analysis of historical contradictions, power dynamics, and others tensions in sustainability efforts.
Underdeveloped and undertheorized concept of Agency	Agency is rarely theorized deeply; often treated as an outcome rather than a process. Minimal investigation into how agency is formed, negotiated or constrained. Collective agency is barely mentioned, and the dynamic, emergent and situated nature of agency in transformation processes is underplayed.
Fragmented conceptualizations of Agency	Different studies propose inconsistent models, making cross-study comparison and practical application difficult.

Table 2.3: Summary of key critiques of the literature

These limitations reveal fruitful opportunities for my research project. Addressing the shortcomings identified above is essential for developing more robust concepts and effective strategies that can holistically foster sustainability agency and support transformative change across HEIs. My study investigates how a Change Laboratory research-intervention can stimulate transformative agency among participants and thereby accelerate the integration of sustainable development at a university of applied sciences. This central research question, together with its sub-questions (see section 1.6), is designed to build on and extend the existing body of literature discussed in this chapter by exploring agency not as a static outcome but as a dynamic, collective process emerging within change-oriented interventions.

In order to contribute to this endeavour, in this study I proceed to frame sustainability agency in the tradition of Cultural-Historical Activity Theory (Vygotsky, 1978) as a form of transformative agency (Hopwood & Sannino, 2023a; Sannino, 2023) and to advance the development of this concept based on the theory of expansive learning (Engeström, 2014). Chapter 3 will expand on these theoretical foundations of my research in detail.

3 Chapter 3: Theoretical Background

3.1 Introduction

This chapter provides an overview of the theoretical background of my research project. I first clarify my ontological and empirical stance and discuss the choice of Cultural-Historical Activity Theory (CHAT) and Change Laboratory (CL) for this research project in the context of HESD, including a discussion of recent framing of CHAT as a theory for sustainability research and pedagogy. The chapter then gives a brief introduction to my chosen theory and explains central CHAT concepts such as Activity, Activity System, Contradictions, Double Stimulation and the theory of Expansive Learning. A substantial part is dedicated to Agency in CHAT, specifically the concept of Transformative Agency by Double Stimulation (TADS) (Sannino, 2015a, 2015b, 2016, 2022) as well as the theory behind the Change Laboratory as my chosen methodology. The chapter concludes with a brief account of other theories I considered for my research project and the reasons why I decided against using them in favour of CHAT.

3.2 Ontological and epistemological stance

As outlined in section 1.2, my motivation to conduct a research intervention using Change Laboratory (CL) methodology was spurred by the desire to engage in a project that would make a difference and have an impact at my university and beyond. Having worked as a learning designer for many years, my philosophical stance towards human development and learning has always been aligned more with constructivist and interpretivist approaches rather than with objectivist and positivist paradigms (Cohen et al., 2018), and I strongly believe in the potential of positive change through knowledge and learning.

In the course of my growing involvement with sustainability integration at my institution recounted in section 1.2, I have developed a strong sense of responsibility for my personal and our collective actions, and a sense of urgency to contribute as best as I can to dealing with the many challenges humanity is

facing today. My new role has also changed my perspective towards a stronger awareness of the role of collective learning and development in effecting material change in my work setting and a wider social context – a significant change from my previous view of learning as individual pursuit to develop competences and knowledge. This change was partly fuelled by the change in my professional role and my rapidly developing understanding of the pressing transformative changes necessary to maintain a liveable environment and society. Further influences included the exchange and interaction with students and colleagues concerned with advancing sustainable development, but also my role as a parent of two teenage daughters, who I hope will have a bright future on a healthy planet in a peaceful and prosperous society.

Becoming familiar with CHAT in the course of several modules of my Ph.D. programme was a pivotal experience for me as I discovered a strong alignment between my personal ontological-epistemological stance and the philosophical foundations of activity theory. My conviction that humans are active agents, capable of shaping our own destiny rather than passively accepting the status quo (an idea partly aligned with but also going beyond the constructivist and interpretivist perspectives I embraced while training as a learning designer) has grown stronger. I am now firmly convinced that we not only can but must work together toward positive change, a position grounded in hope, responsibility, and agency. As a consequence, the role of research and education is not to merely describe how things are and thus potentially to perpetuate the status quo, but to extend our understanding of the world around us with a clear developmental focus aimed at analysing our motives and objects of interest in order to achieve improvement, solve problems, and effect positive change, i.e. to create conditions for desired future trajectories. In this, I agree with Stetsenko (2022), who writes:

the core question is about how the world can be changed in light of what there should be, given our commitments and ideologies, our politics, and ethics. This implies that all acts, including those of knowing and being, presuppose a forward-looking striving and activism—acting with the purpose of changing the world in line with a particular sought-after future. (Stetsenko, 2022)

This activist approach is core to CHAT and aligns with Marxist traditions where emancipatory knowledge production is seen as intricately linked to social activism and political-ideological criticism, and where science goes well beyond the discovery of truth and can, indeed, be called revolutionary as defined by Sannino and Engeström:

Revolutionary practice is not reducible to acute political struggle for power. It consists of practically generating possibilities for better life, emancipatory alternatives to the existing restrictive order, using its inner contradictions and embryonic potentials as leverage and source of energy. This was the agenda and methodological stance of activity theory from its inception. (Sannino & Engeström, 2018).

This agenda resonates deeply with my own beliefs and aligns with my ontological and epistemological position. It underpins the intentions I pursue in my work generally and with this study specifically. Through my professional experiences, discussions and collaboration with colleagues over the years, I have developed a good understanding of the issues and barriers standing in the way of stronger sustainability integration such as lack of resources and time, lacklustre top-down support, and structural limitations impeding collaborative work. Yet I also recognize that this perspective is limited and - even if captured through a more rigorous process such as a “traditional” research project - could only ever represent a snapshot of the status quo. Encountering CHAT’s notion of collective, emancipatory knowledge creation through the productive use of contradictions as drivers of change offered an avenue that not only allowed me to gain a deeper understanding of the barriers I had observed, but provided an opportunity to involve others eager to support this agenda and to work collaboratively towards stronger sustainability integration at my university with tangible outcomes. This deeply influenced my methodological choices, aligning with a participatory approach that prioritizes transformative agency over passive data collection. The potential of the intervention to empower others, especially the SDG Ambassadors, but also other lecturers and students within their own spheres of influence, was an additional feature of this “revolutionary practice,” which I fully

appreciate only in hind-sight, as I observe how they flourish pursuing their own sustainability agendas and projects.

In summary, my research field, sustainable development in higher education, and my objectives to not only explore and explain the status quo of sustainability integration at my university, but to create at least the potential for change, development, and collective agency to advance this integration, are well aligned with an activity theoretical position for my project. Taken together, these foundations shaped the kind of knowledge I aimed to produce: transformative, relational, and aimed at contributing to institutional and cultural change.

The next section provides more detailed insights into the aspects I considered in my choice of CHAT as a theoretical backbone and Change Laboratory as an interventionist research methodology for this study.

3.3 CHAT for HESD

As part of my decision to employ CHAT as a theoretical framework of this project, it was important to investigate how the theory had been used in relevant prior research. I was especially interested in investigating how and why other researchers had employed CHAT in exploring sustainability related issues, and what their conclusions were with regards to the value of this approach.

This section establishes the rationale for my choice of CHAT in the context of current use of the theory before pertinent theoretical concepts are explained in more depth in subsequent sections. I will provide an overview of fourth generation Activity Theory and its focus on “runaway objects” and briefly introduce the work of an African research community currently working within this tradition in a sustainability context (albeit outside of HE). I will also introduce CHAT projects related to HESD, which are few in number as yet but show high potential. Finally, building on the growing CL use in other HE research areas, I will comment on the features of CHAT that make it a suitable choice to explore and foster sustainability integration in HE institutions.

Interest in and explicit discussion about the application of activity theory and related concepts in driving sustainability agendas have only started to emerge recently (Engeström & Sannino, 2021). In a symposium entitled “Expansive Learning and Transformative Agency for Equity and Sustainability: Formative Interventions in Six Continents”, Engeström et al. (2022) brought together leading researchers actively working with activity-theoretical formative interventions across the globe in order to discuss the role, challenges and possibilities of CL and CHAT in “tackling fateful challenges” and to “develop just and sustainable solutions to global crises” (Engeström et al., 2022, p.1731). The description of the event directly refers to “the global crises of climate change, poverty and deepening inequalities”, with the authors arguing that “heterogeneous multi-activity coalitions” (ibid.) are necessary to tackle these crises, giving rise to fourth generation activity theory:

the main challenge that requires a fourth-generation activity theory is the radical and fateful transformation in the objects of human activity. In the current phase of capitalist globalization, such interconnected objects as poverty, climate change, and pandemics cannot anymore be treated as isolated issues to be brought under control by technical means; they influence and pervade the objects of innumerable activities and call for radical revisioning of the ways our societies and lives are organized. (Engeström & Sannino, 2020, p.14)

A CHAT research community more explicitly concerned with sustainable development is active in Africa. In their systematic literature review of CL interventions across Africa, Winberg et al. (2023) found a strong focus on social, economic and ecological sustainability, with some interventions directly addressing grand challenges such as climate change, environmental protection, and sustainability for community improvement. A prominent example is the work of Mutizwa Mukute, which centers on fostering transformative and transgressive social learning among smallholder farmers through participatory approaches grounded in CHAT and CL methodology with the aim to reframe entrenched norms and enable expansive learning to tackle interconnected challenges such as climate change, food security, and sustainability (Mukute et al., 2018). Also in Africa, Lotz-Sisitka et al. (2015) discuss CHAT as one suitable theory applicable to transformative, transgressive learning processes necessary for sustainability

transformation in HE. These examples demonstrate a gradual take-up of the sustainability agenda in the CHAT research community, informed by work from the global south and manifested in the emerging fourth generation of CHAT. They provide excellent examples of impactful work of HE researchers with communities to tackle real-world challenges. Interest in organisational change in HESD, the topic my thesis is inherently concerned with, however, is so far not evident in this body of research.

The steadily increasing use of CHAT and CL in the context of organisational change initiatives generally and in HE particularly is well documented. Applications of CL and CHAT in HE change initiatives are reviewed in detail by Bligh and Flood (Bligh & Flood, 2015), and are manifest in many projects since then (Colasante, 2024; Diao et al., 2021; Englund, 2018; Garraway, 2021). Despite the productive application of CHAT evident in these studies in several areas of HE research, there is so far little evidence of CHAT being taken up in the wider HESD research community beyond brief references to specific projects (McCrorry et al., 2020).

One notable exception is the work of Scahill (2022) and Scahill and Bligh (Scahill & Bligh, 2022; 2025), who report on a CL intervention at an Irish university campus focussing particularly on concept formation and the development of stakeholder agency. To the best of my knowledge, this is the only research project that is directly related to organisational change in HE regarding sustainability transformation using CHAT and CL. Scahill and Bligh (2022) conclude that the CL is a powerful approach for developing sustainability-focused practices and initiatives in HESD, highlighting the promotion of open discussion amongst participants, the capacity building potential of such interventions, and the collaborative development of new ideas and concepts. They find CL an effective approach for overcoming differing perspectives and disciplinary boundaries with the potential to harness enthusiasm and build commitment amongst participants. These characteristics of the CL closely dovetail with my own research intentions and provide an important starting point due to many

similarities in terms of the context and issues encountered, but while Scahill and Bligh (Scahill & Bligh, 2022; 2025) focus strongly on concept development, my centre of interest is in exploring sustainability agency, which is an angle not explicitly explored in their work.

Several features of CHAT and CL stand out as being particularly well aligned with the nature of HESD and, by implication, with my own project. First, CHAT aligns well with the complexity of HE institutions (Bligh & Flood, 2017), which involve diverse stakeholders and often ill-defined and contested sustainability goals. The conceptualisation of activity as a collective, object-oriented system can help navigate these interactions holistically. Second, HESD aims to transform not just educational practices but institutions themselves, fostering future “change makers.” This contrasts with Orr’s (2021) critique of universities as preserving a flawed modern paradigm:

[They are] committed not to transformation, great or otherwise, but more often than not to patching up flaws in the modern paradigm [...] (Orr, 2021, p.1).

Given this contested nature of HESD, CHAT can help investigate conflicting goals and contradictions, which can be leveraged for expansive learning and transformative change (Engeström & Sannino, 2010). Third, HE sustainability initiatives are best embedded in local communities, which require alignment with and understanding of local socio-cultural contexts. CHAT’s emphasis on historicity and multi-level analysis supports this localisation by uncovering the roots of unsustainable practices (Bligh & Flood, 2015). Fourth, HESD depends on collaboration across roles, disciplines, and cultures. Lotz-Sisitka et al. (2015) emphasize the need to transcend entrenched boundaries in sustainability efforts:

people everywhere will need to learn how to cross disciplinary boundaries, expand epistemological horizons, transgress stubborn research and education routines and hegemonic powers, and transcend mono-cultural practices. (p.74)

These features provided a strong basis for my decision to use CHAT and CL in my own research. CHAT’s ability to deal with complexity and the productive approach to contradictions aligned closely with my research aims. I also

appreciated how CL can foster multi-voiced engagement and facilitate the exploration of diverse perspectives, helping to equalize power dynamics between different stakeholder groups, which was essential to my approach. These qualities convinced me that CHAT provided a robust theoretical foundation for examining the complexities of HESD in my research context.

The next section provides a (necessarily) brief description of the main tenets of CHAT and key concepts of the theory pertinent to this study.

3.4 Cultural-Historical Activity Theory (CHAT) and pertinent concepts

3.4.1 CHAT: A brief introduction

This research project employs CHAT as a theoretical framework to explore the development of transformative collective agency of research participants through expansive learning in the context of a higher education institution. This section describes selected theoretical concepts in CHAT which underpin the approach taken in this project and were the basis for the planning and preparation of Change Laboratory sessions, the data analysis and interpretation, and the conclusions drawn from the project. The aim here is not to present an in-depth discussion of these concepts, which is available elsewhere (Bakhurst, 2009; Kaptelinin & Nardi, 2006; Keengwe et al., 2014; Lémonie, 2025; Yamagata-Lynch, 2010). Instead, I intend to provide a compact introduction to readers not familiar with CHAT in order to enable them to grasp the key theoretical concepts this thesis is built on, explain why they are relevant, and show how they have influenced the design and implementation of this study.

3.4.1.1 Activity, Action and Operation

Activity Theory has its roots in the early 20th century in the work of the Russian psychologist Lev Vygotsky (1978) and his colleagues Aleksei Leontiev and Alexander Luria, who sought to problematise and critique ideas of human

behaviour by analyzing the genesis, structure, and dynamics of everyday activities in real-world contexts.

Unlike other sociocultural theories that focus narrowly on action, activity theory situates actions within broader, evolving activities, highlighting their systemic, motivational, and long-term context (Sannino et al., 2009).

At its core is the concept of activity, viewed as a purposeful and transformative relation between a subject and an object, through which both are mutually shaped. Activity Theory emphasizes that human development and consciousness emerge through socially and culturally mediated practices grounded in collective, goal-directed action (Kaptelinin & Nardi, 2006). Sannino et al. (2009) stress the centrality of activity as reflecting the collective, purposeful, and historically grounded nature of human life and emphasizing participation in object-oriented practices that extend beyond individual goals.

The object of the activity is what gives the activity meaning and direction:

Due to its link to human needs, an object is a historically developing entity that is never fully attained or complete. As a general entity it resembles a vision, often Utopian, that, however, finds concrete instantiations in everyday life. Human beings pursue, reproduce, and potentially transform the object of their activity by means of actions on its concrete instantiations. (Sannino et al., 2016)

Whilst Vygotsky occasionally mentioned “systems of activity,” his focus was on how individual actions are shaped by cultural and semiotic tools, not on the concept of activity specifically (Sannino & Engeström, 2018). It was Aleksei Leontiev (1978) who expanded Vygotsky’s ideas by defining activity as a durable, object-oriented system, and clearly distinguishing between activity, action and operation as summarized by Bligh and Flood (2015):

- **Activity:** A collective, sustained human effort, driven by its orientation towards an object

- **Action:** Bounded and intermediate efforts performed by individuals or groups that are specific, conscious, and time-bound and directed towards a goal
- **Operation:** Routine or automated processes that carry out the actions, shaped by conditions.

Figure 3.1 represents these relationships of Activity, Action and Operation and their drivers (based on Virkkunen & Newnham, 2013).

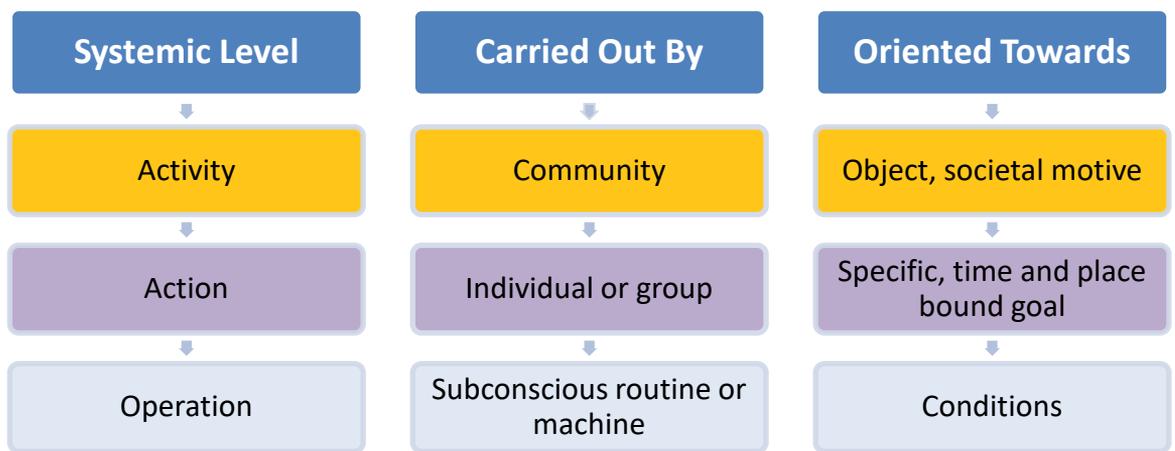


Figure 3.1: Relationship of Activity, Action and Operation (created by author based on Virkkunen & Newnham, 2013)

Leontiev posits that human activity is expressed through the actions individuals perform, making the two interconnected but distinct. Activity is driven by an object and aims to meet a need, while actions are the deliberate, goal-oriented steps taken within that activity. Operations are the automatic, unconscious methods used to carry out actions, shaped by context and developed through repetition (Lémonie, 2025).

Activity theory thus evolved from Vygotsky’s perception of activity as individual action in the interplay between subject and object to Leontiev’s definition of collective activity systems. The next section provides a more detailed explanation of the nature of activity systems and how they are used in CHAT.

3.4.1.2 Activity Systems and Contradictions

An activity system is a model for a single unit of activity. The fundamental relationship in an activity system is that between a subject, community and their object, with the object giving purpose, coherence and direction to the activity and serving as the motive force that directs and sustains this orientation. In other words, activity systems are object-oriented, and when individual goals align with, or are reshaped by, shared motives, the activity system becomes more unified around its object, enabling transformative development and expansive learning (Sannino, 2021).

Based on the work of Leontiev, Engeström developed a visual model of an activity system represented in the form of a triangle consisting of the elements displayed in Figure 3.2 and explained below.

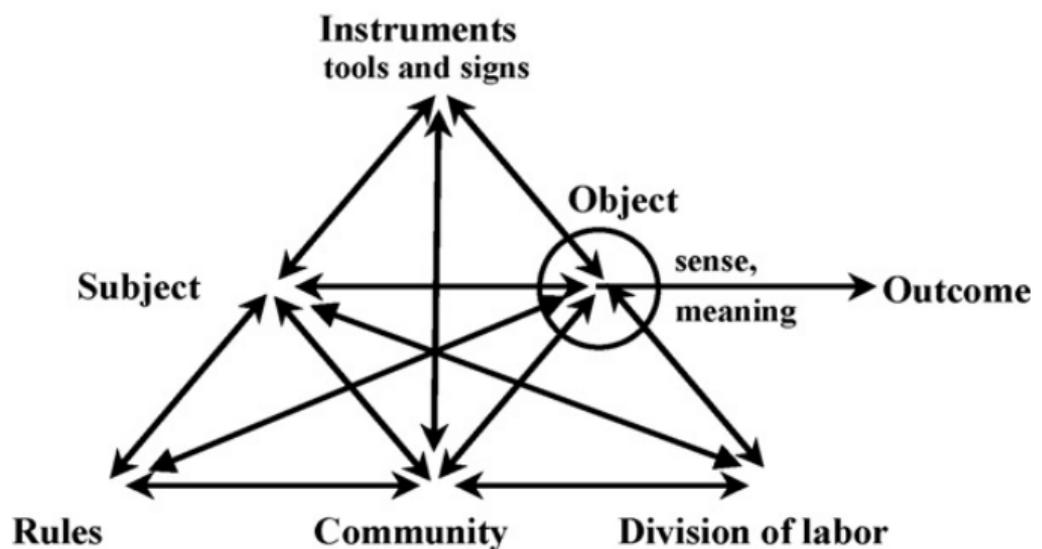


Figure 3.2: General model of an activity system (Engeström 1987, reproduced in Engeström & Sannino, 2010)

- **Subject:** Individuals or groups who are engaged in the activity as protagonists, and from whose perspective the activity system is studied

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- **Object:** The material entity whose transformation provides the motivation for the activity
 - **Community:** Broader social group who share the same general object, and to which the subject belongs
 - **Instruments (tools and signs):** Artefacts mediating how the subject pursues their object
 - **Rules:** Norms and conventions guiding correct work within the activity
 - **Division of labour:** Distribution of roles and responsibility within the activity
 - **Outcome:** The intended or actual result of the activity

In the object-oriented activity system, the relationship between subject and object is mediated by culturally and socially produced artefacts and tools and regulated by explicit or implicit rules and conventions, involves other stakeholders who share the same general object (community), and is organised through a division of labour that determines tasks, specialisations, and power and authority (Engeström & Sannino, 2010; Moffitt & Bligh, 2021).

Development of the activity is conceptualized as change triggered by contradictions, “unfolding relationships between systemic elements that support *and* undermine each other” (Bligh & Flood, 2017). Engeström and Sannino (2011) define contradictions as a dialectical concept that cannot be understood as surface-level inconsistencies or competing priorities to be balanced; rather, they are inner systemic tensions rooted in historical development of activity systems. These tensions are deeply embedded in the structure and development of the activity and cannot be directly observed, but they are revealed through their manifestations. Engeström and Sannino (2011) identify four types of discursive manifestations of contradictions: dilemmas (hedged uncertainty), conflicts (argumentative resistance), critical conflicts (emotionally charged paralysis), and double binds (being faced with impossible alternatives), each marking a distinct way individuals and groups articulate tensions within a system.

Contradictions can take multiple forms in activity systems:

-
- as primary contradictions within individual elements of a system;
 - as secondary contradictions between elements of the same activity system (e.g., between tools and objectives);
 - as tertiary contradictions between the current activity system and a culturally more advanced or new form of the same system; and
 - as quaternary contradictions between interconnected activity systems (Engeström & Sannino, 2010).

Contradictions are seen as the primary drivers of change and development within activity systems, and are a key concept in CL methodology. When contradictions surface, they create disturbances that challenge the status quo, opening up space for new possibilities. Through engaging with these tensions, individually or collectively, participants can reconfigure their practices, motives, and structures, leading to transformative learning and expansive development. In this way, contradictions are not only symptoms of systemic issues but also catalysts for agency, creativity, and structural transformation. CHAT provides a structured framework that can reveal such contradictions within, across and between activity systems (Engeström & Sannino, 2011).

3.4.1.3 Relevance to my project

Working with CHAT means that my research directs attention at the level of activity rather than action, allowing for a different, broader perspective. From my experience as practitioner, I had initial ideas about an activity system of sustainability integration as a collective, object-oriented endeavour involving diverse members of the university community, who work toward embedding sustainability into institutional practices, values, and culture. From my professional vantage point, I envisaged related actions (such as developing faculty workshops, creating sustainability programmes, organizing events, and launching awareness campaigns), which are mediated by various tools (e.g., policy documents, digital platforms, learning materials), shaped by institutional rules and norms, and carried out by a community of staff, students, and

administrators under a distributed division of labour. However, the analysis of the activity system(s) at play in sustainability integration at UNI was a core part of the collaborative project and was based on the collective experience and understanding of participants rather than predetermined by me as the researcher-interventionist.

Within the Sustainability Change Laboratory (SCL), participants collaboratively came to understand the activity system, surfacing contradictions, such as tensions between institutional goals and operational constraints, as manifestations of deeper systemic issues. These contradictions served as catalysts for expansive learning, enabling the group to envision and prototype alternative, more integrated models for sustainability in the university. By framing sustainability integration as an evolving activity system, my project foregrounds how development emerges from within the contradictions and dynamics of collective activity. This framing also supports my intention to prompt participants to conceive of changing the activity, rather than only changing their actions.

3.4.2 Expansive Learning

Expansive Learning is a learning theory developed by Engeström (2014)(1987) that builds on CHAT to understand a specific kind of learning which is not well explained by other learning theories but is important. Unlike traditional models of learning that focus on the acquisition of existing knowledge and stable practices, expansive learning describes a creative, collective process in which learners engage in constructing and implementing something fundamentally new, i.e. they are learning something that does not yet exist. Expansive learning is not a new model that tries to explain all forms of learning in a novel way. Instead, it is a theory that attempts to explain a particular phenomenon which is unlike other forms of learning. It emphasizes transformation over reproduction, and innovation over adaptation.

Engeström and Sannino (2010) define expansive learning as “learning in which the learners are involved in constructing and implementing a radically new, wider

and more complex object and concept for their activity” (p. 2). It is especially relevant in settings where established knowledge and roles are insufficient to address emerging contradictions or challenges. Through collective inquiry and experimentation, individuals and groups can re-conceptualize their activity and transform their practices, often as a response to tensions between their current reality and desired goals or values (Engeström & Sannino, 2010).

One of the central metaphors in expansive learning is that of expansion, which conveys the multidirectional movement involved in creating a broader and more complex object of activity as explained by Engeström et al. (2003):

We distinguish expansion from mere quantitative increase or extension. For us, expansion is qualitative transformation and reorganization of the object. On the other hand, expansion does not imply an abrupt break with the past or a once-and-for-all replacement of the existing object with a totally new one. Expansion both transcends and retains previous layers of the object. (Engeström et al., 2003)

This expansion is mediated by tools and concepts that are developed and refined during the process itself. As learners engage in this process, they not only learn but also co-construct new knowledge, leading to qualitative changes at both the individual and collective levels of activity (Sannino et al., 2016).

Expansive learning is particularly significant in contemporary contexts marked by rapid change, uncertainty, and complexity, especially in work and organizational environments. Engeström and Sannino (2010) argue that modern societies increasingly demand forms of learning where “*nobody knows exactly what needs to be learned*” (p.3), and where the design of new activity systems and the acquisition of necessary knowledge and skills are inseparable and must evolve in tandem.

Engeström and Sannino (2010) posit that especially two broader societal developments heighten the need for expansive learning: first, the rise of the Internet and related forms of social and peer-based knowledge production; and second, the global challenges we now face, i.e.:

the emergence and increasing presence of global threats and risks [...], exemplified by global warming, new pandemic diseases and global financial disasters. This opens up a field of tremendous challenges for concept formation and practical redesign in a scale that has to exceed the boundaries of any single discipline, profession or organization. (Engeström & Sannino, 2010).

These issues are at the core of the agenda of global sustainable development (see section 1.1) and the basis for my work. Dealing with these challenges requires new forms of concept formation and practical redesign that transcend disciplinary, professional, and organizational boundaries.

In practice, expansive learning theory underpins the design of Change Laboratories (see section 3.4.5). At the heart of expansive learning is the idea that participants engage in a process of “learning something that is not yet there” (Engeström & Sannino, 2010, p. 2). This requires and simultaneously fosters what Engeström terms transformative agency (see section 3.4.3), empowering participants to reconceive their activity in ways that open up a radically broader range of possibilities.

3.4.2.1 The Cycle of Expansive Learning

Expansive learning theory is a process theory that emphasizes the dynamic expansion of the object of activity through a cycle of actions. This occurs via successive phases of collaborative inquiry, analysis, and co-creation, as captured in the expansive learning cycle. This cycle was developed by Engeström (2014) to explain how expansive learning occurs “in the wild”. Consisting of seven successive phases, it is also used as a processual framework that can guide learners as they collectively transform their activity systems.

Figure 3.3 shows the typical sequence of an expansive learning cycle.

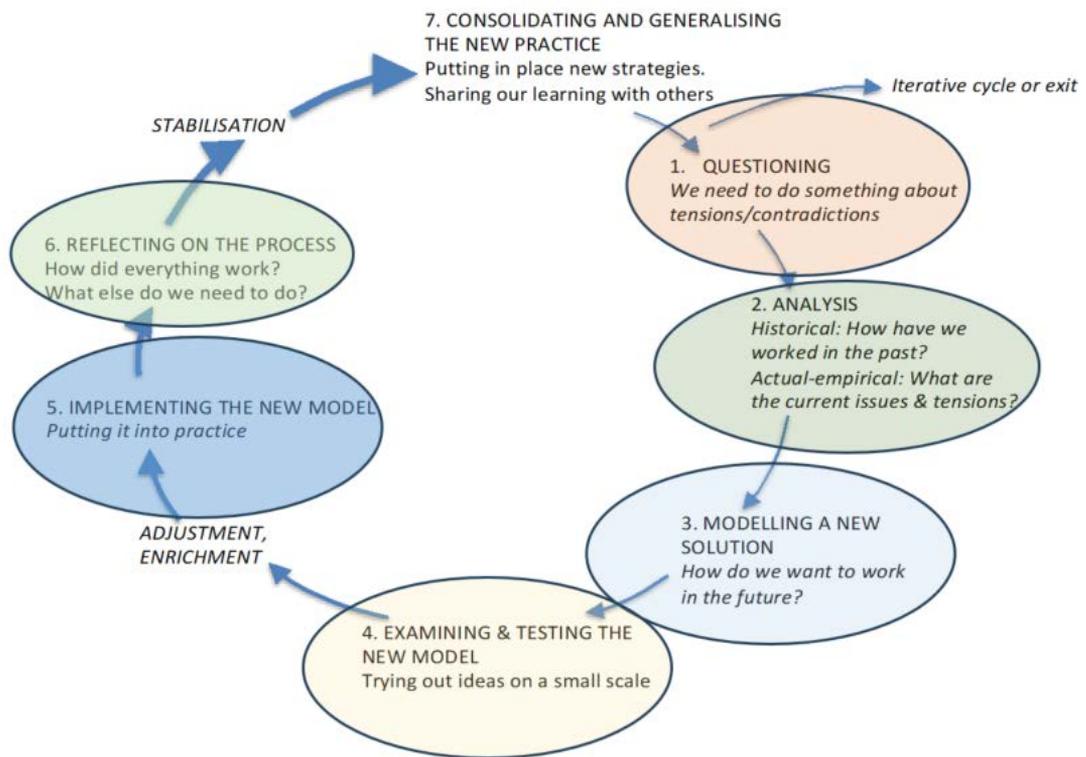


Figure 3.3: Expansive Learning Cycle, based on Engeström (2014)

Each of the seven steps represents an ideal-type expansive learning action:

1. **Questioning:** Challenging or rejecting established practices or plans for change
2. **Analysis:** Examining, describing and interpreting the current activity and its historical development that has shaped the existing practices.
3. **Modelling:** creating models representing alternative versions of the activity that aim to resolve the contradictions and tensions identified
4. **Examination:** Assessing the feasibility, strengths and limitations of the newly developed models through discussion and exploration of possible implementation
5. **Implementation:** applying the newly proposed model in practice at a limited scale to observe their real-world functionality and outcomes

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6. **Process reflection:** reviewing the change efforts to understand how they developed and how well they reflect the intentions and goals of stakeholders
 7. **Consolidation and generalisation:** establishing the new models as standard practices and expanding their use more broadly.

Engeström and Sannino (2010) define this process as a construction and resolution of progressively developing contradictions, stressing that it is not a clean and formulaic progression of predetermined phases. Expansive learning cycles are not smooth and can involve sub-cycles that move back to earlier kinds of action. The model is therefore to be understood as a heuristic conceptual tool that facilitates the expansive learning process.

3.4.2.2 Relevance to my project

In my project, the cycle of expansive learning is used as the model that underlies the design of the Change Laboratory and guides the facilitation of the sessions (see chapter 4). The image of the cycle was shown at the beginning of each SCL session to make transparent the current stage of the process, and guided the reflection session at the end to prompt reflection on the collaborative journey. The explicit use of the cycle helps participants understand what phase they are working in and empowers them to critically analyse challenges related to SD integration, co-create possible solutions, and thus actively engage in transformative actions. Overall, the theory of expansive learning is used to frame the collective effort as a process of generative and agentic learning and development rather than a training programme in the traditional sense.

3.4.3 The principle of Double Stimulation

The principle of double stimulation is central to understanding how agency and transformative action emerge in CHAT. It is regarded as a key element in the activist and interventionist strand of CHAT as formative interventions are grounded in this principle (Morselli & Sannino, 2021), and it is a fundamental

element of the TADS model (discussed in detail in section 3.4.5). Double stimulation offers a theoretical lens through which to understand the emergence of agency and intentional action in the face of complex or contradictory situations. Its significance lies in the way it conceptualises transformative action not as a linear response to external stimuli, but as a mediated, volitional process whereby individuals or collectives actively construct new meanings and solutions (Sannino, 2015a, 2015b).

The concept originates in the work of Vygotsky, who developed it to study the emergence of higher mental functions (Sannino, 2016). In Vygotsky's formulation, double stimulation involves a scenario in which the subject is confronted with a problematic or ambiguous task (the first stimulus) and is subsequently provided with, or develops, an auxiliary artefact or sign (the second stimulus) that serves to mediate and resolve the initial difficulty. This auxiliary tool facilitates the subject's ability to reframe the situation and engage in goal-directed, wilful action.

Building on this foundation, Engeström and Sannino (2017) have extended the principle to explain the emergence of transformative agency in real-world contexts, particularly in settings characterized by systemic contradictions such as workplaces, organisations, or social movements. Here, the focus shifts from individual cognition to collective activity systems, where double stimulation functions as a mechanism through which participants move from passive reproduction to active transformation of practices.

Engeström et al. (2014) elaborate:

Double stimulation is the foundational mechanism by which volitional action, or will, emerges. Thus, double stimulation is the gateway to all higher mental functions. Its starting point is a conflict of motives. If the conflict of motives and the volitional aspect are disregarded, double stimulation is easily reduced to just another term for the general notion of mediation. (Engeström et al., 2014, p.121)

Within the framework of interventionist research, particularly in the context of CL methodology, Engeström et al. (2014) identify three key transitions in the application of double stimulation:

1. The emergence of a **conflict of motives**: A systemic contradiction is experienced at the personal level as a dilemma or blockage that disrupts habitual action.
2. The identification or construction of a **second stimulus**: Participants actively select, create, or adapt an artefact or conceptual model to mediate the conflict. Often, this involves rejecting tools offered by facilitators in favour of those developed through participatory engagement.
3. The **enactment of the second stimulus** in practice: The auxiliary tool must be implemented in such a way that it facilitates new forms of purposeful action. Its transformative potential is confirmed if it enables resolution or reorientation when the conflict reappears. If it fails to do so, it remains inert and ineffective.

Through these transitions, double stimulation operates as the generative mechanism for agency, enabling learners not only to respond to contradictions but to actively reshape their activity in line with emerging values and goals.

3.4.3.1 Relevance to my project

Double stimulation is a central design principle of the SCL. The intervention is conducted by introducing first stimuli in the form of tasks that participants are instructed to address, which help surface contradictions and conflicts of motive. Subsequently, second stimuli are introduced in the form of auxiliary tools such as the activity system model, to assist participants in reframing the problem and support the development of new models of sustainability integration at the university. Over time, the work outcomes developed by participants during sessions become increasingly integrated into tasks for further sessions, thus promoting collective learning and strengthening the participants' sense of cumulative knowledge production (Scahill & Bligh, 2022) .

3.4.4 The Zone of Proximal Development

In understanding how individuals and communities move toward transformative change, the concept of the Zone of Proximal Development (ZPD) is central in CHAT.

Vygotsky's original work, written in the early 1930s and later published in English in 1978, originally defined the ZPD as the space between what an individual learner can do when provided only with a first stimulus, and what they can achieve with support from more capable others, using second stimuli as described in section 3.4.3. What emerges within this zone are the possibilities for development that lie just beyond an individual's current capabilities. In this framework, learning precedes development, with development occurring when the learner internalizes and meaningfully applies new knowledge in novel contexts. As Vygotsky proposed, development follows when the individual has made the new knowledge their own: "what the child is able to do in collaboration today, he will be able to do independently tomorrow" (Vygotsky, 1978, p. 87).

Aiming to theorize change beyond individual development at the level of community, Engeström builds on this notion, but re-conceptualizes the ZPD as a collective space for collaborative transformation of activity systems. He defines the collective ZPD as

the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions.
(Engeström, 2014, p. 138)

In this formulation, the ZPD is not merely about individual learning potential but refers to the capacity of a group or community to transcend a "double bind," i.e. a deep contradiction within everyday practices, where existing ways of acting or thinking are no longer sufficient, yet no clear alternatives exist (see section 3.4.1.2). Engeström uses the term to highlight how such unresolved tensions can become the starting point for expansive learning, as communities work to create historically new forms of activity.

This understanding of the ZPD allows us to explore how transformative, expansive learning emerges not just in individuals, but through collaborative shifts in shared practices and beliefs. Lémonie (2025) clarifies the relationship between the ZPD and expansive learning explicitly, arguing that the seven actions of the expansive learning cycle (see section 3.4.2.1) support the development of the ZPD by relating disruptions in everyday actions to deeper, historically rooted tensions within the activity system. Addressing these contradictions enables the ZPD to take shape.

3.4.4.1 Relevance to my project

The concept of the ZPD reframed by Engeström (2014) as a collective space for expansive learning was used in the interpretation of my findings to analyse the collective progress made in terms of effecting change towards sustainability integration and stakeholder engagement (see section 7.7.3).

3.4.5 Transformative Agency

In CHAT, transformative agency is defined as “breaking away from the given frame of action and taking the initiative to transform it” (Virkkunen, 2006), and is developed by individuals or groups in the process of identifying and dealing with disturbances, tensions and contradictions in their work or other environments. The concept of transformative agency thus transcends the understanding of agency as an individual trait or characteristic, but refers to the ability of individuals and collectives to consciously and intentionally transform themselves and their life worlds (Virkkunen, 2006).

3.4.5.1 Expressions of Transformative Agency

The emergence of transformative agency, framed as a process, has been observed and described using a typology of “agentic actions” that manifest in expressions of agency in the course of participants discourse in Change Laboratory sessions (Haapasaari et al., 2016). Drawing on speech act theory

(Austin, 1962; Searle, 1969), Haapasaari et al. (2016) developed a categorisation of CL participants' spoken utterances defined as "expressions of transformative agency". The types of agentive actions are described in Table 3.1 and provide an analytical framework for the project described here (see chapter 4 for the application of the model).

Type of expression	Description
Resisting	Resisting the change, new suggestions or initiatives. Directed at management, co-workers or the interventionist
Criticising	Criticising the current activity and organisation. Change-oriented and aiming at identifying problems in current ways of working
Explicating	Explicating new possibilities or potentials in the activity. Relating to past positive experiences or former well-tried practices
Envisioning	Envisioning new patterns or models in the activity. Future-oriented suggestions or presentations of a new way of working
Committing to actions	Committing to taking concrete, new actions to change the activity. Commissive speech acts are tied to time and place
Taking actions	Reporting having taken consequential actions to change the activity in between or after the laboratory sessions

Table 3.1: Types of expressions of agency (Haapasaari et al., 2016)

By conducting a detailed analysis of people's interactions using this framework, the development of transformational agency can be traced over time, and episodes of particular interest emerge, so called "Turning Points" described in the next section.

3.4.5.2 *Turning Points*

Turning points in CHAT are qualitatively significant shifts in the development of an activity's object, marked by concentrated disturbances, questioning, and diverse perspectives that reorient the work and advance the object toward expansion (Engeström & Sannino, 2010). They are pivotal moments in the development of an activity system when its normal patterns are disrupted,

prompting significant change or transformation. These moments often arise when contradictions within the system become acute and demand resolution.

In interventionist CHAT research such as in CLs, turning points are “a qualitative change in the nature of the participants’ discourse and a jump in the quantity and quality of their expressions of transformative agency” (Haapasaari et al., 2016). Turning points occur when participants start new actions or change how they approach or view the problematic situation and thereby display activation of agency in these instances. Turning points are significant as they indicate a transition from paralysis to action to resolve the conflicting situation. They are essential for understanding how change unfolds in the process towards transformation of the activity.

3.4.6 Transformative Agency through Double Stimulation (TADS)

TADS is a conceptual and methodological framework developed by Annalisa Sannino (Sannino, 2015a, 2022) to analyze how participants develop transformative agency through the use of mediating tools to resolve contradictions in collective activity. Sannino’s conceptualization of transformative agency retains the core of the definition discussed above (as the ability to break away from given frames and actively shape alternative conditions), but places more emphasis on understanding the mechanisms by which transformative agency is stimulated. Sannino builds on Vygotsky’s principle of double stimulation (Sannino, 2016) to develop a structured account of how transformative agency unfolds in real-world settings (Sannino, 2015a, 2022). TADS offers a tangible analytical and methodological framework for tracing the development of agency in response to complex problem situations. The model is well suited for empirical and procedural foci as it focusses on the “how”, i.e. the mechanisms by which agency is generated and enacted.

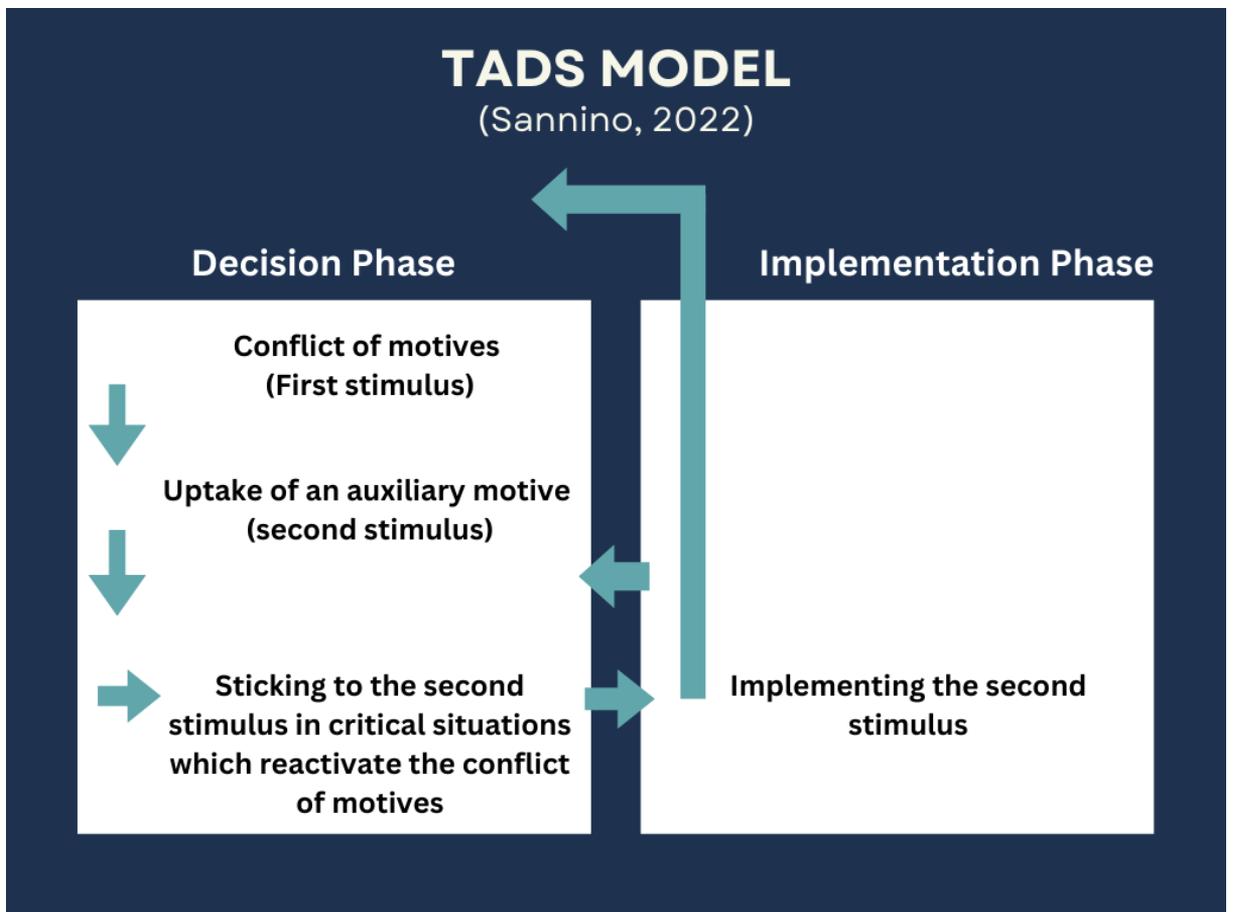


Figure 3.4: TADS Model (Sannino, 2022)

As shown in Figure 3.4, the TADS model involves two phases (the decision phase and implementation phase) (Sannino, 2022). The decision phase consists of three interlinked stages:

- **Conflict of motives (first stimulus):** Participants are presented with a problematic situation or conflicting stimulus, triggering tension or cognitive dissonance. These stimuli evoke divergent or opposing goals, requiring a volitional response.
- **Uptake of an auxiliary motive (second stimulus):** Selecting a second stimulus as auxiliary motive or second stimulus, individuals or groups choose a supportive artefact or tool to mediate and resolve the conflict. A decision or orientation toward a new course of action is consolidated, grounded in the auxiliary motive.

-
- **Sticking to the second stimulus in critical situations which reactivate the conflict of motives:** Participants decide to consolidate their new motive based on the second stimulus, even though the original conflict of motives has reappeared.

Once the decision phase is complete, the implementation of this decision follows, not as externally imposed instruction, but as self-directed, purposefully constructed action.

This structured approach allows researchers and practitioners to trace the micro-genesis of agency that unfolds in real time as conflicts of motive are reframed as generative forces rather than barriers, sparking innovation and transformation. It also emphasizes the material and symbolic mediators of agency (second stimuli), showing how external artefacts can catalyse internal shifts in perspective and intention (motives).

TADS has been used in formative research interventions such as Change Laboratory (Chang, 2024; Morselli & Sannino, 2021; Wei & Sannino, 2024) to trace, frame and transform conflicts of motives and constraints of individuals and collectives. Second stimuli are employed as key tools to address and ideally break away from restrictions or limiting conditions. Sannino (2022) uses the metaphor of “warping” or “forward-anchoring” to describe how second stimuli can be means of seeking and finding firm ground where new ideas can take hold, allowing agents to pull away from problematic situations and chart a path forward. Through this process, individuals and groups can generate and exert transformative agency, i.e. the ability and volition to not only respond to the conditions they find themselves in, but to actively shape their environments, overcoming challenges and creating new possibilities and solutions.

In sum, Sannino’s TADS model explicates the processes by which transformative agency can be analytically observed and practically fostered through structured interventions like the CL. Together, these perspectives enrich our understanding

of how people not only adapt to but actively shape their realities through collaborative, reflective, and tool-mediated action.

3.4.6.1 Relevance to my project

The principle of Transformative Agency is core to this project as a concept under investigation. The study focuses on analysing how TA develops over the course of the CL in the form of Expressions of Transformative Agency and identifying turning points that determine collective shifts in the direction of the collaborative effort. Double stimulation was used as a key design principle in the facilitation of the CL sessions. TADS was used to investigate key episodes in the SCL that are particularly relevant to TA development. Beyond the analytical interest, Transformative Agency was also an intended outcome of the intervention, which sought to provide a setting that empowers participants to recognize their collective agency, challenge the status quo, and collaboratively drive systemic changes.

3.4.7 Motives, mediation, and motion

As outlined in section 2.5, the concept of agency is as yet underexplored and underdeveloped in the context of HESD. My interest in advancing the concept of sustainability agency can be seen as part of a wider movement in CHAT research emphasizing the centrality of transformative agency (and related CHAT concepts) to address contemporary global challenges. A prominent example is the recent publication *Agency and transformation: Motives, mediation, and motion* (Hopwood & Sannino, 2023a), where the authors draw attention to the crucial role of agency in addressing pressing societal and environment challenges and collectively striving for alternative futures. Hopwood and Sannino position scholarship as an ethical imperative, and the predominant psychological and sociological conceptualizations of agency as individual traits or social outcomes are seen as “fallacious, morally wanting and insufficient to respond to today’s pressing societal needs” (ibid. p.1). Hopwood and Sannino offer a response to the current approaches to agency they critique through cultural-

historical foundations and the three related motifs of motives, mediation and motion as “foci and points of departure that are useful in understanding agency as a process for change and in promoting agency and its facilitation by pedagogic means” (ibid. p.10). The following section explains the three motifs and their relationship to agency as conceptualized in CHAT, which the reader will encounter again in section 7.3, where they are used as a theoretical lens to interpret the findings of this study.

Motives, as the first motif, reflect what individuals and collectives care about and strive toward, and are seen as the foundations of agency and drivers of activity, as already discussed in section 3.4.1.2. Rather than being individual mental states or characteristics, motives are shaped by and embedded in social, historical, and institutional contexts, giving direction to agency. Agency involves envisioning and working toward alternative futures in situations arising from conflicting motives, which may paralyze or challenge individuals but can also catalyse change when addressed through meaningful action. In CHAT, motives are not static or internal but evolve through collective activity and practical engagement:

Motives represent the very essence of collective pursuits, what in cultural-historical activity theory is referred to as the object of activity; that is, the reason for the existence of an activity in the first place (Engeström, 1987/2015; Leont’ev 1987, cited in Hopwood & Sannino, 2023a, p. 11).

Thus, agency is projective and transformative, arising through mediation and action toward desired ends. It is about taking a moral and social stand, engaging with what matters to people personally and collectively, and acting with consequence.

Mediation, the second motif, is fundamental to understanding agency within cultural-historical theory. Vygotsky maintained that higher mental functions such as thinking or concept formation are structured and shaped by culturally developed signs and tools:

The tool's function is to serve as the conductor of human influence on the object of activity; it is externally oriented; it must lead to changes in objects. It is a means by which human external activity is aimed at mastering nature. The sign, on the other hand, changes nothing in the object of a psychological operation. It is a means of internal activity aimed at mastering oneself; the sign is internally oriented. (Vygotsky, 1978)

His triadic model of activity referred to in section 3.4.1.2 clearly establishes the centrality of mediation in the subject-object relationship. Bligh and Flood (2015) drawing on Wertsch (2007), posit that

Vygotsky suggests that mediation underpins human action, by which is meant that humans act on the social and material world in ways mediated by artefacts, including physical and psychological tools (such as semiotic signs). Secondly [...] mediation links social-historical processes with mental processes. This is because humans internalise those forms of mediation that have been developed in the cultural, social, institutional world around them. (p. 4-5)

In summary, mediation in CHAT is understood as the process by which human action and thought are shaped through the use of culturally and historically developed tools, both physical and symbolic, which enable individuals to internalize social relations and transform their engagement with the world.

Mediation can be facilitated through processes like double stimulation (see section 3.4.4), where mediating artefacts help overcome dilemmas and stimulate volitional action:

Developing and taking up relevant mediational means (including but not limited to representations of systems) is fundamental to this process [of transformation]. Mediating artefacts can function first as mirrors that help people to question the status quo and voice conflicts of motives, and then become secondary stimuli to envision new possibilities and design new solutions [...]. (Engeström & Sannino 2023, p. 14-15)

Agency then manifests in how people use tools to act meaningfully in social contexts. Mediation thus bridges individual intention and collective change, enabling socially significant transformation, defining agency not just as inward volition, but as outwardly directed, tool-enabled engagement with societal structures, making it central to both personal growth and systemic reform.

Motion is described by Hopwood and Sannino (2023b) as the third motif central to agency, with the authors arguing that agency is best understood “in motion”, as individuals and collectives break away from constraints in

an expansive movement from fragmentary individual ways of working to collectively designed transformations of activities which enhance collaborative work. (Hopwood & Sannino, 2023b)

Motion thus links agency to learning, development, and social change, especially through formative interventions such as CL. This perspective on motion resonates with the concept of the ZPD outlined in section 3.4.4. In the context of CL, the ZPD is activated not only at the individual level but also collectively, as participants move beyond habitual ways of working toward newly co-created practices. In this way, motion within the ZPD becomes a dynamic force that propels collective learning and agency development.

From a cultural-historical perspective, agency involves ongoing and dialectic change: people and organizations evolve by navigating conflicts, reconfiguring motives, and reimagining futures. This movement is not abstract but grounded in material, social, and conceptual processes. Hopwood and Sannino (2023b) argue that this connection to learning and development is essential:

The three motifs of motive, mediation and motion also have potential to be understood through cultural-historical perspectives at the nexus of learning, development and agency. Taking up this agenda is crucial. If theories of agency are divorced from those of learning, there is a risk that, however sophisticated our understandings, we miss out on crucial – perhaps the most powerful – means to go beyond describing or classifying agency, and instead actually promoting it. (Hopwood & Sannino, 2023b)

3.4.7.1 Relevance to my project

The three motifs of motives, mediation and motion are used as an interpretive framework that helps explain what happened in the SCL and how transformative agency developed throughout the seven sessions. The focus on these three motifs provides a lens that illustrates why change was necessary (motive), how participants engaged with mediating tools to enact change (mediation), and what

the path of transformation in the development of the activity was (motion). This perspective is useful in helping to develop the concept of sustainability agency, with is a central aim of this research.

After explaining the key theoretical concepts this study is based on, I will now describe Change Laboratory as the methodology used to implement my interventionist agenda in the next section.

3.4.8 Change Laboratory (CL)

The Change Laboratory (Engeström et al., 1996; Virkkunen & Newnham, 2013) is a formative intervention methodology aimed at addressing persistent issues in work and communities, fostering expansive learning, and developing systemic solutions and new practices based on CHAT (Bligh & Flood, 2015; Englund & Price, 2018). CL is an intervention methodology that engages participants in transforming the activity systems they inhabit through double stimulation tasks in structured sessions, which serve as the core knowledge production mechanism. It is also a research methodology because it provides a structured way for researchers to study how transformation (and transformative agency) develops over time, drawing on empirical data evidencing learning, agency and change processes. This section sets out the theoretical principles underlying CL methodology. The specific design of the SCL is described in chapter 4.

It is important to note that whilst the fundamental principles in CLs remain constant, this does not result in identical projects as CLs typically vary in different settings. In other words, while the CL methodology is grounded in sound theoretical principles, applying these principles does not produce identical designs in every case. Instead, CL projects adopt bespoke designs shaped by these principles but tailored to the specific research context. Table 3.2 provides an overview of the CHAT concepts and principles used in this study and their function in the SCL.

CHAT Concept	Function in SCL
Activity System	<ul style="list-style-type: none"> • Unit of Analysis • Diagnostic and developmental tool (visual & cognitive) in collaborative and co-creative processes
Contradictions	<ul style="list-style-type: none"> • Drivers of collective insights and change in CL, motives and sources of redesign (Lémonie, 2025) • Analytical tool to diagnose deep-seated tensions in Activity System
Expansive Learning	<ul style="list-style-type: none"> • Theory used to understand how CL participants engage in collective actions to critically analyze and transform their own activity system • Step-model of Expansive Learning Cycle used to design tasks for sessions and to guide participants in collectively critically analyzing and transforming their own activity system
Double Stimulation	<ul style="list-style-type: none"> • Principle used to design tasks that stimulate action in participants to productively engage with mediation tools as they transform their activity system
ZPD	<ul style="list-style-type: none"> • Concept used to denote collective learning and development beyond current capabilities towards transformation of the activity system
Transformative Agency	<ul style="list-style-type: none"> • Concept used to trace, frame and transform conflicts of motives and constraints of individuals and collectives

Table 3.2: CHAT concepts and their functions in the SCL

Building on the concepts of CHAT discussed above, CL methodology was chosen for this project to provide a space for collaboration, participation and co-creation of solution for HESD, offering the opportunity for participants to work with others to question, reflect, and critique the historical and current situation, and then model new approaches, implement and experiment with these. This setting is conducive to developing new insights, competences and mind-sets in exchange and collaboration with others, resulting in expansive learning,

development and concrete innovative solutions with a high potential for systemic and sustainable impacts for the participants' local contexts and the possibility to transfer learnings to other settings (Engeström et al., 2022).

Change Laboratory interventions are typically structured in a process based on the cycle of expansive learning (see section 3.4.2), with participants roughly moving through the seven stages described above, but usually not in a linear and strictly sequential fashion. Emphasizing the generation of participants' transformative agency (see section 3.4.4), the methodology allows and even encourages deviations from the researcher-interventionist's proposed agenda so that participants often make decisions about how the intervention develops, especially as they progressively get familiar with and take ownership of the process. This makes CL interventions both risky but also promising – opening space for new ways of thinking, understanding and acting in the zone of proximal development (Bligh & Flood, 2015).

CL interventions have been used in many different fields. Examples of disciplines related to my research which have employed CL methodology include academic development (Englund & Price, 2018; Garraway, 2021; Moffitt & Bligh, 2025), early childhood education (Nuttall, 2022), schools and teacher education (Diao et al., 2021; Morselli, 2021; Nuttall, 2022), vocational education (Moffitt & Bligh, 2021; Morselli & Sannino, 2021) health care and social work (Engeström et al., 2015; Sannino, 2015a), libraries (Engeström et al., 2012), business service providers (Haapasaari & Kerosuo, 2015), and others. The use of the methodology has been increasing significantly over the past decade, with a growing number of publications reporting on CL interventions.

The project described here was based on the theoretical and methodological principles of CHAT and CL as explained above, which are expanded on in chapter 4. The remaining section of this chapter includes a short explanation of other possible theories I considered for my research and the reasons why CHAT was used instead.

3.5 Other possible theory choices

There are several theoretical positions I considered as alternatives to CHAT in the early planning stages of my dissertation project, most of which I was familiar with due to my practical and academic interest in HESD, and some of which I also explored further throughout the early part of my Ph.D. programme. Three theories seemed potentially suitable: Transformative Learning Theory, Participative Action Research, and Systems Theory. Without attempting to offer a full definition of these theories, the following section provides a brief explanation of the features that attracted me to each theory and the key arguments that made me decide to employ CHAT over them.

3.5.1 Transformative Learning Theory

Transformative Learning Theory (TLT) is a theory used extensively in the area of Education for Sustainable Development (ESD) (Balsiger et al., 2017; Boström et al., 2018; Sterling, 2011), and I had encountered it in my previous work relating to ESD as well as when investigating the literature base for this project.

Based on the work of Jack Mezirow (Mezirow, 2000), TLT provides an approach to education that aims to affect fundamental changes in learners' world views through the experience of disorienting dilemmas, i.e. experiences which significantly disrupt learners' assumptions and beliefs, followed by critical reflection and discourse with others and finally leading to the development and adoption of new perspectives and attitudes. Much of the pedagogical literature on ESD uses the term "transformative learning" (albeit without necessarily referring to Mezirow), and I had used TLT in other research projects as a theoretical framework. With the focus of TLT on challenging existing assumptions and practices, and changing learner's behaviours and mind-sets to embrace sustainability, this theory seemed to be a promising approach as it does cater for development and change to some extent, and there is the potential to trigger and trace research participants' individual agency.

However, TLT does not focus on several aspects I was particularly interested in. First of all, TLT does not focus on the concept of agency specifically, which was core to my research intent. The theory also does not consider collective transformation, which was an issue, considering that I planned to work with a diverse participant group with different backgrounds and agendas in an institution-wide effort to affect material, not only cognitive change, which is foregrounded in TLT. The focus on learners' individual perspective change seemed to be limiting the impact my project could have, compared to the dynamic collective journey my research participants and I ended up embarking on using CHAT and the theory of expansive learning.

3.5.2 Participatory Action Research

Participatory Action Research (PAR) was another possible approach I considered. I was familiar with PAR due to my university's strong focus on business and management, where PAR is commonly associated with Kurt Lewin and the methodology's use in organisational change (Shani & Coghlan, 2021).

PAR is a collaborative research approach that involves active participation and leadership of stakeholders who are significantly impacted by the issue being studied or the changes being made to generate new knowledge and drive emancipatory social change. PAR addresses power imbalances and institutional barriers by highlighting critical reflexivity, shared control, and a commitment to social justice, and is geared toward generating knowledge in order to affect positive development and change of problematic social conditions (Cornish et al., 2023). The emancipatory and empowering stance of PAR as well as the collaborative approach and the focus on co-creating knowledge and subsequently actions (Cassell & Johnson, 2006) are well aligned with sustainability initiatives and my own research agenda.

Despite many similarities with CHAT (Lémonie, 2025), however, PAR models have been criticized for being too general to be tested and critically developed (Bligh & Flood, 2015), and they do not focus on forging transformative agency

within the process. CHAT and CL, on the other hand, provide a robust set of theoretical concepts and tools to not only inform and support the research intervention, but also to help understand and explain the activity systems in question, their inherent contradictions, and the processes supporting transformation. This methodologically sound approach based on a strong theoretical basis and the conceptually rich tools available were decisive arguments for my choice of CHAT.

3.5.3 Systems Theory

A third approach I considered was Systems Theory, as it is used in many disciplines core to sustainability research and has also been applied in research about sustainability transformation in HE (Sterling et al., 2013).

A system is defined as “an interconnected set of elements that is coherently organised in a way that achieves something” (Meadows, 2008), typically consisting of elements, interconnections, and function or purpose, which produce – in their interplay – active mechanism that can be adaptive, dynamic, goal-seeking, self-preserving, and evolutionary. Systems Theory identifies flows, stocks and feedback loops as key components within the system that influence its behaviour and the connectivity between its elements, and defines leverage points that can accelerate system change (Meadows, 2008). One attraction of Systems Theory to investigations about sustainability-related issues is its ability to address complex and systemic issues, its focus on understanding dynamic systems, and its inherent appeal to multi- and trans-disciplinarity (Abson et al., 2017; Deets et al., 2020; Porter & Córdoba, 2009). It is a useful and accessible theory to develop an understanding for complex sustainability problems. A recent example is Christou et al. (2024), who draw on a systems-thinking lens to demonstrate how sustainability integration in higher education benefits from understanding institutions as complex, interconnected systems in which meaningful change emerges from the relationships between components rather than isolated interventions.

Even though there are similarities with CHAT, particularly with regards to the strong focus on systems, Systems Theory is less concerned with the specific cultural and historical roots of contradictions than CHAT, and it does not conceptualise human agency and development. This limitation is picked up by Engeström and Kerosuo (2007), who argue that “the system view of an organisation is blatantly insufficient when the researchers try to understand and facilitate qualitative changes by means of expansive learning” (p. 340). There is a vast array of literature in sustainability science employing Systems Theory, but the lack of attention to agency, which was one key aspects I wanted to focus on, and the fact that Systems Theory is not yet well established in the field of higher education in contrast to CHAT led me to abandon this option.

In summary, the theories considered – albeit popular in the academic field of HESD – were possibilities that I discarded. My choice of CHAT aligns with my epistemological and ontological stance and supported my intention to explore how transformative agency can be fostered in HE settings. Change Laboratory, based on the philosophical and theoretical underpinnings of CHAT and the theory of expansive learning, was the most appropriate approach for my research project.

3.6 Chapter summary

This chapter has provided insight into the theoretical background of my research project, starting with a description of my ontological and epistemological stance, followed by a discussion of CHAT as a theory closely aligned with transformative agendas of sustainable development. This is followed by an introduction to CHAT and the theoretical concepts most pertinent to my research as well as the motifs of motive, mediation and motion, which are used as an interpretive lens in this study. A brief overview of other possible theories I considered for my work conclude this chapter. In the next chapter, I will describe how this theoretical basis was used to design and develop the SCL, how it was operationalised, and how the resulting data were analysed.

4 Chapter 4: Research Design

4.1 Introduction

In chapter 3, I have detailed the theoretical background underpinning my research based on CHAT and explained pertinent theoretical concepts and how they have been applied in my project. Building on this theoretical foundation, chapter 4 now describes the research design I have employed resulting from the theoretical and methodological choices I have made. In the foreword to Virkkunen and Newnham (2013), Engeström describes the Change Laboratory (CL) as a

living toolkit that cannot be mechanically reproduced. Each implementation is a creative endeavour that requires grasping the local circumstances and specific potentials of the activity system involved. (Virkkunen & Newnham, 2013)

This chapter explains how this toolkit was put to work in my project. I first argue why a formative intervention in the form of a CL was an appropriate approach for my research aims and then describe how the Sustainability Change Laboratory (SCL) was implemented, including reference to its fully online format. A brief account of the key characteristics of the research site and the institutional context the intervention was set in are followed by reflections on my position as insider-researcher. Next, I describe the participant recruitment process, relevant participant characteristics, the SCL schedule and a record of attendance at the sessions. The subsequent section presents the SCL design, in particular the sequence of first and second stimuli used to progress the work of the group, and describes the way sessions were prepared and facilitated. This is followed by an explanation of the data generation and analysis methods employed. The chapter concludes with a discussion of relevant research-ethical considerations, describing key issues and risks identified, and how they were mitigated.

4.2 The Sustainability Change Laboratory (SCL)

4.2.1 Choosing the CL approach

In order to understand the choices made in the implementation of the SCL, it is important to remember the motivations behind the project as well as my ontological and epistemological stance. Whilst my choice of CHAT as a theory and of CL as a methodology have been outlined in chapter 3, this section briefly reminds the reader of the key aspects impacting on the design decisions I made.

Section 1.2 details my reasons for choosing to do a CL in my research. From the participants' perspective and from my own position as a professional tasked with integrating sustainability at my institution, the overall aim of the SCL was to collectively develop an understanding of the contradictions impeding or slowing progress in sustainability integration as an institutional activity, and to create possible solutions to overcome these. The intervention was also meant to provide an opportunity for stakeholders to engage in a transformative endeavour, and to empower them to transcend the barriers they collectively identified in order to transform the object of the shared activity in a cycle of expansive learning.

From a researcher's point of view, I was interested in tracing collective transformative agency emerging in the course of the SCL session series and exploring what role double stimulation played during an expansive learning cycle in this development. My aim was to contribute to the research agenda employing TADS in the context of HESD within the context of fourth generation Activity Theory. The dearth of research on this concept is expounded in section 2.5.

These distinct but complementary motivations align closely with the ontological and epistemological position described in section 3.2 and with the choice of CL as a "distinct form of interventionism" (Bligh & Flood, 2015). Not only is CL firmly rooted in the theoretical tenets outlined in chapter 3 and supportive of my professional and research aims in this project, but it also provided a practical methodology and toolkit that guided the planning, design, implementation and

analysis of my research. From the perspective of a relative novice in interventionist research and Activity Theory, these practical sources of guidance are of great value. They offer a sound basis upon which to build, bestowing the researcher with confidence in an undertaking that can be defined as “not for the faint-hearted”. My use of CHAT and CL can be understood in a paradigmatic and polyfunctional fashion as defined by Bligh and Flood (2017) in that I use CHAT in all aspects and phases of my research. From this vantage point, I used Virkkunen and Newnham (Virkkunen & Newnham, 2013) as well as the technical reports available from the Bureau the Change Laboratory website (*Bureau De Change Laboratory*, n.d.), especially Bligh (Bligh, 2023), to inform the design and planning of CL sessions and to support the ongoing analysis and interpretation of findings.

4.2.2 Setting the scope of the project in the institution

In addition to theoretical and conceptual deliberations and methodological choices, planning a Change Laboratory involves a range of practical and logistical steps, including negotiations with the client organisation to gain a mandate to run the CL, collecting necessary data to prepare the intervention, and preparing the schedule, design and instruments to be used in the sessions (Virkkunen & Newnham, 2013).

In my case, this included gaining written permission from university management to run the CL as part of the ethical clearance process, and negotiating with the university’s Human Resources department that the SCL could be run as a staff development opportunity so that sessions could be attended during my and staff participants’ work time. I developed a “course description” and fixed session schedule well ahead of the start date to be included in the staff development programme for Winter Term 2023/24. The decision to advertise the SCL as a staff development opportunity had an impact on the project as it made it possible for any interested staff members of the university to participate. This broadened

the focus of the project in terms of including more diverse participants, an aspect which was amplified with the decision to also invite student participants.

Regarding other preparatory activities recommended by Virkkunen and Newnham (2013), e.g. determining the unit of work, collecting internal data to inform the CL design, or connecting the activity to management, it is important to mention that their assumption is that the CL intervention is carried out by external researcher-interventionists, which was not the case in my project. My insider status was a significant advantage, especially with regards to these practical steps and my deep knowledge of the organisation, particularly as I had access to internal data and decision makers. This is further discussed in section 4.4. Regarding the determination of the unit of work, I took a holistic approach to sustainability integration with the intention to create a coalition of as many engaged stakeholders as possible rather than work with a dedicated unit of work such as an academic department or central service unit, which would have provided a different focus. This decision was based on my motivation for the project to make institution-wide changes rather than changes limited to specific units of work. I was hoping to create synergies across different areas and reduce the existing unevenness characterising sustainability integration efforts. This approach also aligns with the recommendations to opt for a whole-of-institution approach in the literature (see section 2.3.1).

4.2.3 Determining the online setting

The SCL was conceptualised as a series of seven fully online sessions from the outset, using synchronous web-conferencing technology and online collaboration tools for participant interaction and collaboration. While CLs have traditionally been conducted face-to-face, with few documented online examples, recent studies (Englund, 2018; Moffitt & Bligh, 2021) and a growing research community are beginning to explore and develop online CL methodologies (Spante et al., 2023). Whilst the implications of employing a fully online format are not a focal point in this thesis, and my learnings with a focus on the technologies chosen to

run the SCL have been documented elsewhere (Obexer, 2024), this section outlines the rationale for the decision to opt for an online mode and the features central to the design of the online SCL.

The reasons for choosing a fully online format were twofold. Firstly, I was aiming to enable more participants to take part, and in actuality, some were located at other campuses, in other towns, and one even in another country. Feedback from participants clearly confirmed that many would not have taken part had the sessions been on site. There were other practical advantages of this format as room bookings were not necessary, and recording sessions and other interactions using online technologies was easier than in a face-to-face scenario.

The second reason is related to the prioritization of online collaborative learning, especially professional learning on a global scale, which has been emphasized as urgently necessary for addressing some of the most pressing global challenges faced by humanity today (Kennedy & Laurillard, 2023). The urgency of sustainability transformation and the potential of digital technologies to multiply the reach of interventions in HESD (and beyond) motivated my choice of a fully online mode. The online SCL can be regarded as a model that provides a structured yet flexible environment for participants from potentially diverse geographic, cultural, and professional contexts to jointly analyse contradictions, co-create solutions, and experiment with transformative practices. By facilitating such collaboration without the constraints of physical co-location, my research aimed to contribute to the body of work on online collaborative learning through an intervention designed to foster “human subjectivities and transformative agency instead of technocratic solutions” (Spante et al., 2023) – a focus that is vital in the context of sustainability transformation.

When planning the CL in fully online mode, it was imperative to consider what aspects would change compared to a face-to-face setting, what was important to retain or emulate in the virtual space, and what opportunities arose from the virtual format. Drawing on the central principles of a CL intervention (Bligh, 2025),

the most important CL features I considered central to the smooth running of the SCL online were:

- the ability to support the development of an online community in a safe space;
- ensuring efficient communication through easy to use, functional online tools so that the discussion and collaboration between participants was seamless and would not be hampered by technological difficulties or barriers;
- effective creation and provision of the tools participants were to work with (including first and second stimuli, and mirror data), and the ability for them to adapt these easily where required; and
- the capacity to effectively record the data produced by the intervention.

4.3 Research site and institutional context

As outlined in section 1.3, the institutional setting for this research project is a University of Applied Sciences in Austria. The university's work on responsibility and sustainability began with business ethics and responsible management, reflecting its origins in business education. Becoming a UN PRME signatory in 2010 set the initial framework, with the 2015 UN Agenda 2030 and SDGs broadening its scope (see section 1.2). Responsibility for these agendas shifted to me in 2017, and the 2021 launch of the Centre for Responsible Management & Social Impact strengthened the visibility of this work (see section 1.3). This agenda is reinforced by national policy requiring HEIs to integrate the SDGs (see section 1.4), by accreditation and ranking demands, and by increasing calls from students and the wider community for universities to drive sustainable development (see section 1.1).

Austrian Universities of Applied Sciences are teaching-intensive institutions, therefore there is a strong focus on sustainability integration in teaching and learning in the activities UNI seeks to support and advance, but other activities (student engagement, operations, and also research) are also included. From my vantage point of sustainability coordinator, there is uneven integration and also understanding of sustainable development across the institution due to a number

of reasons, including disciplinary differences and the absence of a top-level definition and strategy for the integration of sustainability. In the area of teaching and learning, integration of Sustainable Development is patchy, with some programmes embracing the challenge, but others being careful, reticent or uninterested.

Over the past few years, several activities have been undertaken to pursue this integration at my institution more strongly, and there is a group of over 30 colleagues who have volunteered or been appointed to be PRME/SDG Ambassadors (see section 1.3). In 2022, an curricular SDG mapping exercise was commenced, which resulted in about half of all programmes developing a map of what SDGs were integrated in their curricula and – based on this – an SDG programme statement, which articulates how the programme is contributing to sustainable development and what SDGs are in focus. This exercise confirmed my observation of varied progress, commitment and struggles, which mirror the barriers discussed in the literature (see chapter 2). In particular, the challenges are context-specific and differ across the institution between departments and teams, which leads to a lack of synergies and common understanding and limits the collective effect of sustainability efforts.

In my view, the mapping exercise and related activities have been promising developments, providing some opportunities for professional learning, reflection, collaborative exploration and co-creation of teaching and learning approaches, which I initially conceived as key to progressing the university's activities in integrating sustainability. The SCL was conceived as a means of accelerating these efforts by diving deeper into the contradictions and challenges faced by different stakeholders and surmount them with a renewed sense of opportunity and potential. My own role in this endeavour was multi-layered and warrants a critical discussion as provided in the next section.

4.4 My roles as insider researcher-interventionist

Choosing a CL approach meant embracing the dual position of insider researcher-interventionist, a stance that brought both opportunities and challenges for the SCL. Virkkunen and Newnham outline four core CL facilitator roles:

- organiser and supervisor
- chair of discussion
- conductor of the expansive learning process, and
- documenter/analyst.

I performed all of these roles. While Virkkunen and Newnham (2013) assume an outsider interventionist, my position was different: I was simultaneously the project's facilitator, an employee with managerial responsibility for the activity under investigation, a colleague to many participants, and in some cases a former teacher of student participants. Literature conceptualises insider-outsider status as a continuum (Mercer, 2007; Trowler, 2011), and my case involved shifting positions depending on the specific departmental or role-based context. From the outset, I anticipated tensions and adopted a reflexive stance to manage the ethical, relational, and methodological implications (see Section 4.8).

4.4.1 Advantages for the project

As Head of the Centre for Responsible Management & Social Impact, my insider status brought assets often highlighted in the literature (Brannick & Coghlan, 2007; Costley et al., 2014; Miles, 2022). I possessed intimate knowledge of the institution's culture, history, and sustainability trajectory, direct access to decision-makers, and established trust with colleagues. This positioning strengthened the SCL in several ways:

- *Relevance*: I could frame questions and design stimuli that resonated with institutional realities.

-
- *Access to potential participants*: My position in the institution as lecturer and sustainability coordinator made it easier to identify and approach potential participants.
 - *Access to data*: Due to my role, I had access to both historical and current data relevant to the project.
 - *Facilitation*: My experience leading faculty development helped maintain constructive engagement with sensitive topics.
 - *Analysis*: Contextual insight enriched my interpretation of contradictions and turning points.
 - *Implementation potential*: As the person responsible for sustainability coordination, I could integrate SCL outputs into institutional initiatives, with some influence over resources.

4.4.2 Challenges and adaptations

Insider status also comes with several caveats and difficulties, and poses risks noted by Fleming (2018) and Mercer (2007), including bias, power dynamics, and role conflict. At times, critical comments from participants about sustainability practice triggered an impulse in me to defend, explain, or act immediately. Initially intending to participate as an equal group member, I changed this decision after the second session, withdrawing from small-group discussions and limiting my role to facilitation and plenary contributions, and providing factual clarifications when necessary.

This move was motivated by two factors: first, there was an issue in session 2 with one team not finding their online meeting room and not being clear about the task. Since I was participating in a group discussion in another room, there was nobody who could help them, and I was concerned that this might happen also in future sessions. In addition, I realised while working with one of the groups that my extensive knowledge about the institution created imbalances and that they referred to me repeatedly rather than discussing their own experiences and insights. Whilst my decision may have reduced opportunities for participants to

engage with my perspective directly, it protected the group's ownership of the problem analysis and solution-building process, supporting the goal of developing collective transformative agency.

4.4.3 Reflexivity in practice

Following Brannick and Coghlan (2007), I engaged in both epistemic reflexivity (examining my own assumptions and biases) and methodological reflexivity (assessing how my actions shaped the setting). I documented reflections after each session in a research diary, discussed dilemmas with my supervisor and a trusted colleague, and integrated these insights into my findings to increase transparency.

Overall, my dual role amplified the project's practical impact potential but required constant reflexive adjustment to maintain credibility, trust, and methodological rigour. These dynamics directly shaped how the SCL was conducted, interpreted, and embedded within the university context.

4.5 SCL participants and schedule

4.5.1 Choosing and recruiting participants

Following Virkkunen and Newnham's (2013) recommendation to recruit participants who share an object and who "are involved in realizing the same final outcome despite differences in their occupation, task or hierarchical position" (p. 65), I sought to recruit individuals who, despite differing roles or positions, shared a commitment to the outcome of stronger SD integration. I also intended to include the student perspective, as their direct involvement could add credibility, broaden perspectives, and increase impact (Engeström et al., 2014; Hopwood, 2024; Sannino et al., 2021). This approach can also be seen as an example of forming the "Activity Coalitions" of fourth generation Activity Theory, which "require one another to enact the shared utopia and their actors must learn to

operate on the basis of concerted initiatives rather than by top-down orientations” (Engeström & Sannino, 2020).

The SCL was initially advertised through the university’s staff development programme and the SDG Ambassador network. When this yielded limited interest, I postponed the start date for three months and recruited more proactively, personally inviting staff I knew shared an interest in sustainability. My recruitment goal was to involve participants who were either actively involved in, or at least interested in, integrating sustainable development into the university’s core activities.

I also extended the call to students, a decision influenced by my prior experience teaching an interdisciplinary sustainability-related elective, where students’ critical and creative contributions demonstrated their value as key stakeholders. I reached out to students enrolled in extracurricular programmes and electives related to sustainability via an announcement on the institutional learning management system, knowing that due to their choice of participating in such offerings they had a keen interest in sustainability. In hindsight, including students resulted in significant benefits for the project, as discussed in section 5.9.2.

4.5.2 Participant characteristics

Altogether, I was able to recruit 18 participants, 7 of whom were students (StPx), 2 were external lecturers (Px_ext, i.e. lecturers who have short term teaching contracts but are not university staff), and 9 were internal staff (Px_int) consisting of professors, senior lecturers, lecturers, teaching & research assistants, and professional staff. One student had to drop out after the first session due to study commitments and is not included in the count from here on.

Table 4.1 provides an overview of the participants’ roles and the pseudonyms given to them in the transcription of the recordings (details about decisions regarding pseudonymization are provided in section 4.8).

Pseudonym	Role	Organisational Area
P1_int	Professional Staff	Central Services
P2_int*	Lecturer	Business Administration Online
P3_int	Teaching & Research Assistant	Business Administration Online
P4_int*	Lecturer	Tourism
P5_int	Professor	Non-Profit, Social & Health Care Management
P6_int	Senior Lecturer	Social Work
P7_int*	Teaching & Research Assistant	Non-Profit, Social & Health Care Management
P8_int	Professional Staff, Lecturer	Central Services
P9_int*	Teaching & Research Assistant	Environmental, Process & Energy Engineering
P1_ext	External Lecturer	External
P2_ext	External Lecturer	External
StP1	Student	BA Business Administration, 6th Semester
StP2	Student	MA Social Work, Social Policy & Management, 4th Semester
StP3	Student	BA Social, Health & Public Management, 6th Semester
StP4	Student	BA Social, Health & Public Management, 4th Semester
StP5	Student	MA Social Work, Social Policy & Management, 6th Semester
StP6	Student	BA Business & Management, 4th Semester

Table 4.1: List of participants in the Sustainability Change Laboratory

More specific individual demographic details are not provided here in order to protect the identity of the participants (see Section 4.8). Collectively, it can be said that there was an uneven spread across gender with 13 female participants and 4 males, and as the table shows, the representation of disciplines is leaning strongly towards the social sciences and business, with only one participant coming from a technology & science focussed area. All staff participants had been employed by the university for over a year, with many being longstanding members of staff. Of the two external lecturers, one has a high teaching load in several study programmes but is not associated with a department. The other is employed at another university but used to be an internal member of staff at the institution until a few years ago and still teaches courses in the executive education programme. Both know the institution well. The students, one male and five female, were from four different programmes, with two at Master level and four at Bachelor level.

The difficulty in recruiting participants, in which the high time commitment involved in the SCL was a major factor, meant that it was not possible to be selective on the grounds of diversity and inclusion. What should also be noted is that no formal decision makers (i.e. heads of department or programme, members of the leadership team) took part in the Change Laboratory, however four of the participants (marked in Table 4.1 with *) are members of the SDG Ambassador Group and thus have a role related to sustainability.

Participants were clearly informed that the CL is part of my Ph.D. research and how data would be collected and managed. They all received comprehensive information about the project and their role as participants before the first session and signed an informed consent form (see section 4.8. for further details).

4.5.3 Session schedule and attendance

The seven CL sessions ran over 4 months (January – April 2024), with sessions being held every two weeks, only the last session was held four weeks after the previous one in order to allow participants time to reflect on their experiences from some temporal distance. Table 4.2 provides an overview of the session schedule, duration and number of participants:

Session	Date	Duration	No of participants
Session 1	11 January 2024	90 mins	17
Session 2	25 January 2024	90 mins	11
Session 3	8 February 2024	90 mins	12
Session 4	22 February 2024	90 mins	12
Session 5	7 March 2024	60 mins	13
Session 6	21 March 2024	120 mins	14
Session 7	18 April 2024	60 mins	7

Table 4.2: Overview of session dates, duration and participant numbers

All sessions ran on the dates planned, only session 5 was shortened as many participants had to attend another event, with 30 minutes added to session 6 to make up for the time. Sessions 1-4 lasted 90 minutes, sessions 5 and 7 lasted 60 minutes, and session 6 lasted 120 minutes.

Table 4.3 shows the attendance of participants (P) at each session, with the last column indicating the number of sessions attended per person and the last row showing the total number of participants in each session (S).

Participant	S1	S2	S3	S4	S5	S6	S7	Total S per Participant
P1_int	1	0	1	1	0	0	0	3
P2_int	1	1	1	0	1	1	1	6
P3_int	1	1	1	1	1	1	0	6
P4_int	1	1	0	1	1	1	0	5
P5_int	1	1	1	1	1	1	1	7
P6_int	1	0	1	0	1	0	0	3
P7_int	1	1	1	1	1	1	1	7
P8_int	1	1	1	0	0	1	0	4
P9_int	1	0	1	1	1	1	0	5
P1_ext	1	1	1	1	1	0	0	5
P2_ext	1	1	0	1	0	1	0	4
StP1	1	0	1	0	1	1	1	5
StP2	1	0	1	1	0	1	1	5
StP3	1	1	0	1	1	1	0	5
StP4	1	1	1	1	1	1	1	7
StP5	1	0	0	0	1	1	1	4
StP6	1	1	0	1	0	1	0	4
Total P per Session	17	11	12	12	13	14	7	

Table 4.3: Overview of attendance at sessions

As Table 4.3 demonstrates, a few participants attended only some of the sessions with P1_int and P6_int only attending 3 sessions. Only P5_int, P7_int and StP4 attended all. Whilst more continuity in attendance would have been beneficial, the overall number of participants in each session was always sufficient to run three group discussions, which resulted in rich outcomes. I distributed a summary of the session outcomes after each meeting, provided a status update at the start of each session, and in some instances asked groups to update others who had been absent in order to ensure a common understanding across all participants in all sessions.

4.6 SCL design, preparation and facilitation

The design of the SCL followed the directions of Virkkunen and Newnham (2013) and Bligh (2023), employing the Cycle of Expansive Learning as a basic structure and building session tasks and tools based on the stage in the cycle.

Based on this overall structure, I developed first and second stimuli to guide and support participants' developing expansive learning and nurture transformative agency. Whilst these were roughly pre-planned for the entire series of sessions from the start, I planned only the first three sessions ahead in detail, whereas for sessions four to seven I developed session outlines before the start of the SCL, but these were kept under review as I did not know for certain what activities would emerge that would influence the development of the SCL. After session 2, 4 and 5, participants were given homework, which was focused on seeking information about sustainability transformation from outside the group, either by reviewing internal data, talking to other colleagues, or reflecting on certain questions. Participants submitted this additional information online. After Homework 1 (see Table 4.4), which was instrumental to the historical analysis, however, only very few participants actually completed the tasks, which consequently did not produce meaningful additions to the overall CL.

Table 4.4 presents a list of first and second stimuli (see section 3.4.3) that were eventually employed. Column 1 shows the session number and phase of the expansive learning cycle (EL). Column 2 lists the first stimuli used in the progressive tasks (T) in each session, also indicating the social format of the task as individual (Ind.), group work (GW), and plenary (PL). Column 3 displays the second stimuli employed, and column 4 itemises the mirror data (i.e. materials such as recordings, documents, observations, etc. that reflect participants' work practices back to them, prompting analysis and discussion) used to support the work in each session. A more detailed discussion of the design of the SCL and the stimuli used is presented in chapter 5.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 1 Questioning	T1.1 Discuss Change Priorities (Ind. & GW)	Miro Template “Priorities”	Videos about Sustainability in Higher Education: 1 from Rector; 1 from other institution
	T1.2 Discuss where we are at (GW)	Miro Template “Status Wall”	
Session 2 Questioning	T1.3 Rank priorities discussed in S1 (Ind.)	Voting system via the video conferencing system’ whiteboard (stars)	Group work results from last session – 3 priorities from each of the 4 groups
	T1.4 Discuss where priorities are at, find examples (GW)	Miro Template “Status Wall”	
Homework 1 Historical and actual-empirical Analysis	Gather information about past development of sustainability integration at institution (Ind.)	Miro Template “Historical Analysis”	PRME SIP Reports
		Miro Template “Timeline”	Journal Article
Session 3 Historical and actual-empirical Analysis	T2.1 Discussion historical analysis (PL)	Focus points (trends, relevance, influence, issues)	Homework results (Miro); interview previous PRME Coordinator
	T2.2 Map current status of sustainability integration efforts (GW)	Activity Triangle	
Session 4 Modelling	T3.1 Review contradictions and think of how they could be made even worse (Ind.)	Miro Template “Reverse Brainstorming”	Outcomes T2.2 – Contradictions
	T3.2 Develop positive ideas to resolve identified contradictions and transform activity (GW)	Activity Triangle	Outcomes T2.2 and T3.1
Homework 2 Modelling	Develop future (ideal) model of activity system for own work context (Ind.)	Activity Triangle	None
Session 5 Examining	T4.1 Revisit and add ideas, decide on 5 key ideas to focus on (GW)	Activity Triangle & Miro Template	Outcomes T3.2
	T4.2 Determine feasibility of ideas (Ind.)	Feasibility & Impact Tool	Outcomes T4.1
Homework 3 Examining	Discuss ideas with non-SCL colleagues / peers (Ind.)	Miro Template	Outcomes T4.1 and 4.2
Session 6 Implementing	T5.1 Chart Feasibility & Impact Ratings (Ind.)	Miro Template “Feasibility & Impact Mapping”	Outcomes T4.1
	T5.2 Choose one of the high impact/feasibility ideas and develop “Action Plan” (GW)	Miro Template “Action Planning”	Outcomes T5.1
Session 7 Process Reflection	T6.1 Metaphor of participating in CL	Metaphor	Feedback from online survey on experience in CL
	Discussion (PL)		

Table 4.4: First and second stimuli and mirror data used in each session

Each session started with a brief introduction reviewing the progress made so far using the cycle of expansive learning and the key outcomes of previous sessions.

I used the cycle diagram shown in Figure 4.1 on a slide as a visual organiser in each session to remind participants where we are and to explain the next tasks.

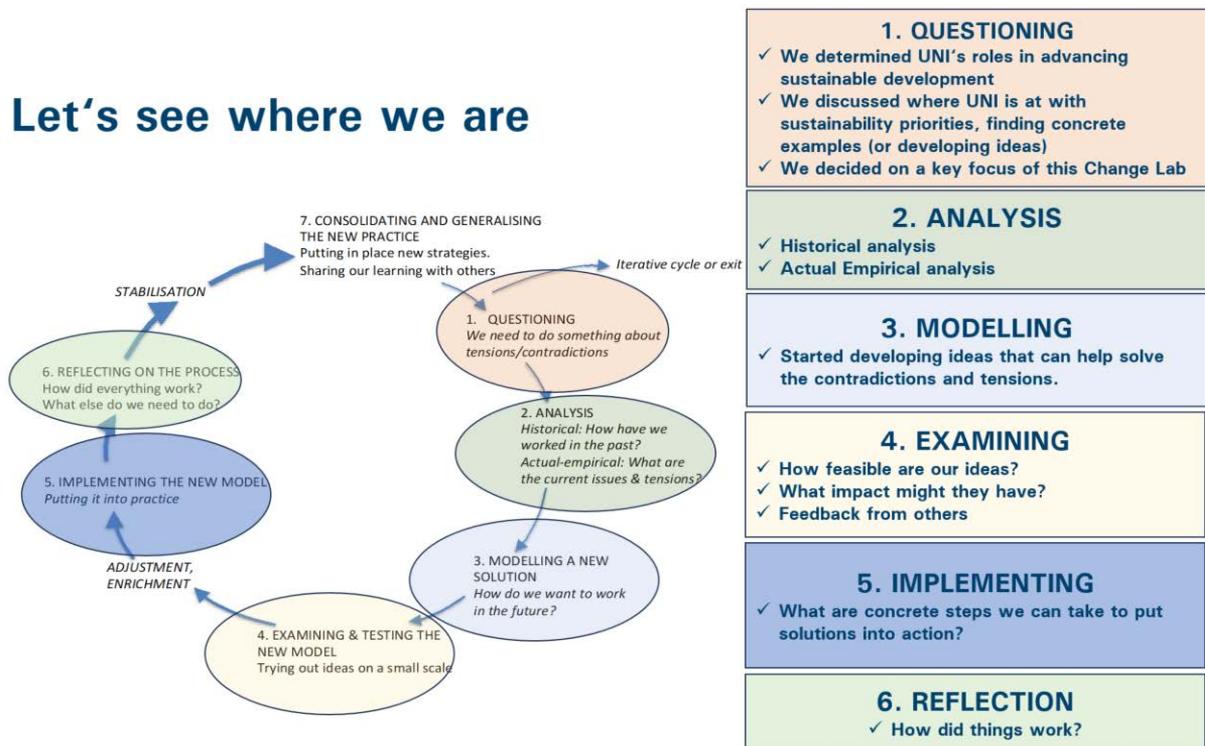


Figure 4.1: Cycle of Expansive Learning with list of CL steps

I then provided stimuli in the form of tasks and cognitive tools to participants. Most tasks were conducted in groups of 3-4 participants in breakout rooms, with each group capturing their discussion outcomes on a virtual whiteboard (Miro) and preparing a report back to the plenary. I allocated groups differently each time in order to bring together different perspectives and views over time. One group member was assigned the role of the rapporteur, and one was tasked with starting the recording in break-out rooms. In addition to group tasks, there were also individual tasks and discussions in the plenary. Chapter 5 provides a detailed account of the activities carried out in each session.

Due to the fact that the SCL was run entirely online, it was essential that the design and activities were well supported by the online tools used to facilitate the sessions. In my choice of digital tools, I considered aspects such as ease of use,

accessibility, functional fit and costs. After evaluation a range of options, I decided on a toolset heavily relying on the institutional digital environment, consisting of the web-conferencing tool “Big Blue Button” to run and record the synchronous sessions including group work, the digital collaboration tool “Miro” for the presentation of stimuli and capturing of work results, and my institutions’ Learning Management System to provide an online website where all information was collated.

Figure 4.2 provides an overview of the key tools employed and their functions, which are described in detail in Obexer (2024).

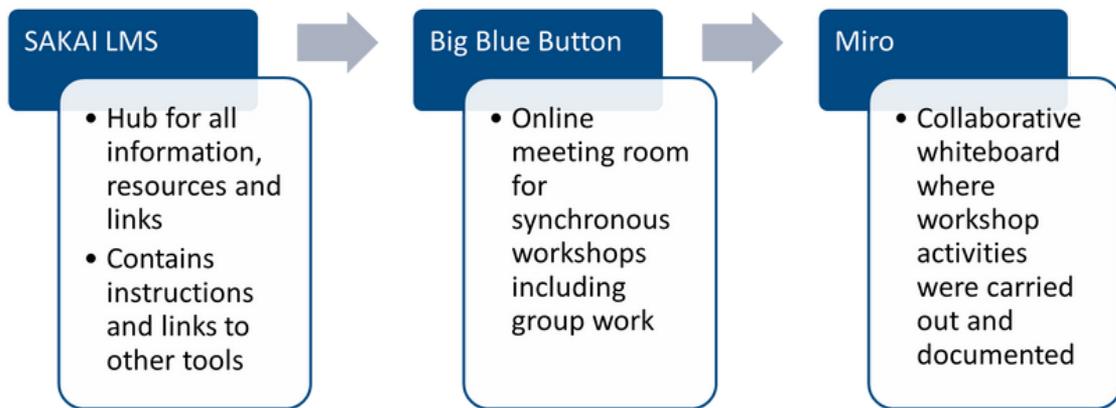


Figure 4.2: Key tools and their functions in the SCL

I selected this suite of tools to suit my local context. Most were already familiar to participants, easily accessible to staff and students, free of licensing costs, and manageable in terms of data protection requirements. In practice, each session flowed from logging into the Sakai workspace and joining the Big Blue Button main room, to accessing Miro via embedded links for individual and group tasks.

The figures below provide an illustration of the SCL online environment. Figure 4.3 shows the overview page of the project site on Sakai, structured along the stages of the cycle of expansive learning, where each session had a separate subpage. Figure 4.4 illustrates how these subpages were structured. Each

session page outlined the purpose of each stage, instructions for group and individual tasks (first stimuli), and any resources provided. When relevant, I added a table of group allocations and roles (scribe/rapporteur, recorder) and a link to the project's single Miro board. Shown in Figure 4.5, the Miro board contained conceptual tools (second stimuli) and served as the workspace for collaboration and documenting results. Finally, Figure 4.6 shows a screenshot of a live session in Big Blue Button.

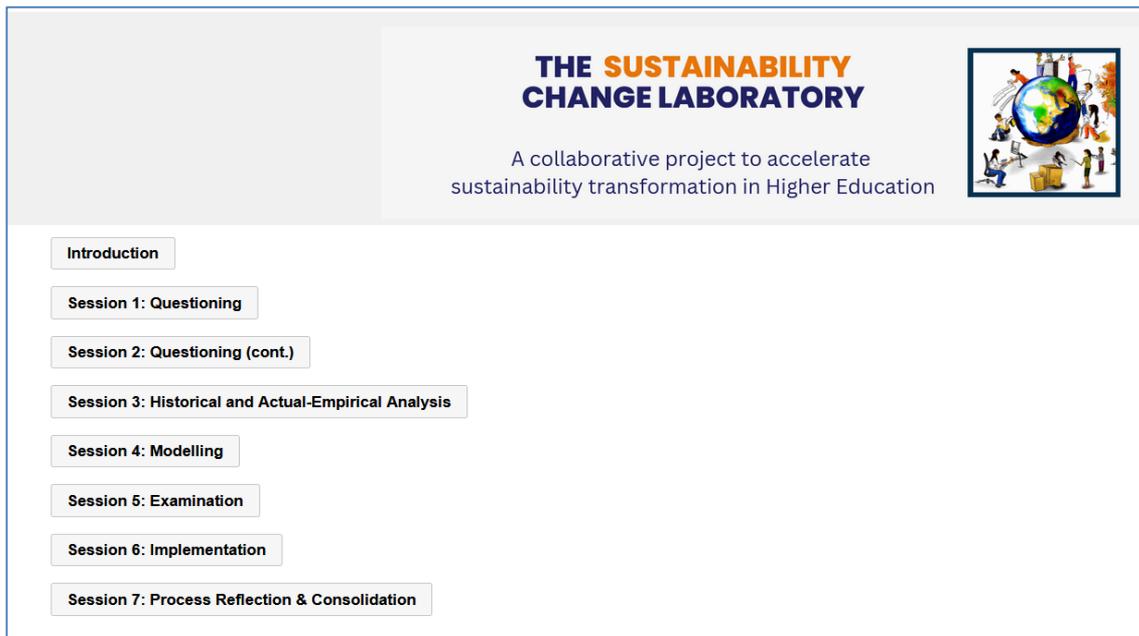


Figure 4.3: Sakai LMS overview page

Historical Analysis

Purpose of this Stage

This stage is all about examining the historical context, patterns, and developments that have shaped the current state of the problem/system. Using mirror data collected since the last session, participants reconstruct the development of the problem, identifying key milestones and significant changes, thus creating a deeper understanding of the problem. This historical perspective enriches the subsequent phases of the Change Laboratory process and supports more informed decision-making for change and improvement.

 **Task 2.1**

Based on the results of the homework from the last session, let's look at the historical development of sustainability integration at MCI and focus particularly on how the events, milestones, trends, etc. have impacted on the values and underlying assumptions that drive sustainability integration. We will discuss this in the plenary, with a few guiding questions to start us off:

- What trends can we observe?
- What is the relevance of the past events/activities for our current challenges?
- How do they influence current strategies and developments?
- Are there any persistent issues that can be observed?

Actual-Empirical Analysis

Purpose of this Stage

The Actual Empirical Analysis stage sets the foundation for the entire Change Laboratory process by providing a data-driven understanding of the challenges and opportunities within the organization. It ensures that the subsequent phases are informed by real-world observations and insights, leading to more effective and targeted improvements.

 **TASK 2.2**

We will now try to map the current activity system of the activity "Sustainability Integration at MCI", with a special focus on "Questioning underlying systems and values".

In your groups, work together to:

- Identify the elements of the activity system.
- Capture any difficulties or discussions you have in determining the relevant elements.
- Discuss any contradictions and tensions that impact the activity system (primary > within a system element; secondary > between different elements)

DEFINITION:

Tensions and contradictions within activity systems refer to the inherent conflicts, discrepancies, or opposing forces that arise during the process of organizational or societal transformation. These tensions often emerge between existing practices, norms, and goals, highlighting areas of friction or resistance to change. Change laboratories aim to identify, analyze, and address these tensions constructively, fostering innovation and development within the system (Virkkunen & Newnham, 2013).

Groups and roles:

Breakout-Room	Group members	Group roles
Breakout Room 1 Miro Link Group 1	Bernd, Lena H, Juliana, Angela	Bernd: Scribe & Rapporteur Lena H: Hit Record Button please
Breakout Room 2 Miro Link Group 2	Julia, Robert, Nico, Lesma, Nina	Robert: Scribe & Rapporteur Julia: Hit Record Button please
Breakout Room 3	Gabriela, Chiara, Runa	Runa: Scribe & Rapporteur

Figure 4.4: Sakai session page (obscured passages cover participants' names for data protection purposes)

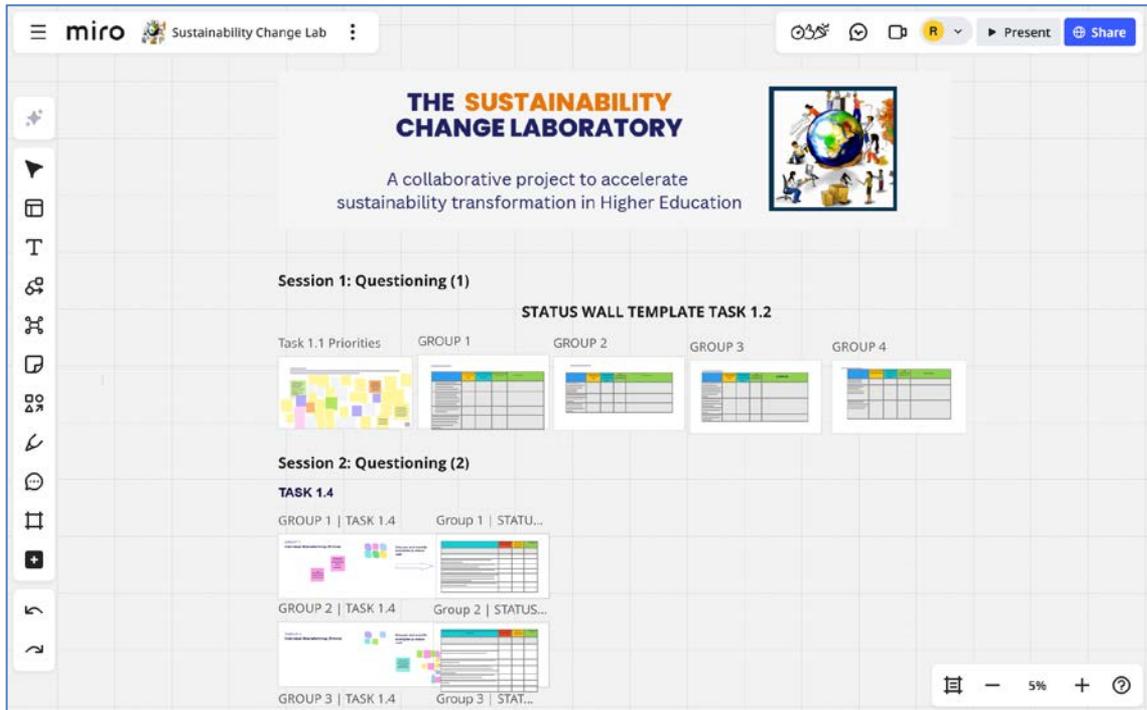


Figure 4.5: Miro interactive whiteboard

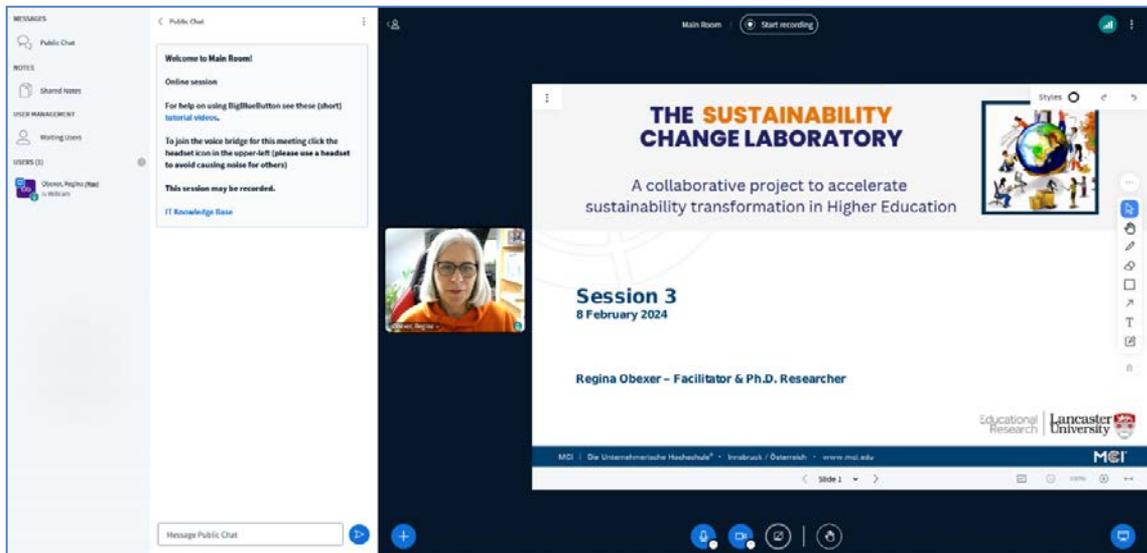


Figure 4.6: Big Blue Button main meeting room

Overall, the online setting functioned smoothly, with only a few technical issues hampering fruitful collaboration in earlier sessions. In particular, the data recording proved highly effective, with all communication of the SCL captured on video and all work results captured on Miro. My concern that the online setting might diminish human connection and, in turn, reduce productivity was only partially borne out by participants' feedback, who commented that they did not think the outcomes would have been different in a face-to-face setting. However, they did flag that relationships between participants might have developed differently, and some voiced the desire to have met in person at least once. Bearing in mind the ongoing nature of sustainability change efforts at the university, these aspects are important considerations for future CL designs. A more comprehensive discussion of the online toolset used, including selection criteria and reflections on the suitability is available in Obexer (2024).

4.7 Data generation and analysis

This section outlines the data foundations of the SCL intervention, detailing both the types of materials collected and generated, and the strategies employed to gather, organise, and manage them. It provides a comprehensive account of the recordings, participant-generated artefacts, homework submissions, observational notes, and session summaries that formed the empirical base for the study, alongside the practical workflows used to process and store this multi-layered dataset. Following this description of data generation and management, the section also explains the analytical approach applied to interpret the material and generate research insights.

4.7.1 Types of data generated

During the SCL intervention, a diverse and substantial dataset was assembled. Key components included:

-
- **Session Recordings:** 440 minutes of group sessions and 454 minutes of plenary sessions (excluding group work), totaling 14.9 hours of audio-visual material.
 - **Chat Logs:** 7 text transcripts (one per session) from online discussions.
 - **Participant-Produced Artefacts:** 7 iterations of a single evolving Miro board, archived as high-resolution image files after each session.
 - **Homework Submissions**
 - *Homework 1:* Posts on Miro in template prepared by researcher
 - *Homework 2:* Activity System produced by participants showing sustainability integration in their own department or team (not used in analysis as only one participant submitted a file)
 - *Homework 3:* Posts on Miro in template prepared by researcher
 - **Mirror Data:** Researcher-generated notes and visual prompts used to reflect group discussions back to participants. This also includes one interview with the previous PRME coordinator, used as a basis for historical analysis.
 - **Session summaries:** 7 concise (1–2 page) documents capturing key events and outcomes, shared with participants before the following session.
 - **Research diary entries:** 7 entries of researcher observations compiled after each session.
 - **Google forms survey results:** 3 surveys after sessions 1, 3 and 6, each with open questions about participants' experience in the SCL.

Table 4.5 provides an overview of the format, type and source of data generated during the SCL intervention.

Data Format	Type	Source
Video and audio recordings	Session recordings	Recorded in video conferencing system
	Interview recording	Recorded using mobile phone
Text / Word documents	Transcripts (combining video recordings and chat)	Transcribed by researcher-interventionist based on session and interview recordings
	Text chat	Copied from video conferencing system
	Session summaries	Created by researcher-interventionist
	Research diary	Created by researcher-interventionist
Miro board	Templates, mirror data and second stimuli on Miro	Created by researcher-interventionist
	Posts, tables and diagrams on Miro boards	Created by participants using templates provided by researcher
	Documentation of work results in sessions and Homework 1 & 3	Created by participants using templates provided by researcher
PowerPoint files	Diagram of participants' own activity system (Powerpoint Template Homework 2)	Created by participants using template
Excel files	Feasibility/Impact Matrix (Excel template Session 5)	Created by participants using template
Google forms survey	Participant feedback via online survey after sessions 1, 3 and 6	Completed by participants

Table 4.5: Data collected during the SCL intervention

As can be seen in column 3, a large amount of the rich set of data forming the basis of this research was produced by participants both within and between sessions, and participants were actively engaged in the data generation process, for example in Homework 1, where they had the option of informally interviewing colleagues about their recollections of how sustainability integration historically

evolved at the university, or in Homework 3 where they were asked to seek feedback from others on the models developed in session 5.

4.7.2 Data generation and management

All data were collected via the online platforms used for the SCL. Session recordings in mp4 format and chats in text format were exported and saved to the researcher's personal computer and transcribed using the transcription software Descript. Participant generated data on Miro was copied after each session and saved as image files, whereas homework was uploaded to the SCL website by participants and then saved. I organised the data using session folders, with each containing recordings, artefacts produced, summaries, and chat files.

In CL interventions, data generation is an iterative process and critical to understanding and interpreting as well as guiding the transformative process evolving throughout the intervention. As data generated in previous sessions is used to guide the design of the next, it is essential that session recordings, artefacts produced by participants, as well as observational data, mirror data and reflections by participants are captured and processed in an iterative cycle. This requires the researcher-interventionist to collect, analyse, select and prepare data produced in each session so that work results can be used as a basis for the next - a critical and labour-intensive task in a setting where typically a large amount of multi-layered data is generated.

After each session, I reviewed the data generated and captured the key events and outcomes in a one- to two-page summary, which was sent to the participants shortly before the next session to remind them of their previous work and also to inform those who were absent. I also used the data generated in each session to develop stimuli for the next session, for example by using direct quotations from the discussion to highlight key points, or when I put contradictions identified in session 2 into a table for a brainstorming activity in session 3. Participants

mentioned the usefulness of the Miro tool, where all activities were on a growing single board, so they could refer back to previous data at any time.

4.7.3 Data preparation for analysis

After ensuring completeness of the dataset to be analysed, all session recordings were transcribed in clean verbatim mode, i.e. exact wording was transcribed but I removed filler words devoid of meaning and smoothed some parts such as false starts, hesitations, or other elements in order to increase readability while ensuring that the integrity of the content was maintained (Halcomb & Davidson, 2006). Other data such as posts, diagrams and tables from the Miro board and homework files were processed, with Miro content being transferred to Excel in order to be able to import the data into the Qualitative Data Analysis Tool ATLAS.ti which was used for coding and category development.

4.7.4 Data analysis approach

My approach to analysis aligns with “reflexive Thematic Analysis” as defined by Braun and Clarke (2022). The emphasis on the researcher’s active and indeed creative role, the focus on reflexivity and subjectivity, the methodological flexibility and the nuanced and contextually rich insights reflexive Thematic Analysis aims to generate all resonated with my own approach to research. The authors posit that reflexive TA offers researchers a high degree of flexibility, allowing for analysis that can be on a spectrum from inductive to deductive, from essentialist/experiential to constructivist/critical, and from semantic to latent. Guided by my research intent, my approach was

- **deductive** rather than inductive due to the strong framing of my analysis by activity-theoretical concepts which provide an analytical lens, even though some steps in the analysis were inductive
- **latent** rather than semantic as I was interested in exploring meaning at a more implicit level

-
- **critical** rather than experiential as I was more interested in interrogating meaning around the concept of transformative agency rather than people's individual experiences
 - **relativist/constructivist** rather than essentialist/realist, using the terms as described by Braun and Clarke (Braun & Clarke, 2022), as I aimed to unpack realities expressed in the dataset rather than capture "truth" evident in the dataset.

4.7.5 Stages of data analysis

Data from the SCL was analysed in several iterative phases and multiple times as described by Scahill and Bligh (2022), who use the descriptors *intersession* (within sessions), *intrasession* (between sessions) and *post-intervention analysis*. First, intersession analysis occurred in real time during sessions, as participants collaboratively examined and built on emerging data. Second, intrasession analysis was conducted by the researcher after each session to inform and adapt the design of subsequent sessions, including preparing data that served as mirror material or informed the development of second stimuli. Finally, a post-intervention analysis interrogated and synthesized all materials to produce the research findings and answer the research questions.

4.7.5.1 Intra-session analysis

This stage of analysis occurred during the intervention, when I reviewed and collected the data after each session and prepared a summary and relevant stimuli for the next session based on the work results. Here, I focussed particularly on contradictions, expressions of agency and other particularly salient points emerging from the session. Whilst the analysis at this stage was a methodological necessity aimed at progressing the intervention rather than a rigorous, theoretically framed process, it proved very useful to collate all data, transcribe group sessions, determine key events and expressions made during the session and develop summaries at this point as a solid basis for second stage analysis. It should be noted that this work has to be done under time pressure in

the time between sessions (in my case, two weeks). This imposes constraints on the extent and depth of analysis possible.

4.7.5.2 Post-intervention analysis

The more substantial part of the analysis was done post-intervention and included the steps outlined in Table 4.6. The entire dataset was uploaded to ATLAS.ti and coded repeatedly, using the initial codes listed in Table 4.6.

Analytical stage & description	Initial Codes	Unit of analysis	Data sources
Step 1: Deductive analysis using expressions of agency (Haapasaari et al., 2016)			
Coding expressions of agency with pre-existing categories	Resisting – Criticizing – Explicating – Envisioning – Committing to Action – Acting	Speaking turns	Transcriptions of sessions, including text chat
Step 2: Analysis of turning points (Haapasaari et al., 2016)			
Turning points: Identifying turning points in the development - instances where participants demonstrate activation of agency by initiating new actions or changing their approach to the problem.	Resolution of Contradictions – Shift from Inaction to Action – Activation of Agency – Reorientation of Motive – Crystallizations of new Practice	Sessions	All
Step 3: Analysis using TADS (Sannino, 2015b, 2016, 2022)			
TADS phases: Identifying instances of systemic contradictions faced by individuals or groups.	First stimulus, uptake of second stimulus, sticking to second stimulus in critical situations, implementing auxiliary motive	Sessions & Tasks	Transcriptions of sessions, including text chat
Inductive thematic analysis: Identification of major thematic streams relating to sustainability integration at UNI	No initial codes, inductive analysis	Tasks	All

Table 4.6: Stages of post-intervention analysis conducted for SCL

Figure 4.7 shows a screenshot of the ATLAS.ti project used for the data analysis, displaying the organising structure I used to manage the data and the coding group used for the TADS analysis. Figure 4.8 shows a sample of a transcript coded using ATLAS.ti.

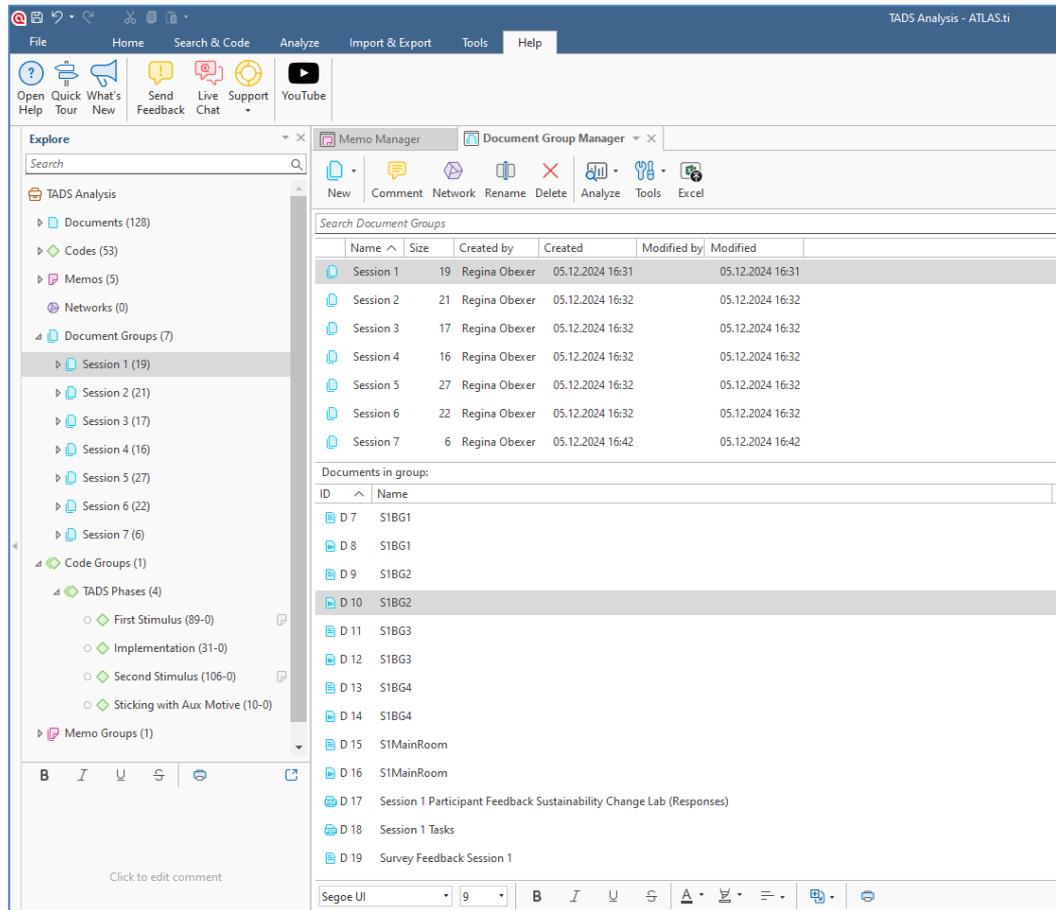


Figure 4.7: Screenshot of ATLAS.ti project

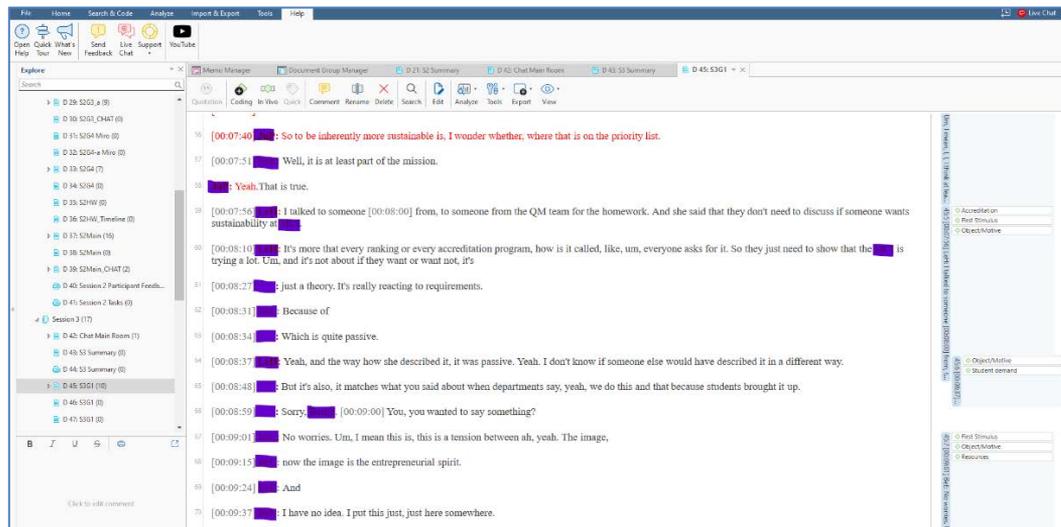


Figure 4.8: Example of ATLAS.ti coding of session transcript (obscured passages cover participants' initials for data protection purposes)

In a first step of analysis, I deductively applied the framework by Haapasaari et al. (2016) described in section 3.4.5.1 and coded expressions of agency in the session transcriptions. This method was useful for this first stage of analysis where quantity was used as an indicator to support a developmental analysis of how agency unfolds over time. I decided to use speaking turns (ST) as my general unit of coding, defined as a new discursive utterance started by a different person. In a first iteration, I had used “episodes of speech”, i.e. clusters of ST that could be allocated to one expression of agency when they occurred in direct sequence, however I decided that more granularity would increase transparency and allow for a more nuanced analysis. In episodes where participants uttered more than one expression of agency, multiple codes were assigned to one ST.

This method was applied consistently for group and plenary sessions, including chat messages, with the exception of report-back episodes in plenary sessions, where rapporteurs summarised the ideas of their group discussion in lengthier monologues. As the rapporteurs were simply relating the outcomes of their discussion, these ST were exempt of the coding and counting process at this stage.

In a next step, the quantitative results of this analysis were represented visually using Excel to provide insight into the development of different aspects of agency as the SCL developed. By tracing the frequency and sequencing of different expressions of agency across sessions, I was able to identify shifts in dominance, for example from a prevalence of criticising to envisioning agentic expressions. These patterns help distinguish significant changes in agency development, which is difficult to establish through qualitative interpretation alone, especially in the extensive data set I was working with. In this step, quantification did not replace but was based on qualitative analysis and served to stabilise interpretive claims about developmental trajectories. My analytical focus was to gain clarity about developmental direction and momentum, which is central to a CHAT-informed analysis of expansive learning.

In particular, this approach allowed for the identification of turning points, which were then used as the basis for closer examination of episodes in the second step of analysis. This step explored instances where participants demonstrate activation of agency by initiating new actions or changing their approach to the problem, using the initial codes listed in Table 4.6 as indicators of significance.

The third step of analysis used TADS (see section 3.4.5) and activity-theoretical categories (see Table 4.6) as an analytical lens to examine conflicts of motive and systemic contradictions expressed by participants. I then investigated the use of second stimuli by first describing the mediating tools introduced and developed, and tracing their role in attempts to resolve identified contradictions.

This step unfolded in two stages. First, I coded session transcripts deductively according to the TADS phases, generating a quantitative picture of where these phases appeared across the SCL. Based on this review, I chose to expand on methods from previous studies: rather than isolating and micro-analysing selected episodes, I conducted an inductive thematic analysis to identify core themes related to the overarching first stimulus, “How can we accelerate sustainability integration at UNI?”. Themes were developed from the full dataset

(session transcripts, summaries, and Miro board outputs) by subsuming codes into major thematic categories.

Next, I examined overlaps between major themes and TADS phases to trace how transformative agency discursively evolved within thematic streams over the course of sessions. This approach was necessary because (1) the relatively large and diverse participant group, with breakout groups reconfigured each session, generated varied discussions and a proliferation of ideas, and (2) linking themes to TADS phases allowed identification of clusters of agency development within thematic contexts, adding depth beyond counting phase occurrences. The resulting three-dimensional mapping of themes, sessions, and TADS phases offered a richer account of transformative agency emergence, which I visualised using icons to depict its development over time.

It is important to note that although expressions of transformative agency and TADS sequences are presented in a structured way, the analytical process itself was necessarily interpretive, non-linear, and iterative. Expressions of agency overlapped, unfolded unevenly, or remained partial, and not all discussions progressed neatly through identifiable stages. Rather than treating agency as a set of discrete categories to be 'identified' or 'counted', I approached the analysis as a way of tracing developmental movement within collective activity. This required analytic judgement in situating utterances within their interactional and institutional context and in interpreting how moments of critique, envisioning, commitment, or action related to one another over time. Consequently, the analysis does not claim to capture agency exhaustively or definitively, but offers a theory-informed interpretation of key moments and trajectories of agency development within the SCL. The outcomes of the analysis are presented in chapters 5 and 6.

Chapter 5 describes the outcomes of the sequential tasks and activities in the SCL. It recaps the design and content of each of the seven sessions, followed by visual and narrative presentations of the results. The aim is to provide a clear account of the process and key topics discussed,

Chapter 6 examines the development of transformative agency in detail. Building on the steps outlined in Table 4.6, the chapter presents the findings of the analysis aimed at showing how the SCL research-intervention stimulated transformative agency to accelerate the integration of sustainable development at UNI and thus answering the overarching research question of this study.

4.8 Ethical considerations

Conducting a CL involves various ethical challenges, requiring careful risk identification, mitigation, and stakeholder communication. This section summarizes how I ensured the ethical integrity of my research and highlights key dilemmas I had to manage.

Formally, I submitted an ethics application and gained approval from Lancaster University. I also sought the formal mandate to conduct the SCL from my university via a letter of support and gained approval from the local Research Ethics Committee. In the recruitment phase, I ensured that all potential participants were informed of their rights and responsibilities and everyone signed the informed consent sheet before the first session.

Intervention research with groups in an organisation heralds a number of risks with regards to participant protection and confidentiality, especially as anonymity within the group is not given, and the researcher has to rely on participants to keep confidentiality agreements but cannot guarantee this. Some aspects were particularly pronounced in the SCL as participants worked in quite a large group of 17 people, several signed up through the university's training enrolment process, which are managed by the HR team, and the participant group included students, not only staff, which added a layer of complexity.

I made sure that these aspects were made transparent to participants from the start through the informed consent form, which included a passage about participants' responsibility to safeguard the confidentiality of others in the group. I also explicitly addressed the issue in session 1 and stressed the importance of

the SCL being a safe space for all participants, and that issues discussed in the group were confidential unless we all agreed to share them with outsiders.

Protecting participants' identity also necessitated a very limited description of their demographic and institutional characteristics. Codenames were applied in the transcription process that would reveal whether the participant was an internal or external staff participant (Px_int and Px_ext) or student participant (StPx). The use of codenames rather than commonly used pseudonyms might seem an impersonal form of anonymisation, but this decision was taken to de-identify participants while avoiding any inferences regarding ethnicity, age, gender, religion, etc. that might be associated with a fictional name (Heaton, 2021). Additional information was kept to a minimum.

Most staff participants knew each other, but not all. With regards to power relations, there were no formal reporting relationships amongst staff that would have complicated matters in the group. SCL participants had a range of different roles in the institution, ranging from professors to internal and external lecturers, research & teaching assistants, and professional staff. However, the relationships with students were more complex, with some staff having supervisory responsibility for student participants. I addressed these issues openly from the outset, emphasizing the importance of "epistemic equity", i.e. that every voice was important and should be heard and that in the SCL, all participants were equals.

Whilst my role as insider-researcher was a great asset in this project, the risks associated with insider research had to be carefully monitored, especially with regards to selection and confirmation bias, emotional involvement, impact of close relationships with colleagues, and also research burnout. Throughout the project, I engaged in ongoing self-reflection and introspection to identify biases, assumptions, and potential conflicts of interest and documented my thoughts in a Research Diary. I regularly met with my supervisor and with a trusted colleague who was not directly involved in the study to discuss issues and questions as

they emerged. These external perspectives were extremely helpful in identifying and addressing potential biases.

A third area of concern was organisational politics. This project was an intervention involving participants who worked on collectively changing their place of work and study with regards to sustainability transformation. One aim was to empower them to develop transformative agency, which necessitates consideration of participants' roles in their own teams, their level of influence, and their expectations with regards to the implementation of the outcomes of their collective work. Whilst there were no power issues between participants, none of the participants - apart from myself - had formal authority to enact the changes envisaged. Throughout the SCL, there was repeated reference to the absence of strategic leadership or even support from "above", and the issue of a predominantly bottom-up approach to sustainability integration was identified as significant. The ethical implications of this "power dilemma" are at the core of this project and will be discussed in more detail in later chapters.

Lastly, sustainability transformation is a whole-of institution effort at my university, with the aim to engage stakeholders across the board. Only a small number of participants were able to participate in the SCL, and it was important to ensure that this does not lead to feelings of exclusion or disempowerment on the side of those not participating. I tried to mitigate this risk by keeping especially the SDG Ambassador group informed of the progress and concrete outcomes of the SCL.

4.9 Chapter summary

This chapter has described the research design that guided this study, explaining why a Change Laboratory was an appropriate formative approach for investigating the development of transformative agency in sustainability integration within higher education, and how the SCL was designed and implemented in response to the specific institutional context. The chapter has outlined key aspects of the research project, including the research setting, participant recruitment and characteristics, the structure and facilitation of the

intervention, and the sequence of mediating stimuli used to support the group's work. I have also reflected on my positionality as an insider-researcher and its implications for the research process. Finally, the chapter has described the data generation and analysis methods employed and addressed the ethical considerations arising from the formative nature of the intervention. Together, these elements provide a transparent and theoretically grounded account of how the Sustainability Change Laboratory was operationalised and lay the foundation for the empirical analyses to follow in the next chapters.

5 Chapter 5: Data Presentation

5.1 Introduction

This chapter presents the unfolding process of the seven sessions and sequential tasks participants worked through in the Sustainability Change Laboratory (SCL) with the aim to accelerate the activity “Integrating Sustainability at UNI”. Each section describes the design and preparation and then provides a report of the seven SCL sessions in visual and narrative form, before the outcomes are discussed. The data this chapter is based on stem from preparatory documentation, notes in my research diary, and an analysis of the session recordings, including reflections on the process, what was successful, any deviations from the design, and the impact this had. The distinction between designed intention and what actually happened in the sessions is important because CL sessions often diverge in actuality from the original design, with these deviations being a critical part of understanding where and why transformative agency development occurs.

The purpose of this chapter is to give the reader a clear explanation of the process and the core topics discussed in the sessions as a basis for the more focussed analysis of the development of transformative agency in chapter 6. By including a dedicated data presentation chapter, I intend to provide a relatively unmediated account of the data, thereby enhancing transparency and allowing readers to appraise the robustness of my research (Trowler, 2012). While some reduction is unavoidable, this stage differs from the data analysis presented in chapter 6, which involves interpreting and transforming data generated in the SCL into meaningful information to answer the research question. Here, I present a descriptive exposition of the data before it undergoes the interpretative process necessary to derive critical insights.

Each of the subsequent sections presents the process of and key data generated in the seven sessions by first describing how I designed and prepared for each

session, then providing an account of what happened as participants worked through the sequential tasks, and finally detailing the outcomes and implications of each session. The sequential tasks, numbered according to the phase of the cycle of expansive learning they are related to (not session number), are described by referring to first and second stimuli, and mirror data. As outlined in Section 3.4.3, first stimuli refer to tasks intended to surface contradictions, second stimuli denote auxiliary tools provided by the researcher-interventionist, or adapted and created by the participants, for reframing, and mirror data contain evidence introduced by the researcher-interventionist prompting participants' reflections (and are often based on previous work results). This terminology will be used throughout this chapter to describe task design and implementation. The social format of each task is indicated using the terminology individual (Ind.) for tasks participants completed on their own, group work (GW), and plenary (PL) for tasks carried out in the entire group. The homework participants were tasked with is also described in terms of design, task and outcomes.

5.2 Session 1

5.2.1 Session 1 Design and Preparation

Before the start of the SCL, I had been in contact with all participants via email, thanking them for registering, providing information about how to access the online environment, and reminding them of submitting the signed informed consent form before the start of session 1.

I designed and prepared the first session with the diverse roles of participants and possible power dynamics in mind. The first part of the session was designed to introduce participants to each other and to the working method of the SLC, covering key CL concepts and ground rules. My intention was to create an open, respectful and appreciative atmosphere where participants could feel safe to express their opinions, ideas and experiences openly, and where trust could develop. I therefore decided to ask everyone in turn to introduce themselves and

to briefly talk about their motivation to participate. I also prepared a slide set with some information about the SCL, including the session schedule, rules of engagement, and the tools we were going to use.

After this introduction, the first part of the cycle of expansive learning was to commence with the action of questioning. The purpose of the questioning phase in CL is for participants to criticize or reject aspects of the current practices, beliefs, or plans, based on their observations or experiences. Questioning is often emotionally charged as participants share issues that counter their values or commitment (Virkkunen & Newnham, 2013). Due to the participants' diverse roles, differing levels of institutional knowledge and the broad scope of sustainability integration in HE, I wanted to allow the group to first develop a shared understanding of the context and their positions before addressing specific issues. I designed two tasks to achieve this goal, which are shown in the session design in Table 5.1.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 1 Questioning	T1.1 Consider and choose sustainability integration priorities (Ind.)	Miro Template "Priorities" (completed version shown in Figure 5.3)	Videos about Sustainability in Higher Education: 1 from Rector; 1 from other institution
	T1.2 Discuss priorities and where we are at (GW)	Miro Template "Status Wall" (shown in Figure 5.1)	

Table 5.1: Session 1 Design Outline

Task 1.1, the first stimulus, instructed participants to consider and choose key priority areas for sustainability integration in their own context, using two videos to highlight different aspects of sustainability integration in higher education as mirror data. The first video was a short series of interviews with academics and students from universities around the world who spoke about different facets relating to the role of universities in realising sustainable development. The second was a recording of UNI's rector speaking about the importance of sustainability and the three dimensions (ecological, economic, social) of

sustainability. I chose these videos to provide participants with an overview of the different roles universities can play in promoting sustainable development on the one hand, and to bring things closer to home with the rector’s input, who emphasized the importance of sustainability but remained at a rather general level, on the other. The second stimulus was a template in Miro where participants were to record their chosen priorities (see Figure 5.3 for the completed version).

Based on the input generated from Task 1.1, in Task 1.2, participants were to collectively discuss what they thought the key priorities at UNI were and determine UNI’s progress in implementing them (first stimulus) using a “Status Wall” template on Miro as a second stimulus (see Figure 5.1).

PRIORITY ACTIVITY	NOT STARTED / NOT DOING WELL	IN PROGRESS BUT NEEDS ATTENTION / SO-SO	WELL UNDERWAY / DOING WELL	EXAMPLES

Figure 5.1: Status Wall Template for Task 1.2 on Miro board

This discussion was designed to uncover issues for further exploration.

This design deviates from other implementations of CL where participants are confronted with problematic aspects of current practice at the very start, but the diversity of the group made it necessary to create a level of shared understanding first. Session 2 returned to questioning of a more conventional nature (see section 5.3.2), as participants critiqued current UNI sustainability activities. My intention here was also to create the space for participants to raise more

fundamental question, such as how sustainability is defined and what the meaning of the concept in UNI's context is.

5.2.2 Session 1 Report

The first SCL was attended by 17 participants and started with an introduction to the way the CL methodology works, including an overview of the Expansive Learning Cycle and an Activity System, and I explained what my motivations to conduct the SCL were. I then asked participants to introduce themselves and their reasons for joining the SCL. Figure 5.2 shows a screenshot of session 1 with the list of participants on the left, the public chat in the middle field, and participants video feeds on the main screen.

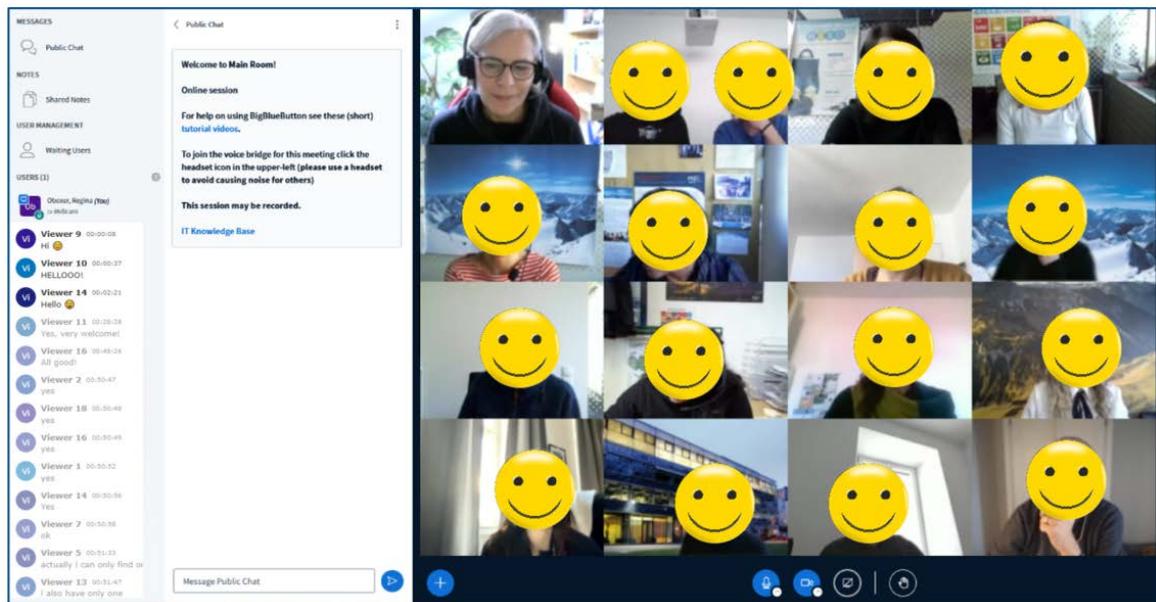


Figure 5.2: Screenshot of online SCL room (participant faces are covered for privacy reasons)

I raised some ethical issues such as confidentiality, rules of engagement and my own role as insider researcher-interventionist. We then commenced task 1.1. The task description, group constellation, and link to the Miro board were – as in all sessions – provided on the SCL website so participants could refer to them.

5.2.2.1 Report on Task 1.1

Participants watched the videos, and each participant individually selected two or three roles of universities they deemed particularly important in supporting sustainable development and posted them to the Miro board. This task resulted in many ideas of priorities regarding sustainability integration in HE (see Figure 5.3, different colours have no meaning).

There were some dominant priority clusters, especially the imperative to consider different dimensions of sustainability (ecological, social, economic), the real-world impact universities should have especially through research and knowledge transfer, and collaboration across disciplines and with stakeholders outside the university and local communities.

Without commenting on the ideas at this stage, we proceeded directly to the group work in breakout rooms to engage in Task 1.2

YOUR PRIORITIES

Based on the videos and your own thoughts and experiences, determine which aspects and roles of universities are important to you personally as a member of UNI (staff, student, lecturer).



Figure 5.3: Outcomes Task 1.1 (created by participants on Miro template)

5.2.2.2 Report on Task 1.2

For Task 1.2, participants were put into four groups with four to five participants allocated by me in advance to ensure an even mix of different roles in each group. I had allocated two roles in each group, one rapporteur and one person to start and stop the recording in the breakout sessions, a model continued throughout the SCL.

Using the Status Wall template as shown in Figure 5.1, participants were asked to jointly select the key priorities identified in Task 1.1 they felt were particularly relevant to UNI, to assess how successfully they thought their priorities were already implemented on a three-part scale, and to add examples. Whilst the intention here was to surface possible contradictions by determining what was **not** happening and to then dive into these, the groups did not go beyond defining priorities due to time constraints, and the status walls remained empty at this stage. The Task 1.2 results of each group are presented in Table 5.2.

Group 1 Results	Group 2 Results	Group 3 Results	Group 4 Results
<p>PRIORITY ACTIVITY</p> <ul style="list-style-type: none"> • breaking down the Silo and bringing resources, competences together from different departments and perspectives • creating safe space to challenge underlying assumptions (in teaching but also beyond, how organization thinks, what guests we invite for lecture series, how we incentivize students etc.) • "good citizenship" of MCI, being embedded in a local context, being involved, <p>Open question to be discussed next time in our group: reimagining the SDG framework considering the cultural aspect and comparing that with human rights and their universality.</p>	<p>PRIORITY ACTIVITY</p> <p>Awareness and understanding of what comprises the three dimensions of sustainability</p> <p>Empowering students to foster their involvement, motivation and use of resources</p> <p>Questioning current economic models in teaching, learning, and research</p>	<p>PRIORITY ACTIVITY</p> <p>Priority for sustainability actions not only on Individuals in a personal perspective but also of institutions communities and companies and politics</p> <p>find ways to enable and show people that they have the ability to change things because Individuals can take over a role for decisions in a change</p> <p>where does change need to happen? education, economy...?</p>	<p>PRIORITY ACTIVITY</p> <p>Question current (economic) model</p> <p>Question the values currently being communicated to various stakeholders</p> <p>Work with cities and communities and outside partners (school, politics on various levels, etc.)</p>

Table 5.2: Outcomes Task 1.2 (summarized and compiled by researcher from posts on Miro board)

None of the groups had time to discuss example activities and their status at this point in order to complete the status wall, and we also ran out of time to do the report-back. However the group activity resulted in a confluence of priority areas which became the basis for session 2.

5.2.3 Session 1 Outcomes

Session 1 resulted in a large number of ideas and priorities, meeting the expectations that participants would identify pertinent aspects that they thought should be addressed in the SCL. I considered the session successful overall, even though several aspects deviated from my original intention.

Regarding time management, there was not enough time to complete the status wall activity in Task 1.2 or to have groups report back on their discussion. In hindsight, we spent too much time with the introduction of all participants and their motivation to participate. This part could have been done online before the commencement of the SCL, maybe using Miro, a point that was also raised by participants themselves in the feedback on this first session.

The session generated valuable additions to my dataset. Amongst the many ideas collated in Task 1.1., there were several commonalities all groups found relevant. In particular, the issue of questioning underlying values and predominant current economic models, including the values UNI conveys to stakeholders, was prioritised by three of the four groups. Equally, a lack of collaboration within and beyond the university (especially with stakeholders at the local level and with schools) was highlighted. There were also discussions about the need to empower people generally and students in particular as a basis for sustainability transformation, and strengthening individuals' actions in their personal and professional roles in the

organisation. This was highlighted in a discussion about what individuals can do in group 3:

S1G3 [00:05:39] P2_ext: I think that we can all do something at our level. We all have a space in the community, in the system, a role, and we can all do something. And I think that by, by believing in that, by trusting that we have this freedom of action, we also then create the institution, the community. So, because otherwise it's like, oh, okay, I would like to do it, but my role is not important. Yes. We all are important in our own ways. And this is super, super important to always keep that in mind.

My expectation that participants would raise questions about the definition of sustainability did not eventuate. This was surprising, but may be explained by the fact that the videos, especially that of the rector, provided foundational explanations, which participants may have taken as a basis. Several of the groups discussed the complexity of sustainability, drawing on the three dimensions ecological, economic and social, with one group debating which dimensions (economy vs. environment) were most important, a second group criticizing that just focussing on the three dimensions was an old-fashioned concept, and a third group highlighting the potential for universities to work in an interdisciplinary manner to bring the three dimensions together. However, these discussions did not result in a call for a common definition.

5.3 Session 2

5.3.1 Session 2 Design and Preparation

Because the status wall task 1.2 had not been completed in session 1, I had to redesign session 2, which continued the focus on questioning. The aim was to build on developing a shared critical understanding of the status quo started in session 1, but more openly expose contradictions to initiate the expansive cycle of rethinking and transforming an activity system. The wide spread of ideas generated in session 1 also prompted me to consider how to reduce their number and determine fewer priority areas we could then explore in detail. To this end, I used the data generated in session 1 (see Table 5.2: Outcomes Task 1.2 (summarized and compiled by researcher from

posts on Miro board)) as mirror data and prepared an individual voting activity and a group discussion to facilitate deeper questioning in session 2. Table 5.3 provides an overview of the session design.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 2 Questioning	T1.3 Vote for priorities discussed in S1 (Ind.)	Voting system in Big Blue Button (stars)	Group work results from T1.1 and T1.2 (see Figure 5.4)
	T1.4 Brainstorm existing initiatives and then discuss where priorities are at. Find concrete examples, focus on what is NOT happening (GW)	Miro Template “Status Wall” (see Figure 5.1)	3 priorities from each of the 4 groups’ work results from T1.2, with selected quotations

Table 5.3: Session 2 Design Outline

I prepared slides listing the priority areas determined by each group in session 1 with salient quotes to illustrate their meaning (see Figure 5.4). The voting activity was planned to collectively select one key focus area from each session 1 groups’ results in the plenary, before participants were to be put into groups to first brainstorm and then discuss examples of activities that support the chosen priorities and determine the status of their implementation at UNI. The status wall I had prepared for Task 1.2 (see Figure 5.1), which had not been completed in the previous session, was used as second stimulus. The intention was to sharpen the focus on questioning the success of UNI’s implementation of the priorities identified in session 1 and identify issues with integrating sustainability at UNI in preparation of the next step, the historical and actual-empirical analysis.

I also prepared instructions for homework 1, where participants were asked to collate different types of data illustrating the historical development of the activity “sustainability integration at UNI”. In order to capture this information, I created two templates on Miro: a four-quadrant table for different types of information gathered (see section 5.4.2 for the completed template), and a timeline for participants to enter specific events over the past 15 years (see Figure 5.12 for the complete timeline).

5.3.2 Session 2 Report

Session 2 was only attended by 11 participants, and I had not received apologies from most of those absent. We started the session with a report-back from the last session. The mirror data from session 1 I had prepared, including the selected priorities and most relevant quotes, were helpful to remind participants of the topics discussed, but it was still obvious that it would have been preferable to complete the report-back in session 1. Even though I had prepared a summary based on the group discussion records on Miro which the rapporteurs from the session 1 groups could rely on, their recollection of the discussion was somewhat patchy. Nevertheless, after revising the outcomes of session 1, we commenced with the next task.

5.3.2.1 Report on Task 1.3

In Task 1.3, I asked participants to vote for the most important priorities by using the interactive whiteboard on Big Blue Button. We went through the slides I had prepared, and each person could vote for one priority from each slide by putting a cross against it on the whiteboard. This task resulted in four priority areas marked in red in Figure 5.4:

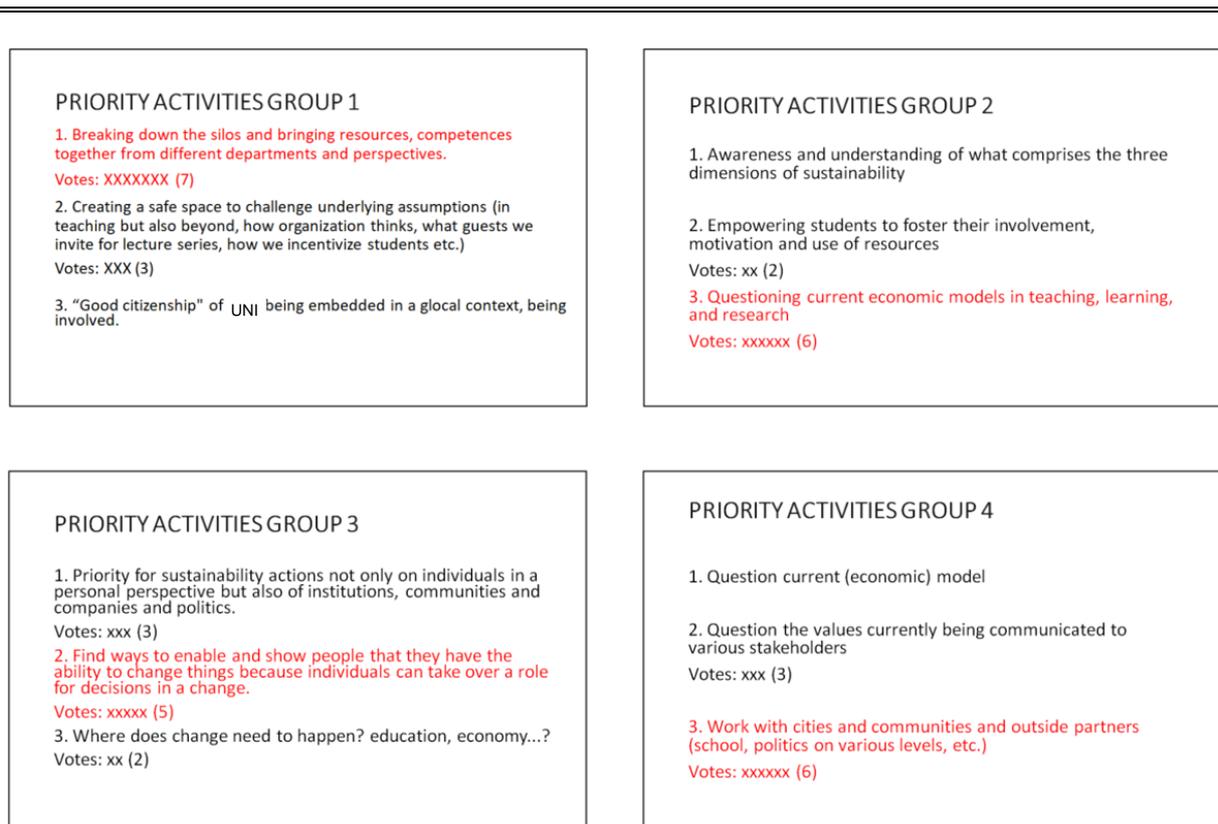


Figure 5.4: Outcomes of voting on priority areas in Task 1.3

One of these priorities was assigned to each group for further discussion, and I had prepared task descriptions on Sakai and status wall templates on Miro for four groups. However, because of the low number of participants, I decided to use only three groups rather than four, and as most participants I had allocated to group 1 were missing, we did not use this group and worked with groups 2, 3 and 4. I left it up to group 3 to decide which of the two priorities they wanted to work with (they chose the Group 4 priority, see Figure 5.4). The priority areas were transferred to each groups' status wall on Miro and task 1.4 was explained.

5.3.2.2 Report on Task 1.4

Task 1.4 was designed to collate examples of existing sustainability initiatives supporting the priority area assigned to each group and to discuss what the status of

these was in terms of implementation at UNI. Only group 3, which I participated in, actually completed the status assessment as planned.

Group 2 worked on the priority area “Questioning existing economic models in teaching, learning and research” and brainstormed many aspects relating to this dimension individually before commencing the discussion, posting their ideas next to the status wall as shown in Figure 5.5.

Rather than discussing the status of activities, however, they jumped to envisioning ideas to promote their priority without paying much attention to the status of the existing activities as instructed, partly because they were bursting with ideas about what could be done more to integrate sustainability at UNI. Figure 5.6 shows the results of their discussion as documented on Miro (note that the table’s columns on the right are empty because they were not completed as mentioned earlier).



Figure 5.5: Outcomes Task 1.4 Group 2 (individual brainstorming)

Questioning current economic models in teaching, learning, and research	NOT HAPPENING, NOT STARTED	UNDERWAY, SOMEWHAT HAPPENING	GOING WELL, or even COMPLETED
EXAMPLES & EVIDENCE FOR YOUR RATING >>			
Public events / discussions/ involvement of stakeholders ... open to questioning current assumptions about how the economy and society work...			
Adapt curricula to alternative theories and models - Use different assessment methods and approaches.			
Start a discussion about what merits scholarships etc - is it traditional performance or social engagement & impact? Does UNI stand for career progression of students or for preparing them for a fulfilled life? What makes an alumni of the week?			
Student initiatives or clubs that promote critical thinking towards economic models. Helping students and faculty surface their values.			
Support research that challenge the conventional assumptions. Create a wild ideas fund.			

Figure 5.6: Outcomes Task 1.4 Group 2 (discussion)

One central question raised by the group was what “success” means at UNI as an underlying value born out of and perpetuating current economic and societal conditions. Aspects questioned included the traditional notion of career progression as opposed to a fulfilling life, success criteria in areas such as awards, research performance, and “alumni of the month” initiatives, and the value of sharing failures, for example at occasions such as “Fuck-up Nights”, which are popular events hosted locally where fiascos and failures from different contexts are presented to the audience in a humorous way. The need to challenge prevailing unsustainable economic models, values and assumptions was perceived in several domains where the university is active, e.g. in public events, teaching and assessment, research, student-led initiatives, and incentives to support alternative modes of thinking.

Group 3 worked on the priority area “Breaking down silos and bringing resources and competences together from different departments and perspectives”. They did not post their own thoughts individually first but started directly with filling in the table. Figure 5.7 shows the results of this group’s discussion, including an assessment of the status of existing activities.

ENTER YOUR PRIORITY ACTIVITY HERE (YOU CAN COPY FROM SESSION 1 ABOVE)	NOT HAPPENING, NOT STARTED	UNDERWAY, SOMEWHAT HAPPENING	GOING WELL, or even COMPLETED
breaking down the Silo and bringing resources, comepetences together from different departments and perspectives			
EXAMPLES & EVIDENCE FOR YOUR RATING >>			
PRME Group Bubbles -			x
Sustainability Week Understanding problems with Lecturers, colleques from other disciplines		x	x
Young Solutions Lack of concrete implementation and egagement opportunities -		x	
Electives Lack of incentives and rewards of collaboration (T&R) -		x	
Collaboration in teaching and research - Schools and Universities -			
Collaboration between Tecnology and Science and Business and Society - Working Networks? Whats the benefit?		x	

Figure 5.7: Outcomes Task 1.4 Group 3 (discussion)

The group identified specific collaborative sustainability activities and events and emphasized their importance and success, but they also discussed several issues with these. In particular, the lack of incentives for interdisciplinary collaboration across departments and the difficulties of surpassing structural, disciplinary and institutional boundaries were mentioned. Being part of this group myself, I provided a lot of information about existing activities, but I was conscious that the other group members were not aware of many of these. The outcomes showed that there were many initiatives indicating some progress, but there is much potential to do more.

Group 4 worked on the priority area “Work with cities and communities and outside partners,” but faced significant challenges. While brainstorming (see Figure 5.8), it

became clear they had very limited knowledge of existing sustainability initiatives and felt therefore that they could not complete the task as instructed:

S2G4 [00:08:29] P5_int: Yeah, that's a quite, quite a tricky session here. [...] to be honest, I collected some elements which I found by just doing a quick internet research on the UNI home page. But I have not the faintest idea if these seminars work or if they, if they don't work. I don't know much about these.

This, however, led to a critical discussion about the lack of information and institutional awareness about current sustainability activities, which was a useful outcome in itself. The group also discussed the "Badges" program, an extracurricular offering providing learning opportunities for sustainable development and responsible management, but found that awareness of the programme was low among the group and among students in general. The outcomes of their discussion are shown in Figure 5.9.

After the break-out sessions, rapporteurs provided a summary of each group's key discussion results, and I asked participants to think about whether any of the three areas had particular importance. After some deliberation, one participant stated that questioning underlying values and assumptions was an important foundation for the other priorities, and there was much agreement with this argument.



Figure 5.8: Outcomes Task 1.4 Group 4 (individual brainstorming)

Work with cities and communities and outside partners (school, politics on various levels, etc.)	NOT HAPPENING, NOT STARTED	UNDERWAY, SOMEWHAT HAPPENING	GOING WELL, or even COMPLETED
schools are invited to UNI sustainability week		x	UNI could do much better
badges with courses/workshops with external lecturers		Information Gap: information about badge program should be improved regarding number of classes required to pass. badges should be included into the curricula	

Figure 5.9: Outcomes Task 1.4 Group 4 (discussion)

At the end of the session, I explained the homework participants were to complete until the next session and referred them to the detailed instructions on Sakai. We closed the session with an understanding that the issue of underlying values and assumptions would be a key point to take forward.

5.3.3 Session 2 Outcomes

After a strong start in session 1, this session proved more difficult. The smaller number of participants forced a last-minute reshuffle of groups, which was hard to manage. In a follow-up email, I stressed the need for advance notice of absences, as this was crucial for planning. From this session onwards, I also created a summary after each session with the main outcomes and sent it to all participants two days before the next session so as to remind them of where we were at, and to inform those who could not attend what had happened. This was prompted both by the low attendance at this session and also by the issue mentioned earlier regarding the incomplete report-backs from rapporteurs.

Me joining one group as a participant created further issues: one member could not find their breakout room in my absence, disrupting their group's work, and my dual role as coordinator and participant unbalanced the discussion. Reviewing other group

discussions later confirmed they had raised more questions and critical issues than mine. Based on this, I changed my approach, deciding not to join groups and instead to check in on each group to ensure they had all the relevant information at the start, which I did for the rest of the SCL.

Two groups engaged well, though one focused prematurely on solutions rather than assessing UNI's sustainability status. Group 4 struggled as the instructions were not clear to them, and one member joined the group very late, so the discussion was limited. However, they identified a significant issue nevertheless, the obvious lack of information and knowledge about sustainability initiatives, which was an important aspect in the questioning phase.

In the plenary report-back, discussion turned to values, with one participant stressing the need to "change the current economic system" before tackling other priorities, a point echoed by others. While I had aimed to narrow the project's scope, we instead moved into the next phase with a sharper awareness of underlying issues, which helped prepare the group for analyzing contradictions and tensions.

5.4 Homework 1

5.4.1 Homework 1 Design and Preparation

Homework 1, set between sessions 2 and 3, was designed to lead into the historical and actual-empirical analysis. This type of action aims to transform a situation to uncover its origins and underlying mechanisms and includes historical and empirical investigation of current practice (Virkkunen & Newnham, 2013). Table 5.4 shows the design of Homework 1.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Homework 1	Gather information about past development of sustainability integration at UNI (Ind.)	Miro Template “Historical Analysis” (see Figure 5.11 for completed template)	6 PRME SIP Reports (2013-2023)
Historical and actual-empirical Analysis		Miro Template “Timeline” (see Figure 5.12 for completed template)	Journal Article Interview with previous PRME Coordinator

Table 5.4: Homework 1 Design Outline

At the end of session 2, I had asked the participants to gather information about the development of sustainability integration at UNI over the past decade with the options shown in Figure 5.10. A detailed description of the task was provided in Sakai.

Preview next session & Homework

Historical and Actual – Empirical Analysis: How has the situation we are trying to change developed over time? What is it REALLY like today?

Homework: Let’s travel back in time a bit...

Option 1: Review UNI PRME SIP Reports (2011-2023)

Option 2: Have a chat with an UNI staff member who has been at UNI for over 8 years and summarise their views

Option 3: If you have been around for a while, summarise your own recollection of how our chosen priority area has developed over time

OPTION 4: Scan the environment for events, significant changes, trends, etc. which you think have impacted on our priority area.

Please post your contributions to the MIRO page. All instructions and details are on SAKAI.

Figure 5.10: Slide with Homework 1 instructions

5.4.2 Homework 1 Outcomes

Many participants completed the homework, which was due to be finalised one day before session 3, and I asked participants to look at it before the session so we could discuss the outcomes together. Figure 5.11 and Figure 5.12 show the information gathered by participants on the Miro board.

Development over time

Please enter key events, milestones, trends

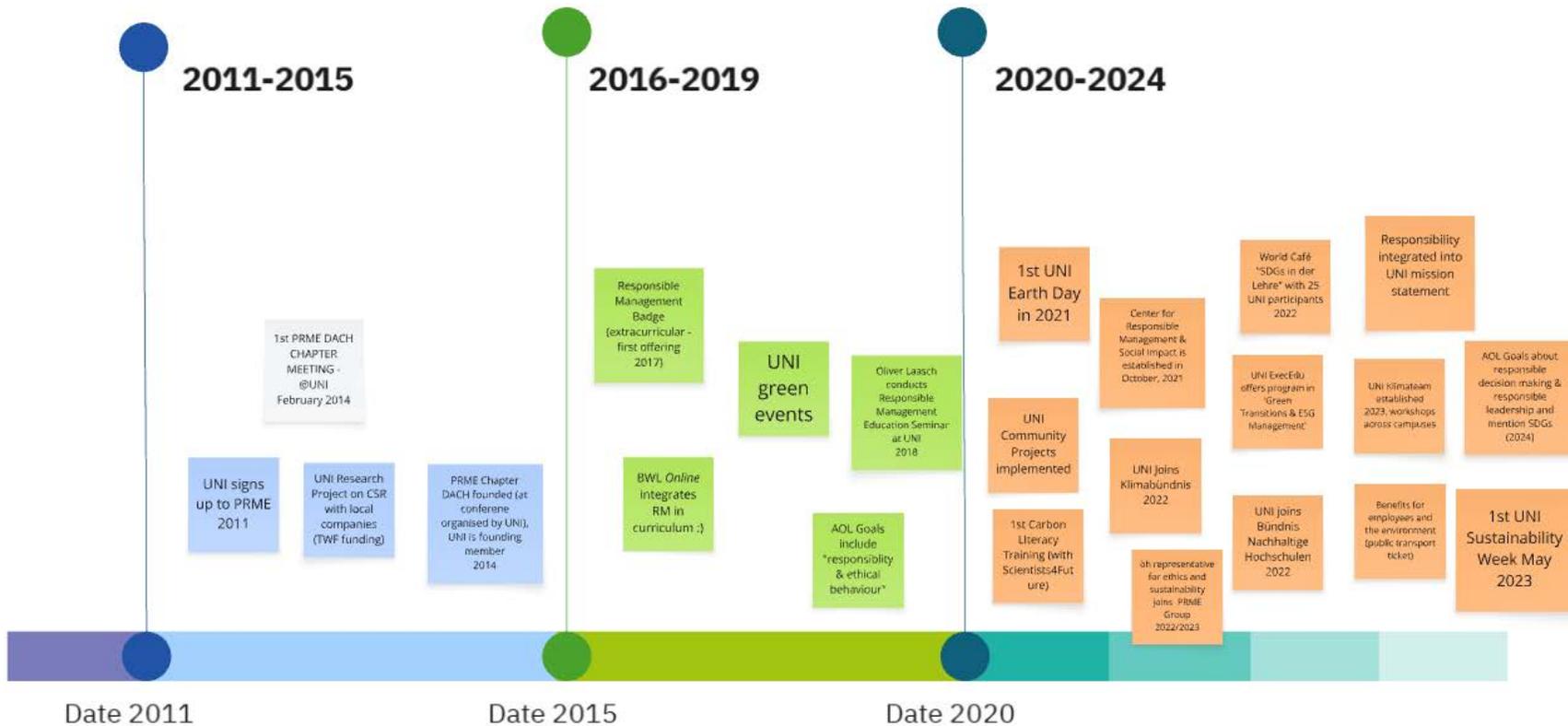


Figure 5.12: Outcomes Homework 1 (Timeline)

5.5 Session 3

5.5.1 Session 3 Design and Preparation

Participants had collected ample information illustrating the different aspects of the historical development of sustainability integration at UNI in Homework 1. I used this information as a basis for the design of the next session, where the historical analysis would lead into an actual-empirical analysis. My intention was to enable participants to develop a better collective understanding of how the activity under investigation had originated and developed over the years at UNI, what factors shaped this development, and what trends could be observed, leading up to current challenges and issues. A common grasp of these aspects was crucial for a deeper exploration of contradictions and tensions.

Table 5.5 provides an overview of the session design.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 3 Historical and actual-empirical Analysis	T2.1 Discuss historical analysis (PL)	Focus points (trends, relevance, influence, issues)	Homework 1 results on Miro (see Figure 5.11 and Figure 5.12) Interview with previous PRME Coordinator; presented in Activity System (see Figure 5.13)
	T2.2 Map current status of sustainability integration efforts (GW)	Activity System Triangle (see Figure 5.15, Figure 5.16, Figure 5.17)	

Table 5.5: Session 3 Design Outline

I prepared questions as second stimuli for a plenary discussion (Task 2.1) focussing on trends and developments, the relevance of past activities for current challenges, in how far these influenced current activities and developments, and if there are any persistent issues. Based on this discussion, participants were then to work in groups

to discuss their perspective of sustainability integration efforts and identify perceived contradictions using the Activity Triangle as a second stimulus.

In order to augment the historical analysis, I also interviewed the previous PRME coordinator, who was in my role before 2018, about his recollection of the development of sustainability and responsibility integration at UNI. As I did not get his written permission to use the interview transcript before session 3, I only mentioned key aspects he had related rather than providing a full transcription of the interview, but I developed Figure 5.13, showing an activity system, from the information gained during the interview and included it on a slide.

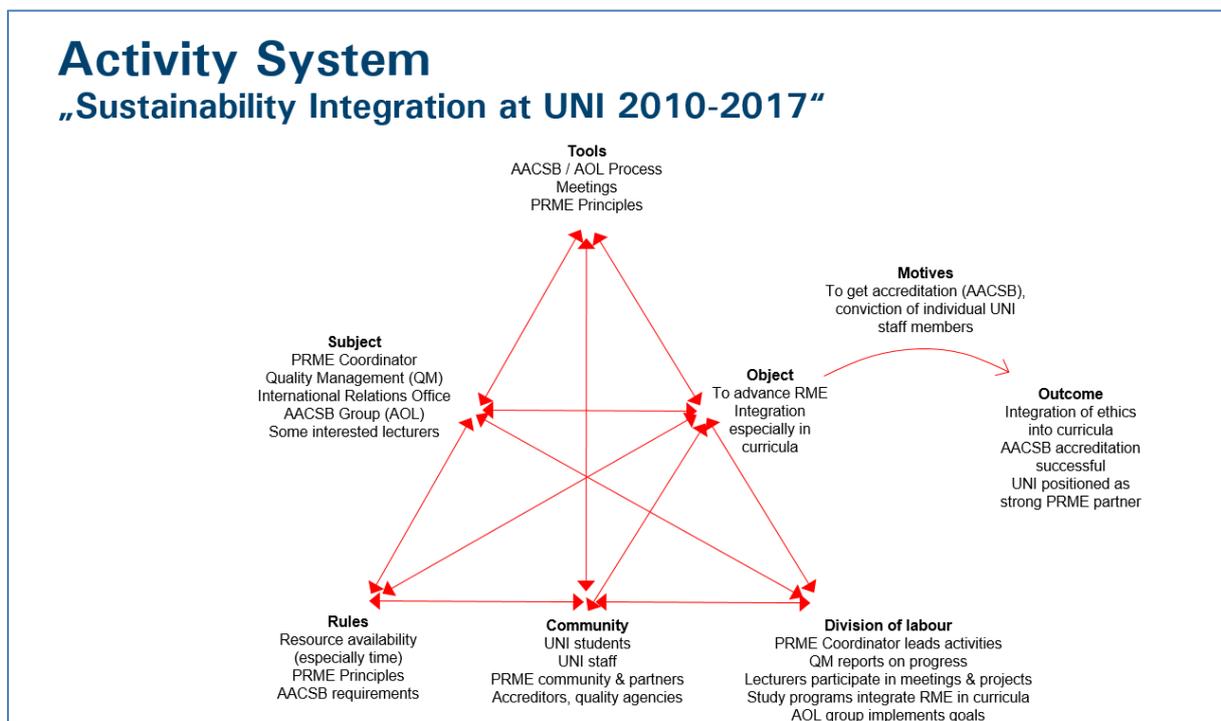


Figure 5.13: Activity System "Sustainability Integration at UNI 2010-2017" (created by author)

The function of this mirror material was twofold: I wanted to provide the information relayed by the former PRME Coordinator in a succinct form, and also model an activity system, so participants had an example they could base their work in Task 2.2 on. I also prepared a slide with specific group work instructions for Task 2.2. as shown in Figure 5.14.

TASK 2.2 – Actual empirical analysis

You will be working in three groups.

Using the template on MIRO, discuss what the current status of UNI sustainability integration efforts are (focus in particular on the issue of questioning existing models/values)

Focus in particular on the SUBJECT and the OBJECT, don't spend too much time on the other elements.

Now discuss what the **tensions and contradictions** within (primary) or between (secondary) elements are.

Figure 5.14: Slide with Task 2.2. instructions

5.5.2 Session 3 Report

Session 3 was attended by 12 participants, and I had received apologies from those not able to come and was prepared for a smaller group. We started with a review of the SCL progress using the cycle of expansive learning, after which we commenced Task 2.1.

5.5.2.1 Report on Task 2.1

Task 2.1, the plenary discussion about the historical analysis, was designed to explore the historical development of the activity, including trends, milestones, and issues, based on the data collated in homework 1. Many participants added their voices and several important points were identified, including positive developments such as the visibly increasing portfolio of UNI sustainability initiatives, the formalisation of these efforts through institutional structures such as the Center for Responsible Management & Social Impact, the SDG Ambassador Group, and membership in a growing number of national and international networks.

Participants criticized the lack of knowledge and information about current sustainability activities in different parts of the university, whilst there was also

acknowledgement that this is sometimes in the hands of individuals who lack the motivation to find the relevant information. The issue of lack of internal collaboration was explored in more detail, with participants lamenting the differences between approaches to sustainability integration between departments, leading to an inability to capitalise on synergies.

S3G3 [00:12:40] P5_int: It's actually quite interesting that [...] we, at the level of the individual study programs, are basically already doing all of this, setting examples and even thinking ahead [...] but at the institutional level of UNI, we essentially find nothing when asked. [...] The little 'object' that one might possibly find is basically all just marketing language, to put it a bit bluntly. Beyond that, there's nothing substantial. The substantial things essentially all come from the bottom up, and I find that quite an intriguing insight—that this is actually the case. The real question is, essentially, how we can use this for our goals.

This led to a discussion about the lack of a common understanding of sustainability at the level of the institution, and the recognition that there is no common object expressed at that level.

5.5.2.2 Report on Task 2.2

Following on from this discussion in the plenary, I explained the structure of the elements of the activity system and the notion of contradictions and tensions to prepare participants for the next task, which was introduced with the slide shown in Figure 5.14.

Participants now worked in break-out rooms in three groups, two of which consisted of staff allocated randomly and different from session 1, and one of students. They created Activity Systems showing how they perceived the current activity of sustainability integration at UNI and related contradictions. They worked on Miro, using the Activity System templates I had created for each group, which also included an explanation of the different elements of the system.

Group 1 saw UNI's sustainability approach as reactive, driven by external pressures rather than internal motivation. Top management was seen as key, while the advisory board's role was unclear. They noted that initiatives exist but gain traction slowly, often

conflicting with UNI's entrepreneurial image. Sustainability is not embedded in job roles, so it competes with other priorities and progresses only when leadership provides support, which is often limited. The group's activity system as documented in Miro is shown in Figure 5.15.

Group 2 discussed the difficulty of integrating sustainability into departments and curricula, noting tensions with maintaining core content. The group agreed that there is limited awareness of sustainability efforts across departments and suggested examining integration practices in the various study programs. They noted that visibility and marketing of sustainability at UNI often lack substance, with real efforts primarily driven from the bottom up. Additionally, the group felt that UNI has missed the opportunity to be a leader in sustainable thinking, as these efforts should have started earlier. The group's activity system created in Miro is displayed in Figure 5.16.

Group 3 (students) wanted more involvement in sustainability but faced limits of time and resources since most efforts are voluntary. They saw no shared goal across departments, creating fragmented initiatives, and questioned whether students truly influence decision making. They also questioned whether students truly have a voice in shaping their experience, resisting UNI's rhetoric about "shaping students." Additionally, the group noted that sustainability is not a topic of discussion within student forums like the ÖH (student representative body), highlighting a gap in student engagement. Notably, students worked silently on Miro before discussing their ideas. The group's activity system is shown in Figure 5.17.

After the group session ended, the rapporteurs summarized, and we closed on time.

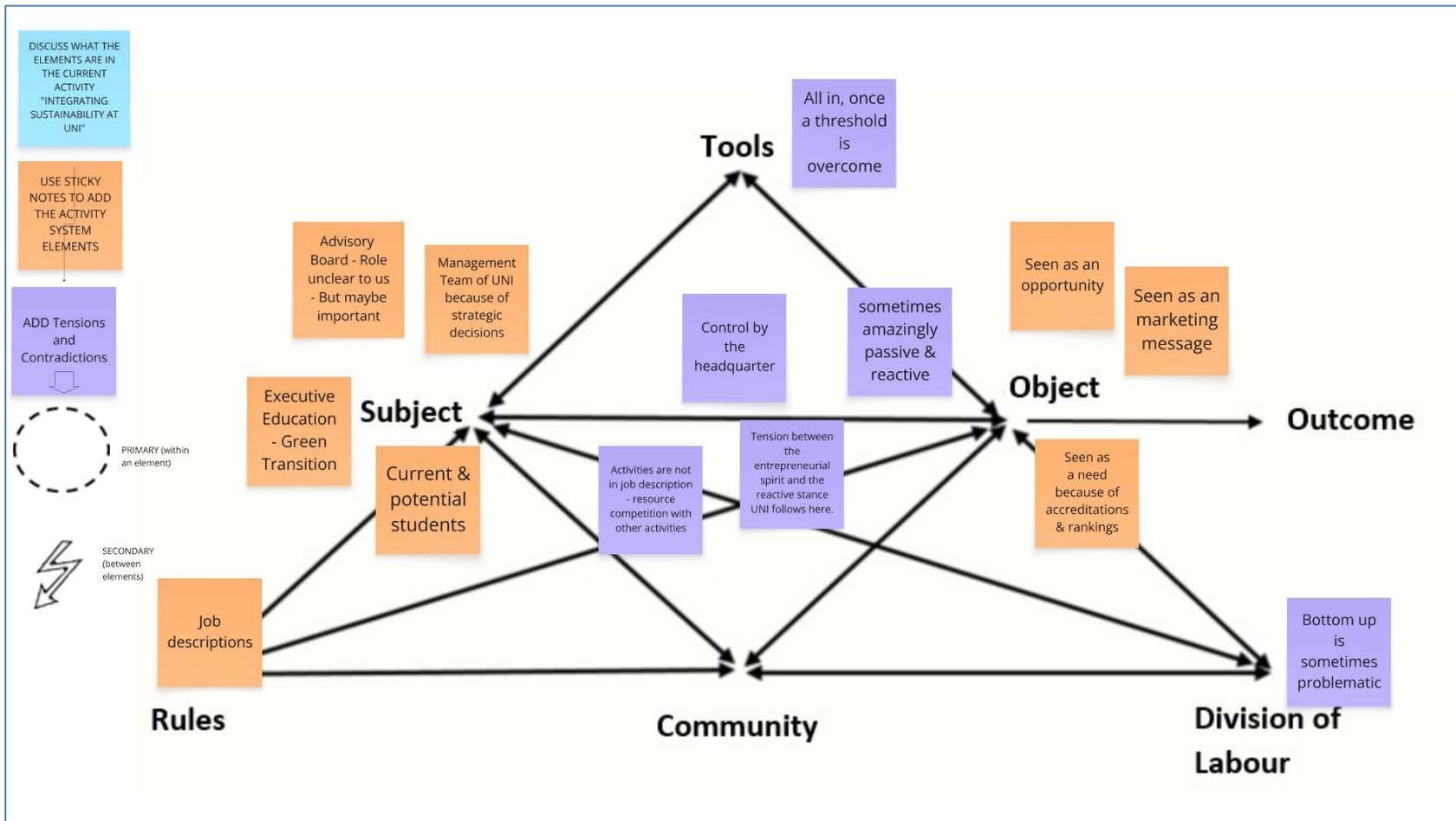


Figure 5.15: Outcomes Task 2.2, Group 1 (created by participants on Miro template)

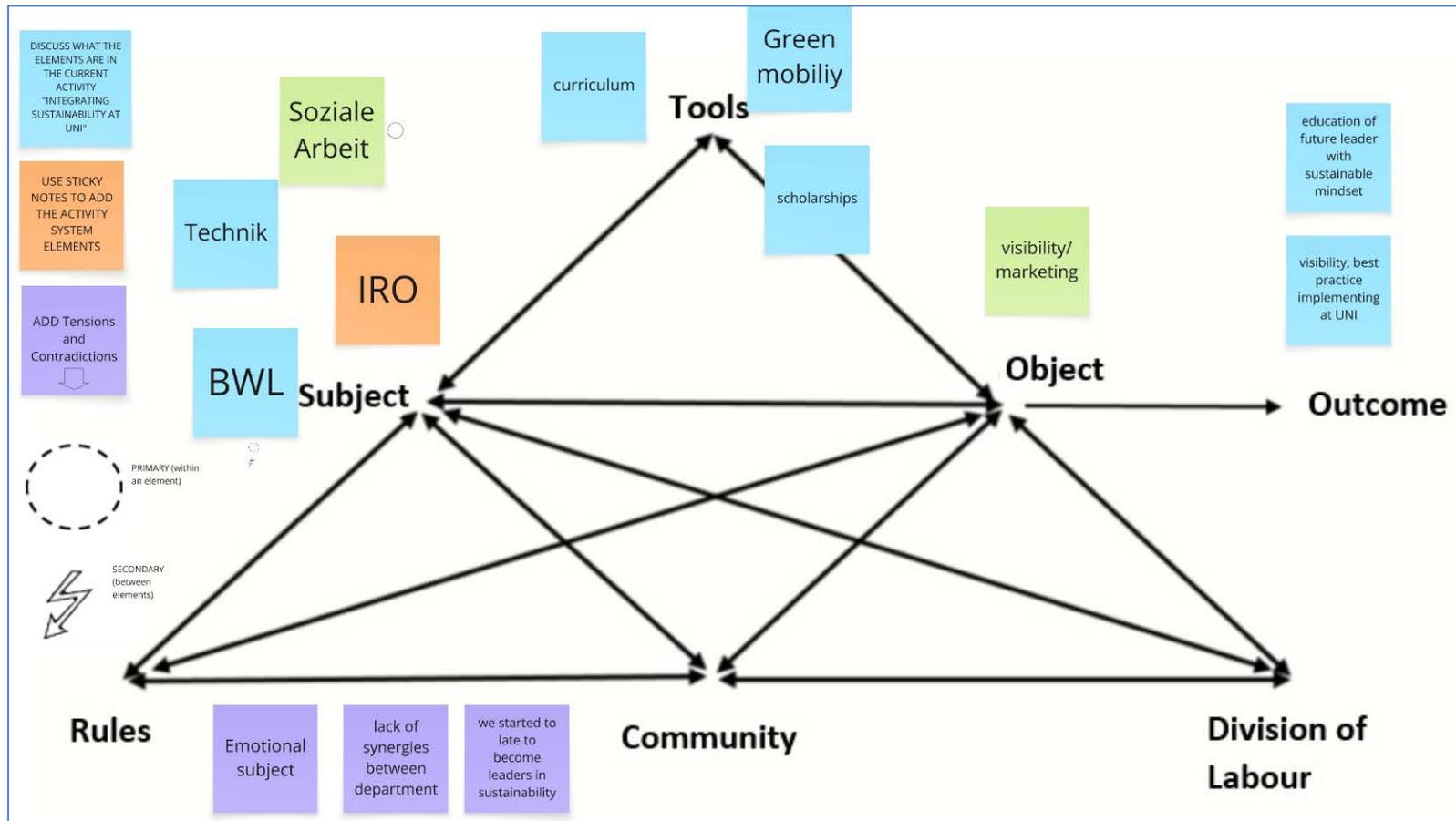


Figure 5.16: Outcomes Task 2.2, Group 2 (created by participants on Miro template)

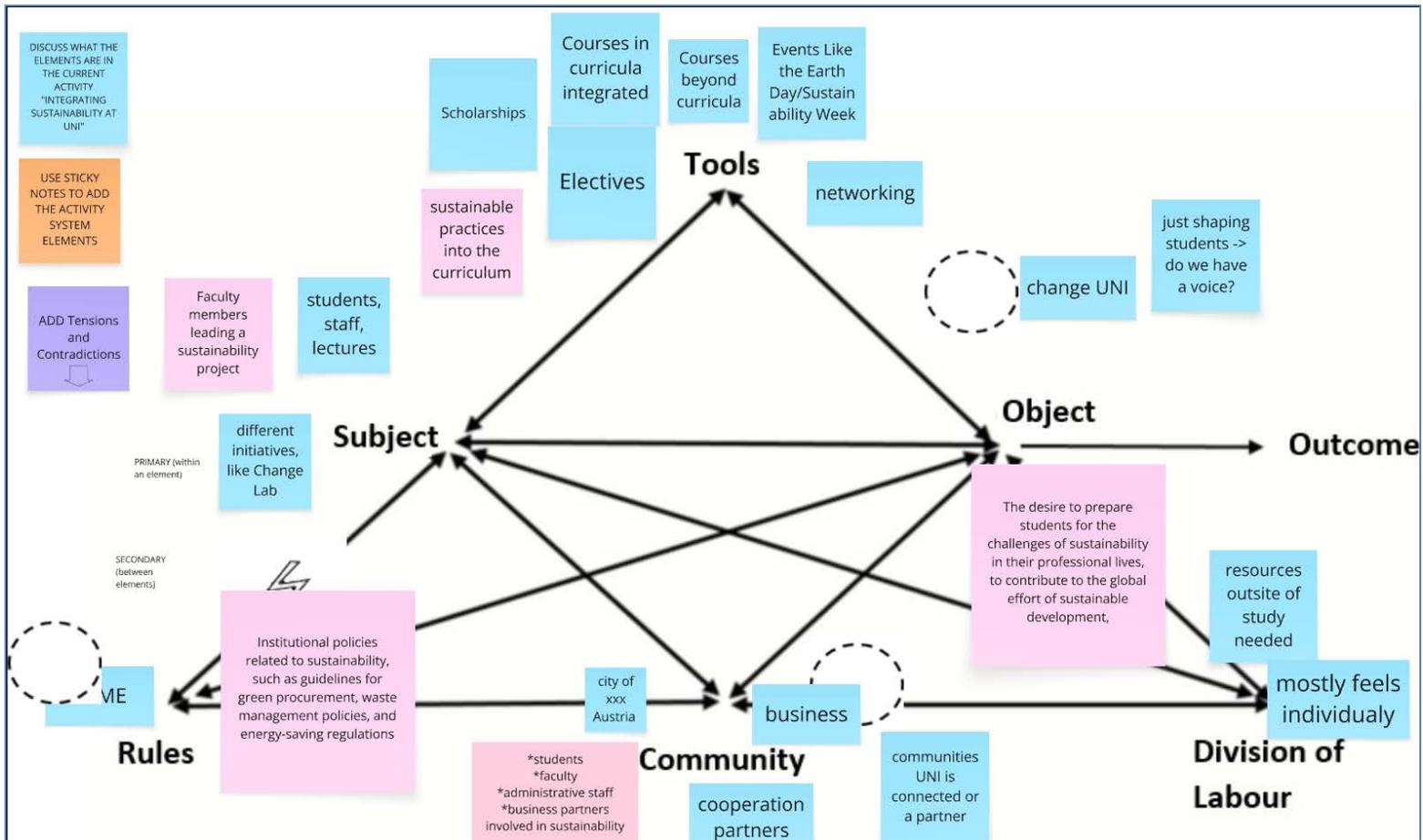


Figure 5.17: Outcomes Task 2.2, Group 3 (created by participants on Miro template)

5.5.3 Session 3 Outcomes

This session was productive, with active discussions and students gaining more voice after being placed in a separate breakout group for Task 2.2. I noted in my research diary that the session went very well: “Hurray - I feel like there is some agency developing already” (Research Diary, session 3). After session 2, I had decided not to join group discussions but rather checked into each breakout room at the beginning of group work sessions to ensure clarity and engagement.

The data generated in this session delivered important additions to my dataset, and also contributed to creating a joint understanding of the development of sustainability integration at UNI over the years. Whereas some participants (especially students, but also some newer staff members) knew very little or nothing about the historical development of the activity, one external and several internal staff contributed valuable knowledge and insights explaining institutional practices and underlying reasons for these.

I felt that the flow of the tasks, from the focus on historical analysis to developing activity systems depicting the current status of sustainability integration worked very well. In particular, having several long-standing staff members share their recollections of the origins of UNI’s engagement with sustainability and the drivers at that time, especially external motivations such as gaining accreditation, was helpful and assisted newer members of staff and students understand some of the origins of the status quo. I was particularly impressed by the richness of the outcomes of group 3 (students), which confirmed my expectation that having a specific student group for certain tasks was beneficial as they could talk more freely and were not hampered by a lack of institutional knowledge. The contradictions identified by all groups in Task 2.2 are summarized in Figure 5.18

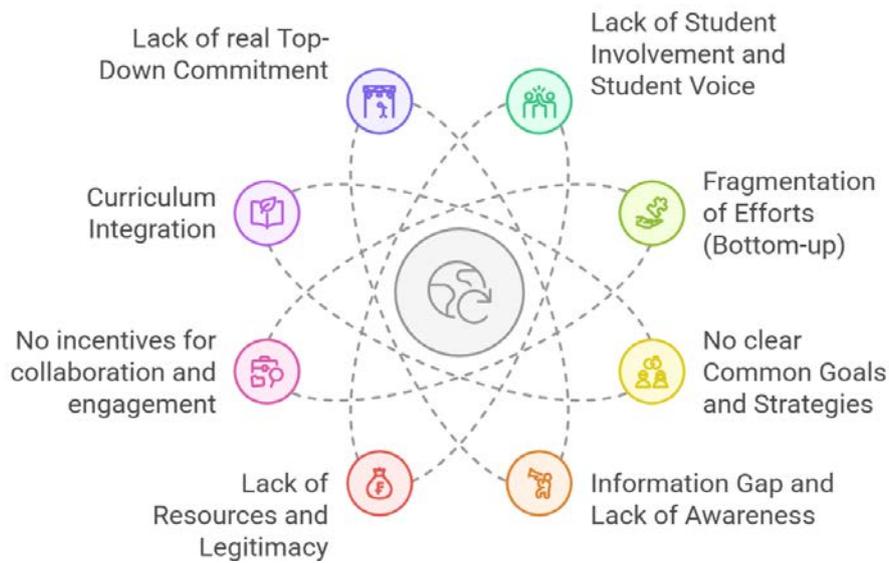


Figure 5.18: Contradictions identified in Session 3 (created by author after the session using Napkin.ai)

The activity systems created and especially the contradictions highlighted provided important information that I used as mirror data to prepare for session 4.

5.6 Session 4

5.6.1 Session 4 Design and Preparation

Session 4 marked the transition from the analysis stage to the modelling stage. Modelling involves creating a simplified representation of a new idea that clarifies the problem and suggests ways to resolve or transform it. Table 5.6 provides a summary of the session design.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 4 Modelling	T3.1 Review contradictions and think of how they could be made even worse (Ind.)	Miro Template “Reverse Brainstorming” (see Figure 5.20)	Outcomes T2.2 – Contradictions
	T3.2 Develop positive ideas to resolve identified contradictions and transform activity (GW)	Activity Triangle	Outcomes T2.2 and T3.1

Table 5.6: Session 4 Design Outline

I prepared slides summarising the key discussion points from the previous session in order to solicit thoughts on the subject / object / outcome relationship and the contradictions identified. I entered the contradictions from task 2.2 in a table (see Figure 5.20), categorizing them according to my interpretation as primary or secondary. This table was then copied to Miro for task 3.1, which consisted of a “reverse brainstorming” activity (Hagen et al., 2016), where participants were to consider how to make the contradictions even worse and post their ideas into the template on Miro (see Figure 5.20).

After this “negative thinking” experiment, participants were to work in groups on task 3.2 to develop positive ideas on how to resolve the contradictions and transform the activity, i.e. to model a new version of the activity. I created an activity triangle template for each group as a basis for this task.

As the issue of a lack of common object and difficulties in collaborating towards a joint goal in sustainability integration was starting to shine through, I prepared a slide (see Figure 5.19) illustrating different types of collaboration I had come across in Virkkunen and Newnham (2013), in order to provide a second stimulus for participants to think about collaboration in UNI’s sustainability efforts if needed.

Different models of Collaboration

(Virkkunen & Newnham, 2013, p.90)

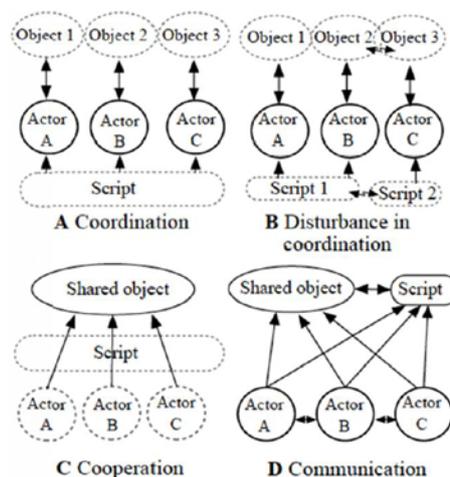


Figure 5.3. Different modes of collaboration (The dotted boundaries indicate that the actors do not consciously reflect on the entity) (Engeström 2008, pp. 50-51; reproduced with permission from Cambridge University Press)

Figure 5.19: Slide showing Engeström's different models of collaboration

A discussion of these ideas in the plenary was to provide food for thought and ways of thinking about the contradictions identified.

To collect further ideas about the various aspects of sustainability integration at UNI, I had also prepared a homework task, inviting participants to create an activity system representing an activity related to sustainability integration carried out by them, in their role at UNI, depicting the various elements in an ideal, future world. However, as only one participant submitted this homework, it was not included in the analysis.

5.6.2 Session 4 Report

Session 4 was again attended by 12 participants. I started the session with a short presentation of the results of session 3 on a slide and asked participants to comment

on these. There was some feedback via chat, including the point that the perceived lack of shared object was not surprising considering UNI's modus operandi, expressed as "Show first, substance second". Based on these critical remarks, I decided to use the slide to explain the models of communication I had taken from Virkkunen and Newnham (see Figure 5.19) and we discussed which model best represents our activity of sustainability integration at UNI. The discussion revealed a lack of shared object and the notion that a script would be helpful but difficult to imagine. One participant argued that a sustainability strategy could be a shared object, with an implementation roadmap providing the script on how to get there. After this discussion, we started the process of modelling new solutions with the reverse brainstorming activity.

5.6.2.1 Report on Task 3.1

The table that listed the contradictions identified in the previous session I had prepared was available on Miro, and participants collated ideas of what would make these contradictions even worse and posted them on Miro.

Figure 5.20 shows that ideas were developed for all contradictions listed, which provided fertile ground for task 3.2.

It is noteworthy that many ideas related to stopping current initiatives, e.g. stopping the SDG/PRME Group, or stopping certain efforts such as communication or collaborative initiatives. This strengthened the sense, that much is happening already, but the activity also crystalized key issues such as the lack of top-level support for sustainability, the lack of resources and legitimacy for sustainability related work, and the lack of synergies and collaboration between departments.

Contradiction Type	Subject > Object	Subject > Object	Rules > Division of Labour	Rules > Division of Labour	Rules > Division of Labour	Subject > Division of Labour	Subject > Division of Labour	Subject > Tools	Subject > Tools	Object
Contradiction description	Lack of common understanding of Object Different objects and motivation for different subjects	Students feel they have no voice, UNI saying 'we want to shape our students'	Lack of resources to engage in this kind of work because of competing priorities	No mention of work related to sustainability integration in UNI position description > not seen as "legitimate" work	Students: Engagement for sustainability has to happen outside of regular study program difficult esp. for working students	What we see happening is mostly Bottom-up, this can be problematic Efforts are seen as mostly individual	Lack of synergies between departments	Information gap, lack of knowledge what others do, what is happening across UNI	Entrepreneurial Spirit vs. reactive and passive approach to sustainability integration	UNI started too late to become leaders in Sustainability
Ideas how to make this EVEN WORSE	<p>Stop the PRME group</p> <p>not coming up with a common UNI sustainability strategy and implementation plan</p> <p>Eliminate the 'sustainability' paragraph from the mission components</p> <p>no communication between the different lecturer and departments</p> <p>Lecturers who teach 'technically/mechanically' but have no genuine interest in students.</p>	<p>no feedback meetings</p> <p>no open discussions/talks with lecturer</p> <p>Students are no longer allowed to have their own ideas, they just need to learn content by heart</p> <p>no badge-programms or other seminars form the career service</p> <p>strictly predefined topics for bachelor's programmes, assignments, etc</p> <p>No possibilities for Students to engage</p> <p>Hierarchy in the subjects: some "seem" to be more important/legitimate than others!</p>	<p>getting judged for the work or getting the work not valued</p> <p>Make employees pay for their time spent thinking about sustainability.</p> <p>stop talking about priorities</p> <p>Research projects/courses/... that focus on sustainability are rewarded less (less SWS, less money)</p>	<p>no regulation form EU-Side for sustainable action.</p> <p>The integration of sustainability is only led by profit companies interests</p> <p>Sustainability is communicated by leaders as a nice-to-have</p> <p>Make employees pay for their time spent thinking about sustainability.</p>	<p>Stopping SDG mapping</p> <p>all programmes about sustainability are extra courses which do cost money</p> <p>seminars overlap with extracurricular seminars + no flexibility to attend or do both</p> <p>no badge-programms or other seminars form the career service</p> <p>Students need to prove that they engaged with sustainability (adds pressure) but there's no time/space as part of the programs</p> <p>Open UNI only during classes.</p>	<p>No communication channels / platform for 'new ideas' or individual voices/effort (passive or active muting of potential subjects)</p> <p>Further inore this in the future</p> <p>bottom up is no longer wanted, changes can only come from the management team</p> <p>Staff no longer has a say in sustainability issues</p>	<p>being separated in location</p> <p>stop working with the electives which maybe also give space for communication between the departments?</p> <p>Still not incentivizing cross-departmental work in teaching, research, etc.</p> <p>From now on: only department specific social events.</p> <p>Departments have to compete with each other - creates division and maybe envy</p> <p>Competitive spirit between the dptmts!</p> <p>all personal effort costs extra money</p>	<p>no more Info-point</p> <p>No meetings discussing progress that is made, research</p> <p>No Newsletters or other information</p> <p>stopping PRME group</p> <p>As of now: You cannot chip your lunch, when at the table with colleagues from other departments</p>	<p>complete disregard of alternative economic approaches such as social economy.</p> <p>stronger focus on forprofit businesses</p> <p>say that UNI has no longer a pioneering role</p> <p>We decide we want to be late adopters/laggards</p>	<p>UNI does not care at all</p> <p>As we are too late, it does not matter now anyway</p> <p>UNI lowers current activities</p> <p>do nothing because UNI started to late</p> <p>EU-Regulation will not come (CSRD)</p> <p>UNI management declares that sustainability is a pain in the neck</p>

Figure 5.20: Outcomes Task 3.1 (Reverse Brainstorming)

5.6.2.2 *Report on Task 3.2*

The sharpened perspective on contradictions and tensions developed in the previous tasks provided a fertile basis for Task 3.2, where participants worked in three groups to develop solutions for the contradictions in the form of a new model of the activity system.

Group 1 focused on strategic alignment and on enhancing student engagement at UNI. Key points included integrating voluntary sustainability activities into the curriculum with credits rather than relying solely on extracurricular participation. Participants emphasized the need for clear communication of initiatives across the institution, bridging gaps between subgroups, students, and top management. “Sustainability tribes” (informal groups that can be joined by any member of UNI interested in sustainability) and structured meetings with agendas were proposed to facilitate collaboration and bottom-up ideas, while top-down support from management was seen as crucial to implementation. Overall, a combination of bottom-up engagement and top-down leadership was identified as essential for meaningful sustainability integration and awareness at UNI. Figure 5.21 shows the group’s work results on Miro.

Group 2 discussed that current initiatives often lack incentives, recognition, and dedicated time, limiting participation. They proposed solutions that include integrating sustainability into courses and on-boarding, offering credits for students, and recognizing staff contributions. A focused sustainability boot camp or challenge week was suggested to promote collaboration across departments, interdisciplinary interaction, and practical project implementation. Increasing student involvement in curriculum design and improving communication through newsletters, information points, and events like “sustainability fail nights” were also emphasized. Overall, these measures aim to enhance motivation, coordination, visibility, and impact of sustainability initiatives across the institution. The groups work results posted on Miro are shown in Figure 5.22.

Group 3 talked about enhancing the SDG Ambassadors group's visibility across departments and ensuring outputs reach everyone through regular meetings rather than relying on single representatives. They discussed giving students some choice in their courses while maintaining essential mandatory content, allowing engagement and personalized learning. Competition between departments, driven by hierarchy and resource allocation, was noted as a challenge, and ideas were proposed to distribute sustainability tasks fairly. Overall, the discussion emphasized clear communication, student involvement, and leadership commitment as crucial for fostering collaboration, motivation, and effective sustainability practices across UNI. Results posted on Miro are pictured in Figure 5.23.

After the group discussion, rapporteurs presented the outcomes, and some questions were clarified. At this stage, there was no intention to integrate the results as I was planning to let the existing groups continue their work in session 4 so they could further develop, but also test and examine their ideas for new models of the activity.

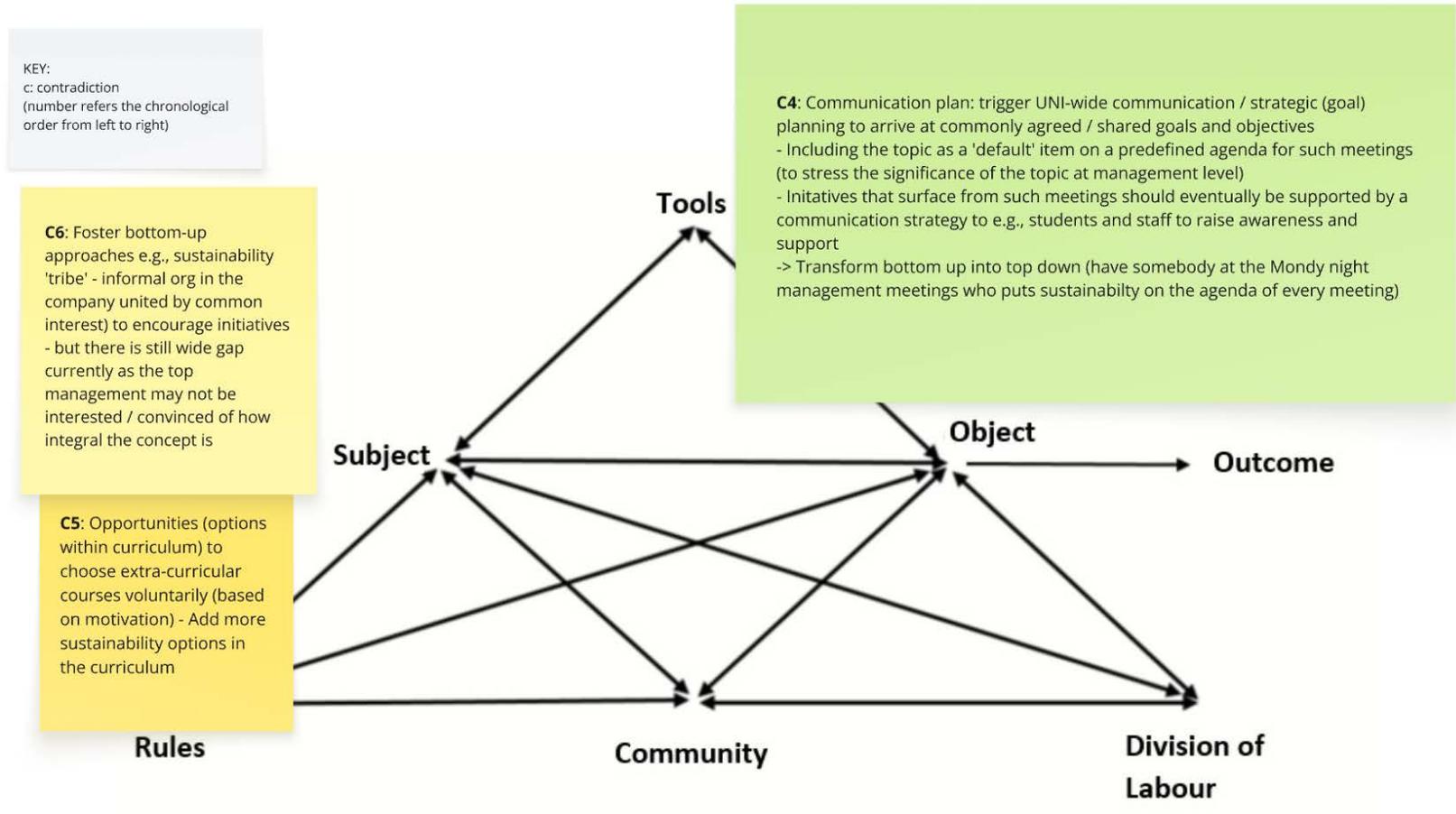


Figure 5.21: Outcomes Task 3.2, Group 1 (created by participants on Miro template)

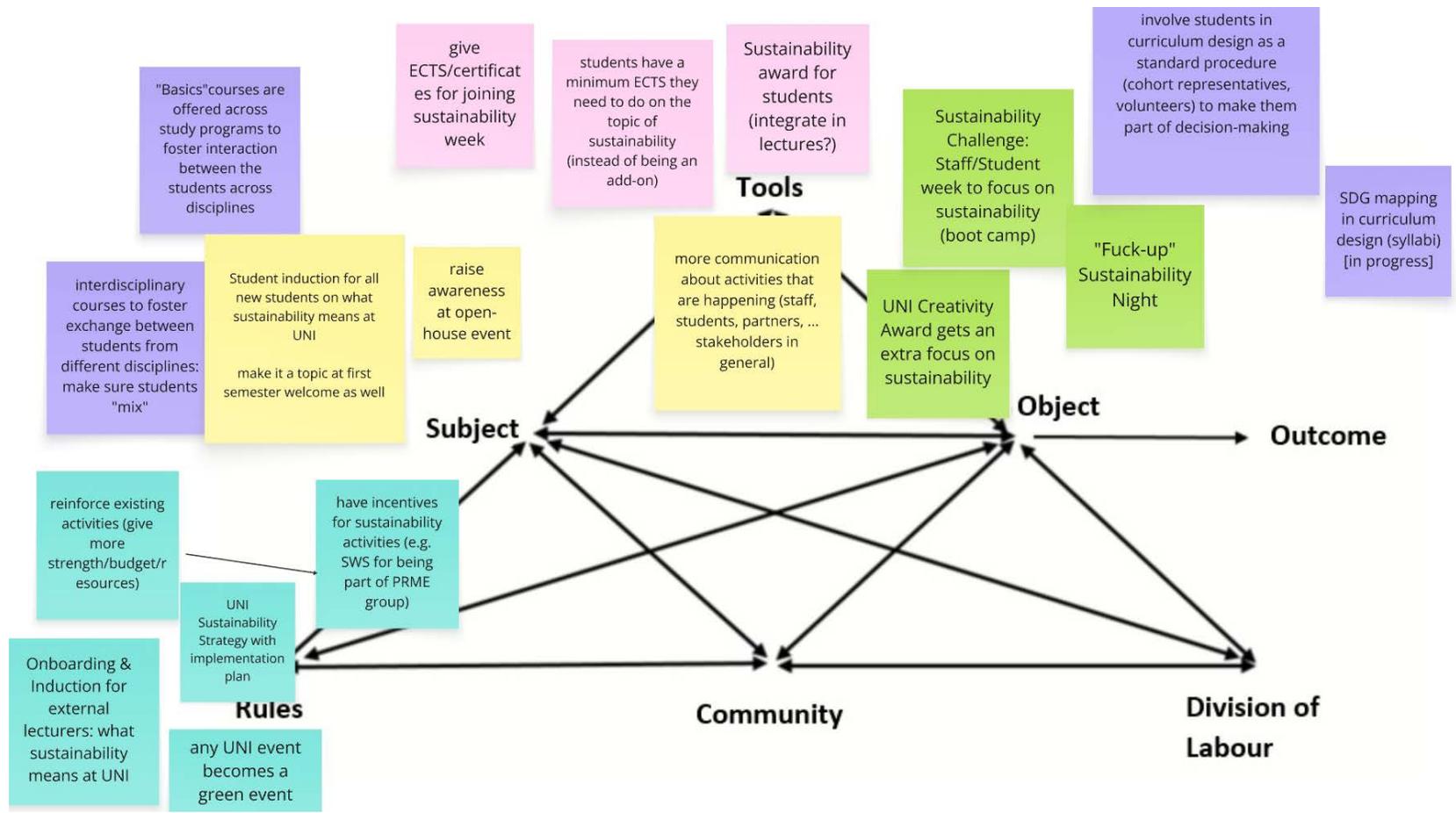


Figure 5.22: Outcomes Task 3.2, Group 2 (created by participants on Miro template)

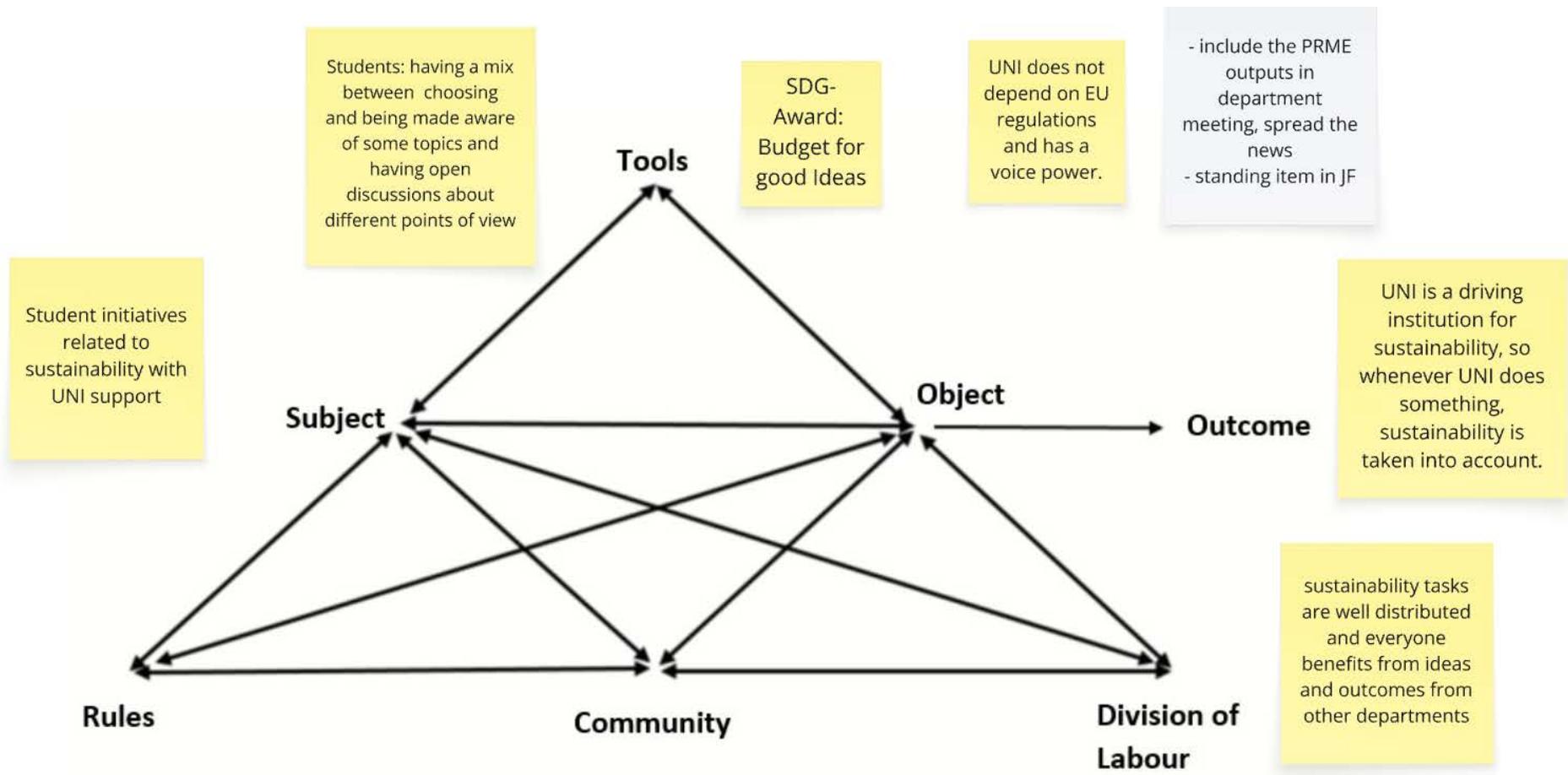


Figure 5.23: Outcomes Task 3.2, Group 3 (created by participants on Miro template)

At the end of the session, I explained the homework for next time, which was to create an activity system for participants' own, individual perspective. Figure 5.24 shows the instructions for this task.

Homework

- Please develop a **future (ideal) model** of the Activity System „Integrating Sustainability at UNI“ from your personal perspective, i.e. from the role YOU (and people in similar roles) play in this activity.
- This means, the **SUBJECT** is you (and other people who have the same or similar roles to you) 😊.
- You can choose to have a **short term, mid term or long term** focus, please indicate this on your activity system.
- Please submit your AS model to the Dropbox in Sakai by the end of next week (Friday, 1st March) so I can analyse and synthesize your ideas in time for our next session.

Figure 5.24: Slide with instructions for Homework 2

Since only one participant subsequently submitted this homework, it is excluded from the analysis, even though the results were used as a basis for a group discussion in session 5, where the participant presented their homework unprompted.

5.6.3 Session 4 Outcomes

This session went according to plan as far as the flow of tasks was concerned. The reverse brainstorming task prompted participants to look at the contradictions in the activity from a different perspective. The ideas generated in task 3.2 were creative and

manifold, touching on many areas of sustainability integration. A summary of the outcomes of this task is presented in Figure 5.25.



Figure 5.25: Collated outcomes of Session 4 (created by author after the session using Napkin.ai)

What did not work so well as the use of the activity system template. Even though the groups all posted their ideas onto the Miro template, it was clear that they were not concerned with the elements of the system and did not discuss the systemic nature of their solutions as much as I hoped they would. It seems that their focus was on developing many ideas rather than discussing few ideas in more depth. In hindsight, the explanation why we were using the activity system as a template could have been more explicit, which might have steered the groups to discuss possible solutions more systemically. Nevertheless, the ideas generated provided a solid basis for continuing

the modelling actions in session 5, and I had the impression that – even though the activity system was not used as explicitly as I might have wished – participants continued to develop an increasing understanding of the complexities, practices, and challenges related to the activity we were exploring. At this stage, we did not integrate the outcomes of the groups beyond reporting where they were at as this work was to be carried on in session 5 by the same groups.

Regarding the homework task, I made the mistake of making this a voluntary task, with the consequence that it was ignored by most participants. This was, however, not crucial, and I redesigned session 5 without presenting the outcomes of the individual activity systems to be created in homework 2 as planned.

5.7 Session 5

5.7.1 Session 5 Design and Preparation

The aim of session 5 was to test the ideas developed in session 4, with additional input from participants absent last time. Having engaged in modelling actions in session 4, the first section of this session was still part of the modelling phase, with the second part moving us into the examining and testing the new model phase, where CL participants run, operate and experiment with new models of the activity in order to better understand its dynamics, potential, and limitations (Virkkunen & Newnham, 2013). Table 5.7 shows the design outline of this session.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 5 Examining	T4.1 Revisit and add ideas, decide on 5 key ideas to focus on (GW)	Activity System Triangle & Miro Template	Outcomes T3.2
	T4.2 Determine feasibility of ideas (Ind.)	Feasibility & Impact Tool (see Table 5.11)	Outcomes T4.1

Table 5.7: Session 5 Design Outline

I felt that the ideas developed in Task 3.2 were a good starting point but needed further development. I was also conscious that out of the 17 participants, only between 11 and 13 had attended the last 3 sessions, but they were not the same people as participants had to skip sessions for other commitments but then came back. The same groups as in Task 3.2 carried on their work, but I decided to add participants missing from session 4 to each of the existing groups so they had the existing ideas explained to them, could give feedback, and ask questions. This was deliberately designed as part of the examining and testing actions.

Task 4.1 asked participants to revisit and consolidate the ideas developed in the previous session in groups, including explaining them to newly joining members, who were to critically review them, and to collectively select up to five key ideas they transferred into a Miro template to take forward, resulting in a maximum of 15 ideas across all groups.

For Task 4.2, I developed a “Feasibility – Impact Tool” designed to help participants assess the feasibility and impact of their selected ideas. The intention here was to help participants select specific ideas from the wide array of solutions they had developed up to now. Especially since we had already reached past the halfway point in the CL and we aimed to have tangible action plans for some initiatives, I felt that we had to limit the number of ideas developed so the new models could become concretized and specific enough to at least get them ready for implementation.

Assessing the ideas’ impact and feasibility was designed to decide on which to take forward towards execution. I created the tool in Excel and provided the file for download in Sakai. The aspects used to describe feasibility and impact were based on my own prior professional experience in managing large scale change projects in HEIs, and I used ChatGPT to help frame the explanations of each aspect. Each aspect could be given up to 3 points, and there was a field for additional aspects participants deemed important in both dimensions so as to ensure the assessment could include factors I had not considered. The task was to individually pick a maximum of three of the 15

ideas developed by the groups and to rate these across the dimensions shown in Figure 5.26 and Figure 5.27.

FEASIBILITY Aspects		Explanation	Points
			1= low 2= medium 3= high
Stakeholder Support		Level of support and buy-in from key stakeholders, including UNI leadership, staff, students, external lecturers, local community members, etc.	
Resources		Availability of financial, human and technological resources needed for implementation	
Compliance		With current regulations, policies, practices, processes and written and unwritten rules	
Other Aspect		<i>Add aspects you deem important here</i>	

Figure 5.26: Feasibility Aspects in Feasibility and Impact Tool (created by author in Excel)

IMPACT Aspects		Explanation	POINTS
			1= low 2= medium 3= high
Social Acceptance and Engagement		Potential for acceptance and engagement among stakeholder groups towards the initiative.	
Environmental Impact		Potential or actual impact of the initiative on reducing carbon emissions, conserving natural resources, and promoting biodiversity.	
Educational Impact		Level of educational benefits of the initiative in raising awareness, promoting sustainable behaviours, and integrating sustainability in curricula.	
Long-Term Sustainability		Durability and resilience of the initiative over time, considering factors such as maintenance requirements, adaptability to changing circumstances, long term costs or savings, and alignment with long-term sustainability goals.	
Other Aspect		<i>Add aspects you deem important here</i>	

Figure 5.27: Impact Aspects in Feasibility and Impact Tool (created by author in Excel)

Participants were to finalise the rating during session 5 (or at home if they did not finish on time), and to send me the file or upload it to Sakai before the next session so I could collate the results.

I also prepared homework 3 to be completed before session 6, which involved participants discussing their favourite ideas with colleagues (UNI staff or students) outside of the SCL group and gaining feedback from them. This was to be collated on Miro next to the ideas posted on the board, but as for homework 2, only one or two participants completed this homework and it was therefore not included in the analysis.

5.7.2 Session 5 Report

Session 5 was attended by 13 participants and was shortened by half an hour due to an internal event many of the participants had to attend (30 minutes were subsequently added on to session 6).

5.7.2.1 Report on Task 4.1

Participants returned to the break-out rooms with the teams they had worked with in session 4, with one or two additional members in each group who had been missing in the previous session. I asked them to explain their ideas to the new group members and to review them together and prepare for a presentation of their five most important ideas in the plenary. This resulted in a number of suggestions that could be put into action to accelerate sustainability integration at UNI, with varied foci, actors, and interventions. Groups reported back from their discussions, which their selected ideas shown in Figure 5.28.

Idea G1.1: More sustainability options for students to select from (in their curricula) - focus area in a semester (from 3rd semester on) - More sustainability case studies and problem-solving projects (with different companies) ... 3rd semester in any program is the "UNI sustainability semester" (which is a starter semester for sustainability in any program that continues further up until the theses. Ideally: a sustainability program dedicated to sustainability.

Idea G1.2: Transform bottom up into top down (have somebody at the Monday night management meetings who puts sustainability on the agenda of every meeting). Target: make sustainability a recurring topic and finally register the trademark: UNI The sustainable school (R)

Idea G1.3: Enable a UNI Sustainability Tribe (students, profs, workers, administration ... whoever feels committed to sustainability)

Idea G1.4: Have a sustainability award (just like the creativity award but not for entrepreneurial ideas but for sustainability ideas)

Idea G1.5: Introduce "Chief Sustainability Officer" as a new role @ UNI

Idea G2.1: Enable students as active agents

Idea G2.2: Organise sustainability events for staff & students (and other interested stakeholders)

Idea G2.3: Create UNI Sustainability Strategy with implementation plan on all levels (infrastructure, teaching, admin, allocation of necessary resources, onboarding incl. external lecturers, green events)

Idea G2.4: Curriculum Design for Sustainability Education (incl. basic sustainability courses across curriculum, interdisciplinary sustainability courses across programs, SDG mapping of courses, involvement of students in curriculum design)

Idea G3.1: Consider EU Regulations that might have an impact (CSRD)

Idea G3.2: Enhance PRME/SDG Group Members communication to the departments (e.g. standing agenda point in meetings)

Idea G3.3: Offer a choice of different student courses: mandatory/ voluntary, open discussions, possibilities to engage

Idea G3.4: Increase knowledge about activities related to sustainability at the UNI, who is doing what? What research is happening, who is teaching relevant courses/topics, what is ÖH doing (students initiatives), create opportunities to tender, support grass-root movements of students, etc.

Idea G3.5: Create "basic mood" for sustainability, e.g. through information sharing and joint inspiration and connections.

Figure 5.28: Outcomes Task 4.1, all groups, with ideas numbered by group for Task 4.2

5.7.2.2 Report on Task 4.2

After the report-back from the groups on their selected ideas, I explained the next task, which was to evaluate the ideas according to feasibility and impact. As I knew that most participants, including myself, had to leave, I asked them to finalise the task at home and explained what to do before everyone left. Participants were asked to individually choose a maximum of three ideas developed in Task 4.1 (from all groups,

not just their own) they liked best. Using the Feasibility & Impact tool (see Figure 5.26 and Figure 5.27), they were to rate the chosen ideas according to the criteria in the tool and to note down their feasibility and impact scores for each. I asked them to send me their work results before the next session.

5.7.3 Session 5 Outcomes

As session 5 was very short and most of the time was spent in the groups continuing to work on their ideas, it was over very quickly and rapporteurs relayed the outcomes of the discussion and the key ideas the groups had chosen. The session concluded with an explanation of the feasibility and impact rating activity, which participants were to complete before the next session and which was carried forward to session 6 for further discussion.

The ideas developed, discussed within the teams, and presented in the plenary provided key data I added to the dataset (see Figure 5.28).

5.8 Session 6

5.8.1 Session 6 Design and Preparation

Session 6 was longer than the others (120 minutes), and was the last session scheduled before the reflection session. Building on the work done in session 5, where modelling and examination action were carried out, my intention in this session was to get as close as possible to “implementation”, knowing that we would not be able to actually implement the ideas in the sense described by Virkkunen and Newnham (2013) within the scope of the SCL. However, it was important to me to enable participants to create a sense of possibility and ownership for the realization of their ideas in practice. To this end, I designed two tasks as shown in Table 5.8.

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 6 Implementing	T5.1 Chart Feasibility & Impact Ratings (Ind./PL)	Miro Template “Feasibility & Impact Mapping” (see Figure 5.29 for completed matrix)	Outcomes T4.1
	T5.2 Choose one of the high impact/feasibility ideas and develop “Action Plan” (GW)	Miro Template “Action Planning”	Outcomes T5.1

Table 5.8: Session 6 Design Outline

Task 5.1 was designed to collectively determine the feasibility and potential impact of the ideas developed in task 4.1 by mapping participants’ individual ratings from the feasibility/impact tool completed onto a joint matrix. The ideas from task 4.1 were given codes with the group number (1,2,3) and the number of the idea (e.g. the first idea of Group 2 was G2.1), and I prepared a list of ideas with numbers to enable quick reference to the numbers. This task was to create a type of “heatmap” that would help crystalize the ideas rated as most impactful and most feasible, with impact on the x axis and feasibility on the y axis. As most participants had sent me their Excel file with the rating before the session, I prepared the chart with most results in advance, with the possibility to add scores during the session for those participants who had not sent them to me beforehand. Figure 5.29 shows the final chart resulting from this task.

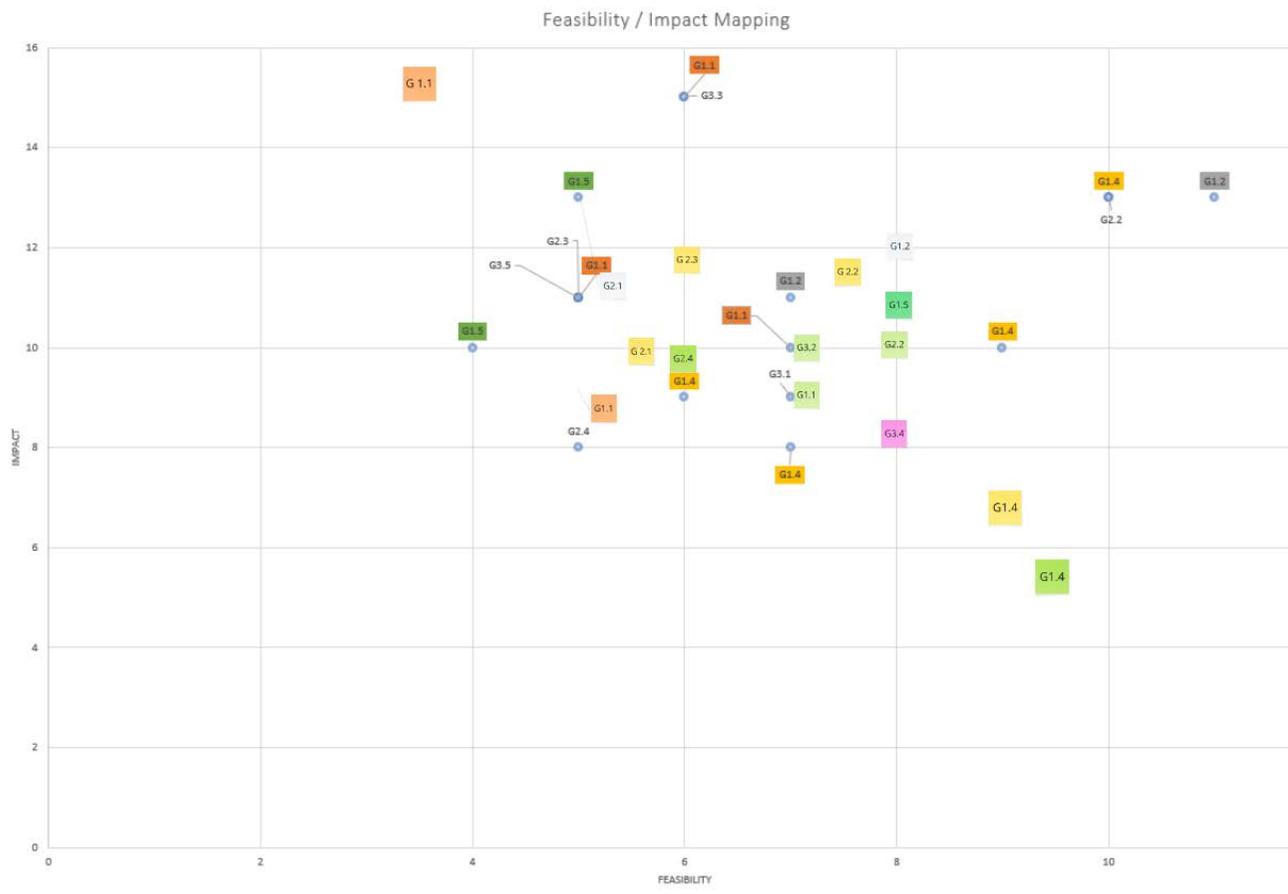


Figure 5.29: Feasibility/Impact Matrix (mapped by author and participants on Miro template)

Task 5.2 was a group activity where participants were to choose one of the most impactful and feasible ideas resulting from task 5.1 and create an action plan for its implementation at UNI. To steer the discussion about planning for implementation, I created an action plan template on Miro for each group, consisting of the headings

- Your chosen idea
- Context of implementation
- Who are the players? What role do YOU play?
- Action steps

Figure 5.30 shows the instructions for Task 5.2 provided to participants as they started working in groups.

Task 5.2: Action planning

You will now work in teams. I have divided you into groups that reflect your roles, but this exercise is about both individual and collective agency, so do not limit your thinking to your role only.

In your team, choose **one** of the high impact/high feasibility ideas (or a sub-idea of one). Your task is to develop a "mini-action plan" for something YOU, in your roles at UNI and as committed individuals, can do to put the chosen idea into practice, or to bring it closer to being implemented. In your choice of idea, you might want to consider which of the ideas is suitable for you to make a contribution to or even take a lead on.

As you discuss and develop your action plan, please work through the following steps:

- First, determine the **context** where you would want to implement the chosen idea (in your team / department / study program; at UNI as a whole; at your campus; in an informal group, in your cohort, etc.)
- Discuss **who** would need to be involved in getting the idea off the ground, and **what role you could play** in putting things into action / motivating others to collaborate with you.
- Break down the chosen idea into **actionable steps or tasks**.

Figure 5.30: Slide with instructions for Task 5.2

I was careful to encourage participants to consider their own role in the implementation of their idea, but also cognisant that for some ideas they might not have the role, power or authority to drive implementation, especially the students. I therefore planned to create role-based groups, with students in group 1, staff in mixed roles in group 2, and SDG Ambassadors in group 3, reflecting the influence they could have on the implementation.

After the group discussion, participants were to come back to the plenary and present their action plans, which were then to be discussed by the entire group under the heading “where to from here”. This last discussion was intended to promote participants’ ownership of the SCL outcomes and a sense that their work would not stop with the end of the SCL, but that there was a commitment to continue implementing their ideas.

5.8.2 Session 6 Report

The session was attended by 14 participants and started with a review of where we were at in the cycle of expansive learning. We then launched into Task 5.1.

5.8.2.1 Report on Task 5.1

Participants were shown the feasibility / impact matrix with the results I had already received. I asked participants who had sent me their scores to check that they were all there and participants who had not sent scores beforehand to add their ratings to the chart. This resulted in the final matrix shown in Figure 5.29.

5.8.2.2 Report on Task 5.2

Having collectively reviewed the results of the rating activity, participants now worked in groups with the second instrument provided by me, a template for an action plan. They were instructed to choose one of the ideas on the chart, preferably one with high impact and high feasibility, and develop steps for

implementing it, including a description of the chosen idea, the context where it can be implemented, actors in the implementation (including their own role), and specific action steps. For this activity, the groups were divided in roles, i.e. the students were in one group, members of the SDG Ambassadors were in a second group and all others in a third. Interestingly, they all chose the same concept to work on independently from each other, idea G1.1, which in the original phrasing read:

Idea G1.1: More sustainability options for students to select from (in their curricula) - focus area in a semester (from 3rd semester on) - More sustainability case studies and problem-solving projects (with different companies) ... 3rd semester in any programme is the "UNI sustainability semester" (which is a starter semester for sustainability in any programme that continues further up until the theses). Ideally: a sustainability programme dedicated to sustainability.

From here, groups started to flesh out how this idea could be implemented using the action plan template. The (independent) decision by all groups to create an action plan for the idea to increase students' curricular options for sustainability learning points to the strength of this concept as a lever to resolve the conflicts of motive identified earlier. Participants now developed a range of second stimuli in the form of actionable changes to the activity system which are situated in their own practices and experiences.

The group consisting of mixed roles discussed enhancing sustainability options within academic programmes by building on the SDG mapping initiative, an ongoing activity where curricula are scanned to identify SDG integration in courses. Using this as a starting point, participants proposed going deeper by examining specific classroom activities, case studies, and examples to identify gaps, which could be addressed collectively across departments by pooling resources. The group also highlighted the importance of training and professional development to help lecturers improve their understanding of teaching methods for sustainability, including peer teaching, where lecturers learn from each other by attending each other's classes. The value of incorporating students' diverse

professional backgrounds and expertise was also highlighted. The concept of a cross-disciplinary capstone project spanning multiple years, disciplines and cohorts emerged as a way to integrate sustainability efforts more effectively across programmes. When identifying the stakeholders to be included in the implementation, the group mentioned teaching staff (both internal and external), the academic council, programme heads, and the staff development team in the HR department. There was also a discussion about leveraging teaching assistants' positions to connect lecturers with an interest in sustainability.

The group consisting of SDG Ambassadors focused on formalising sustainability integration across all programmes. They proposed developing policies for incorporating sustainability into all study programmes at UNI with a minimum of 15% of each program's courses focussing on sustainability. Courses would need to meet specific criteria to be considered appropriate, such as explicitly discussing the SDGs and including sustainability-related teaching materials. They emphasized the involvement of internal and external teaching staff, as well as students. External partners such as sustainability networks were mentioned as potential collaborators for sharing ideas and enriching the integration. The SDG Ambassador group was identified as a central resource, providing guidance, materials, and examples of sustainability integration.

The student group also focused on integrating sustainability courses into study programs, but their approach involved giving students more choice and engagement through a voting system. A suggestion to have a capstone exam on sustainability early in the programme was abandoned as they feared that this would demotivate students. They proposed instead to offer students a list of sustainability-focused courses to select from, allowing them to choose the courses they are most interested in to increase motivation. Stakeholders involved the student representative body, heads of departments, lecturers and also external companies who could provide real-world sustainability problems for students to work on, enhancing practical learning. The group emphasised the

role of a moderator to oversee the initiative. The students also defined some practical steps for implementation, including an online voting platform with a Question & Answer function for students to ask questions related to courses on offer. They discussed that the study programmes would need to create space in the curriculum and discussed the format (mandatory vs. voluntary, duration, credit points).

After the group discussion had ended, rapporteurs provided an overview of the outcomes and a discussion about “where to now” ensued. Some questions were discussed to clarify other groups’ ideas, and specific items were emphasized as important. Participants felt that the ideas developed complemented each other well and proposed that they should be presented to various stakeholder group such as the leadership team, the individual departments, and the SDG Ambassador group. There was a sense that implementation of some of the ideas was a tangible option, even though only few participants expressed commitment to progress them in their roles. In the end, participants thanked me for the facilitation and we finished on time.

5.8.3 Session 6 Outcomes

This session resulted in several concrete ideas to transform the activity, and provided a rich addition to my dataset, extending and detailing the more general ideas developed in previous sessions. Figure 5.31 shows the key outcomes of this session, which in combination represent strong drivers for new models of sustainability learning pathways at UNI.



Figure 5.31: Collated outcomes of Action Planning in Session 6 (created by author after the session using Napkin.ai)

My intention to determine the feasibility and impact of the broad range of solutions created previously and use this as a way of deciding on what ideas should be developed further worked well. I was surprised that all groups opted to work on sustainability learning pathways in different facets, however the fact that teaching and learning is UNI's main focus which all participants were engaged with in one way or another can explain this convergence. The feasibility/impact tool proved effective for this purpose, even though some participants mentioned

that the list of ideas it was based on could have been consolidated more as several ideas were similar, which made selection somewhat arbitrary.

I was concerned that the diverse roles of participants might raise a sense that they could not contribute much to sustainability efforts and limit the development of collective agency, however this concern did not eventuate. The different perspective raised in the groups (teaching formats, policy, student choice) reflected the participants' varied understanding of avenues towards sustainability, and their implementation plans provided rich insights into aspects of practice that could help expand the activity towards sustainability transformation. For this purpose, the action planning template worked well, even though the groups could have done with more time to work out details.

In the final plenary discussion, it was noteworthy that the communication mostly occurred with participants using chat rather than activating their microphones. Even though many participated with comments, I felt that a direct communication would have resulted in richer outcomes than text chat. This reflected an overall tendency in the SCL to not use microphones or cameras during plenary discussions, whereas these tools were used by all participants in break-out rooms. In hindsight, I would force this issue more and provide more time for all-group discussions, which were limited in the SCL.

Overall, however, I felt afterwards that this session was successful and participants left with a sense of achievement and purpose, with several expressing the intention to "do their bit" in implementing aspects of the ideas developed. I promised to create a table with the outcomes of the SCL (including ideas developed that were not part of those selected for Task 5.2) and keep participants apprised of their implementation as work on them progressed.

We finished on time, and several participants thanked me for having had the opportunity to participate as they knew they could not come to the final reflection

session. Being aware that only a third of the group could attend the last session, I informed them that I would follow up with a feedback survey and asked them to complete this before the next session.

5.9 Session 7

5.9.1 Session 7 Design and Preparation

Session 7, attended by 7 participants, was scheduled four weeks after session 6 and designed as reflection on the participants' experience in the SCL. According to Virkkunen and Newnham (2013), in the cycle of expansive learning, process reflection means looking back on the process to consolidate and generalize new practices, enabling participants to take agency in preparing for future development while supported by the researcher in framing and facilitating the reflective work. Reflection can therefore refer to the process, the outcomes, and to what was learned and not learned during the CL. I designed two tasks for the session as shown in Table 5.9

Session & EL Phase	First stimuli	Second stimuli	Mirror data
Session 7 Process Reflection	T6.1 Metaphor of participating in CL	Metaphor	
	T6.2 Discussion (PL)	Discussion / reflection questions	Summary of feedback from online survey on experience in CL (see Figure 5.33)

Table 5.9: Session 7 Design Outline

Task 6.1 aimed to create a metaphor that represents the participants' individual experience in the SCL and post it to Miro. This was designed as a creative exercise that would provide insight into how they perceived our journey in the SCL. This was followed by Task 6.2, a plenary discussion of participants' perceptions of the SCL process, outcomes and learnings. As I knew that many participants were not able to attend, I had invited feedback from the group on

their experience in the SCL through an online survey with a set of open questions sent to them two weeks before the session. The online feedback survey consisted of 8 open questions asking respondents about their experience in the SCL. It was completed by 8 participants and elicited feedback regarding their learnings, experience of the process, and expectations of further steps. I gathered the results of the survey and used this input as mirror material for session 7 by summarizing the comments and preparing slides (see Figure 5.33) to discuss the feedback with the attendees. During the plenary discussion, I also asked participants to identify what they had not learned by posting unmet expectations of the SCL on Miro.

5.9.2 Session 7 Report

5.9.2.1 Report on Task 6.1

I started the session by inviting participants to create a metaphor for their experience of being part of the SCL, resulting in the posts shown in Figure 5.32.



Figure 5.32: Outcomes Task 6.1 (created by participants on Miro template)

Some participants also commented on their posts, highlighting their enjoyment of taking time out from their work routine to discuss sustainability with colleagues and students and their appreciation for working with like-minded people who are also passionate about sustainability.

5.9.2.2 Report on Task 6.2

I had prepared slides with the feedback received from those not able to come through the online survey, highlighting the most important points raised (see Figure 5.33), and we discussed these in the plenary.



Figure 5.33: Slides summarizing survey feedback as shown in Session 7

The input gathered through the survey was used as mirror data for this task, where I invited comments and further aspects from the side of the attending participants. They actively contributed to the discussion, reacting to and raising a number of points beyond those gathered in the survey.

In terms of what worked well, they agreed with the survey results and particularly highlighted the value of working with people from diverse backgrounds, stressing that especially the student perspective and interdisciplinary variety led to deeper reflection. Students expressed that the experience was empowering overall, and power imbalances were addressed by one students, who related her experience:

S7 [00:37:46] StP2: For me, it was like, um, it's more serious, the meeting, because if there are only students, you can't do anything [...] it felt more serious and more intense for me if you have all the perspectives and especially the staff. And I would like to add some thoughts about power or maybe hierarchy. Sometimes it felt like ... I would say an example, P6_int is my master thesis professor. And I thought, okay, so it's going to be a little bit strange or not easy for me to say really what I think about UNI and stuff like this. But it was before the first meeting and the first meeting it was all gone. I was like, okay, we are really working together on eye to eye and it's no problem, but there were, yeah, thoughts before.

The interdisciplinary nature of the SCL also helped participants appreciate different approaches to problem-solving and broadened their understanding of the sustainability issues.

Regarding the challenges, attendees confirmed that in earlier sessions it was sometimes difficult for groups to organize and understand the tasks at hand, and the limited time in the 90-minute sessions was mentioned as being too short:

S7 [00:09:27] StP5: Um, especially in the discussions, I found that the time was running too fast. As soon as we had great ideas and explored them, the time was already gone and we had to switch back to the main room. So, yeah, I think maybe a little bit more time for discussions in smaller groups would be great.

StP2: Yeah, [...] especially in the task where we had to really go to action, we would have needed more time to decide which task do we want, which goal we want to achieve. How are we really going to think this through it? For me, it was like always

scratching on the surface, but not going deeper and really think about how can we do it in a project and stuff like this. It's was not enough time for this. But I also agree that I would not / Yeah, were not able to give more time.

Language barriers were seen by some as obstacles to fully developing ideas, but others also said that they appreciated having the opportunity to speak English and practice their language skills. The tools and well-organized facilitation were seen as very effective, even though it took some time to get used to the online environment. Participants appreciated the structured format of the sessions, with clear guidance and summaries provided. However, there were calls for in-person meetings, more time for discussion, and greater consistency in attendance to improve the overall process, while participants also appreciated the difficulties in realising these aspects in practice.

When asked about their learning, many participants reported gaining new insights, particularly regarding sustainability and the institutional context. They realized the importance of considering historical developments in understanding current challenges and learned that sustainability transitions are complex and discussion takes time. The sessions reinforced the need to integrate multiple perspectives in developing solutions. Especially the student perspective opened new insights for some:

S7 [00:40:43] P5_int: I have learned about students at UNI. I have learned that many students, well, they don't feel represented and they don't ... they have the feeling of having no voice. This is new for me. I didn't expect that. So that's a very, well, quite impressive learning from this setting.

Although many participants felt the sessions generated good ideas, there was some concern about the feasibility of these ideas and their long-term implementation within UNI. Several participants expressed the opinion that without ongoing pressure and institutional support, the outcomes of the SCL might not lead to concrete actions. Seeing how many people are interested in sustainability and the motivation and ideas palpable in the SCL offered hope for change. There were also comments alluding to participants reconsidering

changes in their own role, such as integrating sustainability more in their teaching, and the intention to motivate others to bring about collective change.

S7 [00:55:38] P5_int: Yeah, we should continue this discussion as [in the] I think first or second session. I am deeply convinced that this must be at least partially a top down process. So the question is how to get there. Yeah, this is an extremely interesting questions. I'm, well, I'm ready to, to discuss this topic further.

In the activity designed to identify what was not learned, participants posted a few different thoughts on Miro as shown in Figure 5.34.

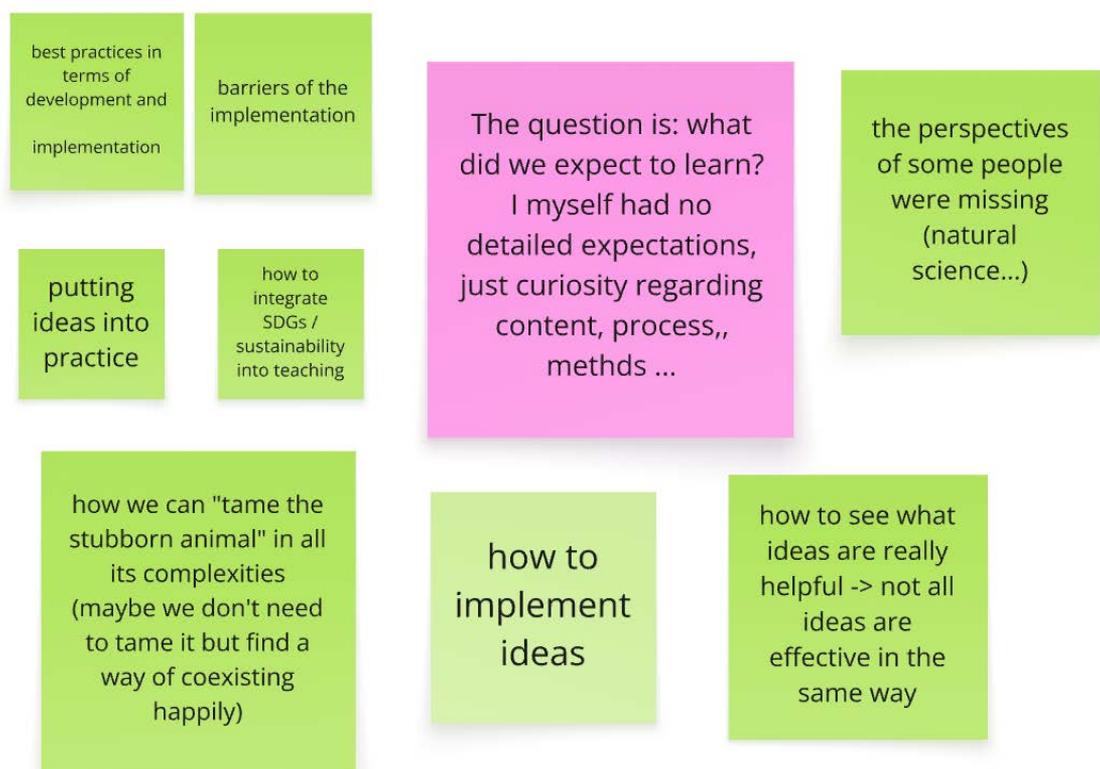


Figure 5.34: Outcomes of Task 6.2 – What was not learned? (created by participants on Miro template)

As these posts show, the main concern about what was not done or learned in the SCL was related to implementation, signalling perhaps a lack of confidence that the outcomes would be put into practice. The absence of significant

perspectives from other areas of UNI and the lack of concrete integration measures in teaching were also mentioned, as was the perception of sustainability as a “stubborn animal”:

S7 [00:56:48] P2_int: Yeah, I wrote that down because like taming the stubborn animal reminded me a bit of how we as UNI apparently also think that we are supposed to shape our students. And I think it's, it's very telling that these are the kinds of metaphors that we use, that this is something that we have to conquer and control and use our power over. And I think that is something that we might have to change in our mind-set.

After having concluded the discussion, I thanked participants for their participation and announced that I would keep them informed of further progress. They thanked me and we closed on time.

5.9.3 Session 7 Outcomes

This session was focussed on reviewing the experience in the SCL in terms of process and outcomes, with participants raising aspects regarding the format and process of the SCL as well as their views on what was achieved. It was regrettable that only a small number of participants could attend the session, however the online feedback gained before the session and turned into mirror material worked well. The participants provided comments on the feedback, mostly agreeing with observations made and also adding some aspects.

Many of the comments from participants confirmed design choices I had made, and there was a positive vibe in the group with regards to the experience in the SCL. We had certainly succeeded in creating a safe space where everyone felt they could express their opinions and where their ideas were valued. Participants also valued the interdisciplinary, collaborative nature of the sessions, especially the inclusion of students. This confirms my decision to invite stakeholders, including students, to collaborate, as their varied perspectives enhanced learning and made the process more engaging for everyone. Participants also reported

that they gained new insights through reflection on practices, information about existing UNI initiatives they were not aware of, and recognizing the value of diverse perspectives and sustainability's complexity.

From the feedback, I have learned how crucial it is to design processes that make participants feel their voices are genuinely heard and valued. Seeing how this sense of empowerment motivated people to bring change into their own teaching and work reminded me that agency only has real impact if outcomes are grounded in participants' everyday practices. At the same time, the feedback also revealed the importance of continuity. When attendance was inconsistent and participants had to miss sessions, collaboration felt more fragmented. While my summaries between sessions helped, it is important to think about how to support sustained participation in a context where participants are juggling many priorities.

Finally, the skepticism about long-term institutional impact was an important motivator to continue working on the implementation of the ideas. It is not sufficient to spark inspiration within the SCL, but it is important to continue to anchor outcomes in UNI structures so that the ideas developed become part of lasting sustainability transformation. However, overall, participants were highly engaged, felt their agency was supported, and valued the interdisciplinary collaboration, though some desired clearer action steps and follow-through.

5.10 Chapter summary

This chapter has reported on the seven SCL sessions, outlining the design and preparation of each session as participants worked through the phases of the cycle of expansive learning. The chapter has presented the process and the outcomes in both visual and narrative form, reflecting on successes, challenges, and deviations from the original design. Overall, the collaborative tasks, including the first and second stimuli, worked well in supporting the group's co-creative

work and expansive learning, and there was little deviation from the designed workflow. Challenges such as limited session time, discontinuity in attendance, the risk of distraction in the online environment, and uneven knowledge and information about UNI sustainability initiatives impacted on the SCL. Nevertheless, based on questioning and analyzing the current status of sustainability integration, participants produced rich and innovative ideas and new models of the activity, ready for enactment in practice. After providing a detailed account of the process and key discussion themes in this chapter, the next chapter will provide an in-depth analysis of the emergence of transformative agency in the SCL.

6 Chapter 6: Data Analysis

6.1 Introduction

Chapter 5 presented the process and outcomes of the sequential tasks participants worked through in the Sustainability Change Laboratory (SCL) in order to provide an overview of the key topics developed to accelerate the activity “Integrating Sustainability at UNI” in each session. This chapter now puts a closer lens on the development of transformative agency and provides analysis to answer the overarching research question of this study:

How can a Change Laboratory research-intervention stimulate Transformative Agency in participants to accelerate the integration of sustainable development at a university of applied sciences?

The following sections describe the outcomes of the data analysis, which, as explained in section 4.7.5, was conducted in three steps, each addressing specific sub-research questions. Section 6.2 presents the outcomes of the quantitative analysis of expressions of transformative agency, including a brief commentary of how discursive ETA developed across the cycle of expansive learning.

Section 6.3. presents the identification and qualitative analysis of turning points, which indicate notable shifts in participants’ agency, e.g. when they change their approach to the problem or embark on new actions. Identification and analysis of these situations is essential for understanding how change unfolds in the process towards transformation of the activity.

These sections address sub-question SRQ1:

How does Transformative Agency develop over the course of the CL intervention, as manifested in discursive expressions of agency, and what turning points can be identified indicating a transition from paralysis to action?

Next, section 6.4 describes the results of the analysis using the TADS model (Sannino, 2022), focussing on the identification of conflicts of motives, the formulation and uptake of second stimuli and auxiliary motives, and tracking how these second stimuli were upheld when challenged through the re-emergence of the conflict of motives and finally implemented.

This step is characterised by a combination of quantitative and qualitative analysis. Deductive coding of the TADS phases was combined with an inductive thematic analysis of the participants' discussions and outputs throughout the SCL. TADS phases and thematic streams were then mapped across the SCL in order to depict the evolving of transformative agency through double stimulation. In the final section, a deep qualitative analysis reveals how conflicts of motive and auxiliary motives evolved over the first part of the SCL, followed by a closer examination of three key episodes demonstrating how participants worked through the TADS phases and developed agentic purpose through concrete implementation planning.

Finally, section 6.5 reports on the outcomes of the reflection session, including the results of the final participant survey and situates these in the overall findings regarding the emergence of transformative agency throughout the SCL. The chapter concludes with a summary of the findings.

Section 6.4 and 6.5 thus specifically address SRQ2:

SRQ 2: How does Transformative Agency develop as participants work through conflicts of motive and engage with mediating tools in the process of double stimulation during the SCL?

6.2 Step 1: Quantitative analysis of Expressions of Transformative Agency

Stage 1 analysis focussed on identifying and categorizing discursive Expressions of Transformative Agency (ETA, see section 3.4.5.1). These expressions serve as markers of transformative shifts in activity and allow the researcher to trace the development of agency as the participants work to resolve contradictions and initiate meaningful change. Through the deductive approach described in section 4.7.5, I provide a structured description of the types of ETA evolving as evident in the data and put this in the context of the overall development of the SCL.

6.2.1 Types of ETA and emergence across sessions

Figure 6.1 displays the sum of manifestations of ETA across all SCL sessions. The overall pattern demonstrates that the SCL was characterised by a high number of expressions with regards to envisioning and explicating possibilities and ideas, and a large number of criticizing expressions, but it shows that the ETA indicating resisting and committing to action are comparatively low, and demonstrates a complete absence of ETA indicating taking action.

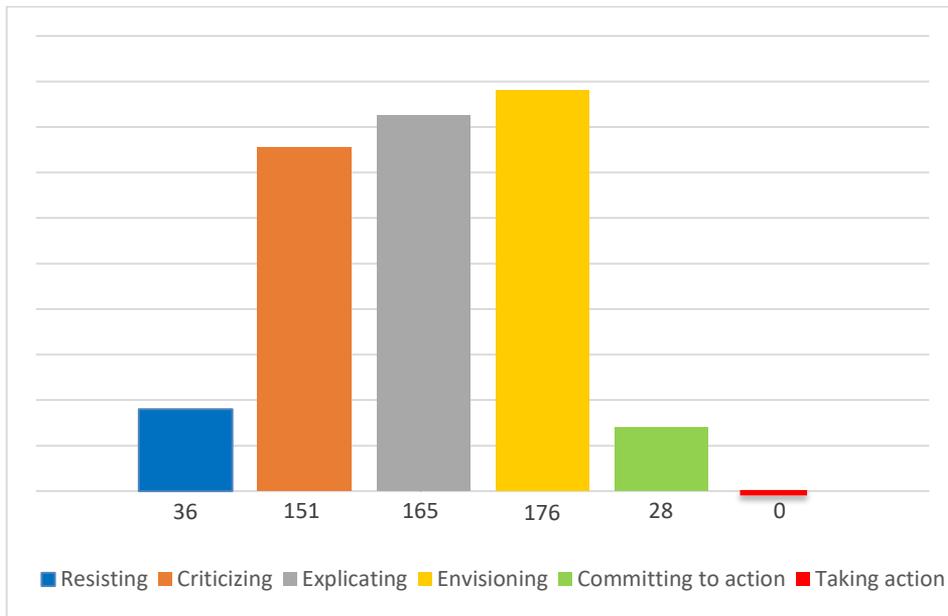


Figure 6.1: Total ETA Types in SCL

A more differentiated picture becomes apparent when looking at how ETA emerged over the course of the SCL. Figure 6.2 provides an overview of the results of the quantitative analysis of ETAs across all sessions, showing a strong focus on explicating in session 1, a surge of criticizing in session 2, persisting into session 3, a balance of criticizing, explicating and envisioning in session 4 and a marked increase in envisioning in sessions 5 and 6 as well as an increase in committing to action in session 6.

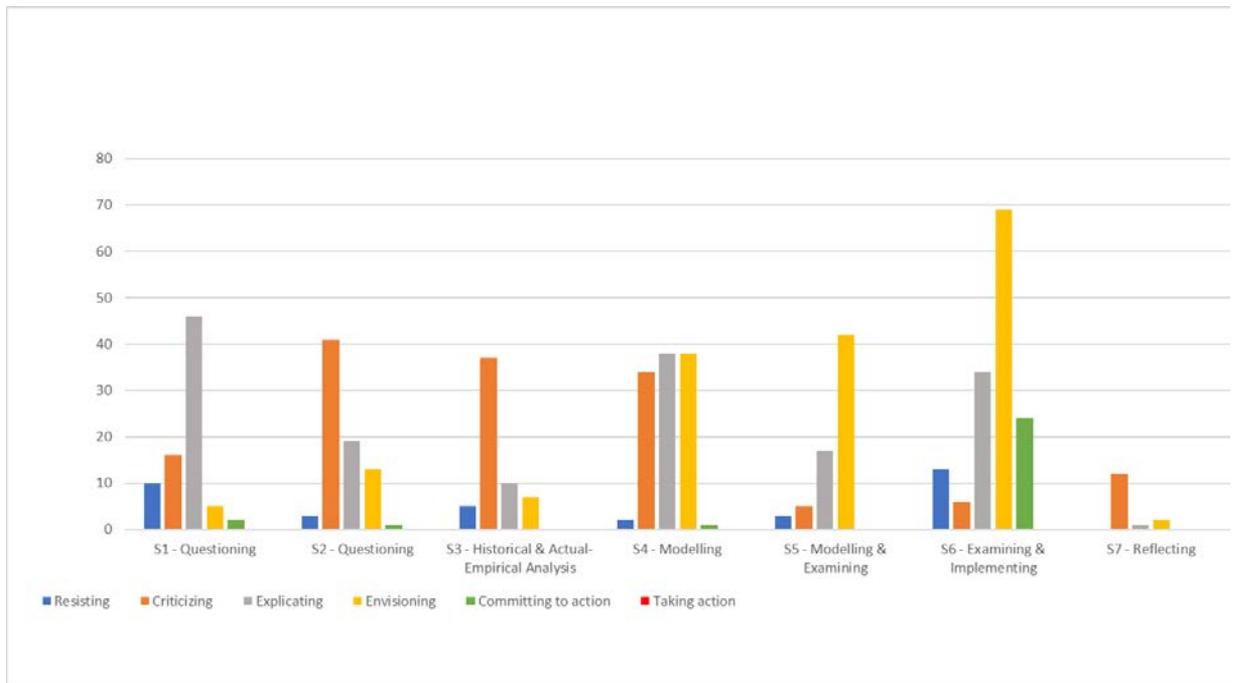


Figure 6.2: Overview of ETA across SCL sessions

6.2.2 ETAs across the Cycle of Expansive Learning

Understanding how participants' discursive ETA developed throughout each phase is an important prerequisite to tracing the unfolding emergence of transformative agency, and is directly related to answering the research question of this study. Before delving into a detailed analysis of selected episodes of the SCL, this section provides an overview of the development of expansive learning across the intervention in order to map out how tasks and prompts triggered specific peaks in ETA. The manifestations of discursive ETA across the SCL can be understood in the context of the cycle of expansive learning underlying the design of the SCL as shown in Figure 6.3.

Let's see where we are

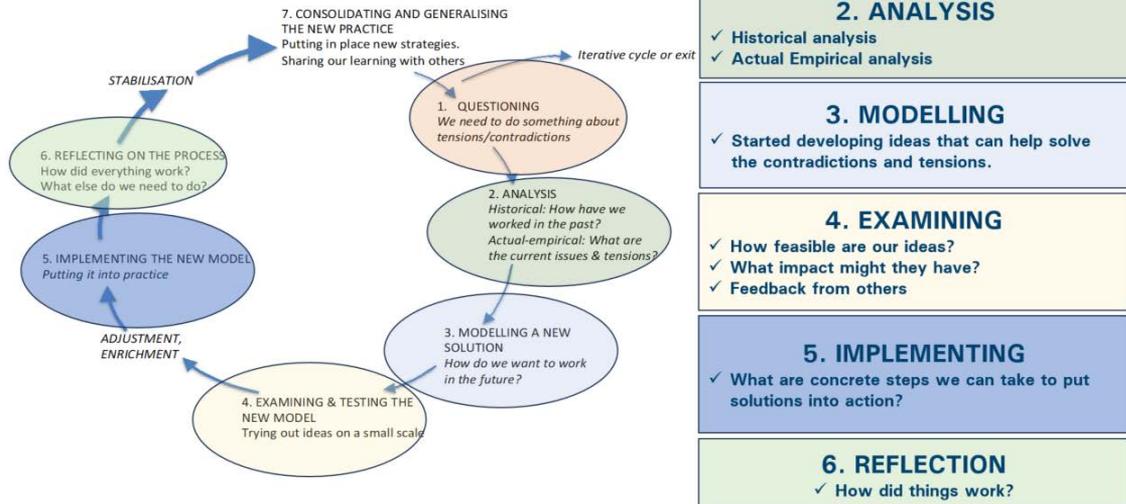


Figure 6.3: Cycle of Expansive Learning and tasks completed during the SCL

This figure derives from a slide used during session 7, the reflection session, and depicts the tasks carried out during the SCL, which do not deviate much from the intervention design. Table 6.1 presents an overview of the session design, which corresponds overall with what actually happened in the sessions.

Sessions 1 and 2 were designed to question the current situation by identifying contradictions and tensions in the activity under examination. The high number of “Explicating” expressions in session 1 can be explained by virtue of the two initial tasks, which were to determine and discuss priorities of change in sustainability integration at the university based on video input in the form of interviews with HE members as mirror material. Explicating in terms of expressing possibilities and potential for change in the activity was a consequence of this focus and an important initial step to collectively determine the scope and focus of the intervention and establish a shared understanding of the key topics to be examined further.

SCL Session	Session 1	Session 2	Homework	Session 3	Session 4	Session 5	Session 6	Session 7	Post SCL																																																																																																		
Expansive Learning Action	Questioning	Questioning	Historical Analysis	Historical & Actual-Empirical Analysis	Modelling	Modelling & Examining	Examination & Implementation	Reflection	Consolidation, Implementation																																																																																																		
SCL Tasks / Designed First Stimuli	1.1. Determine priorities 1.2. Discuss priorities	1.3. Decide on priorities to pursue. Find examples of activities	H1: Gather information and fill in historical analysis template and timeline	2.1. Discuss historical development 2.2. Map current activity system, identify contradictions	3.1. Reverse brainstorming 3.2. Create Activity System mapping possible solutions	4.1. Revisit and add ideas 4.2. Examine feasibility & impact of ideas	5.1. Joint feasibility & impact assessment 5.2. Action planning	6.1. Answer questions about process, learnings and observations 6.2. Discuss feedback	7. Progressively implement solutions																																																																																																		
Designed Second Stimuli	Brainstorming Template; Status Wall Template	Status Wall Template; Voting	Timeline & Historical Development Template	Activity System Template	Reverse Brainstorming Tool; Activity System Template	Impact & Feasibility Tool;	Impact & Feasibility Tool; Action Plan Template																																																																																																				
Actual activities carried out	We determined UNI's roles in advancing sustainable development.	We discussed where UNI is at with sustainability priorities, finding concrete examples. We decided on a focus of this Change Lab.	We examined a range of sources and sought input from others about the historical development of the activity.	We discussed the past development of sustainability at UNI. We analysed the current activity "Sustainability integration at UNI" and identified contradictions and tensions.	We started developing ideas that can help solve the contradictions and tensions.	We elaborated and tested our initial ideas with peers. We asked ourselves how feasible our ideas are, and what impact they might have. We sought Feedback from others outside the SCL.	We jointly assessed the feasibility and impact of our ideas and plotted them. We developed concrete steps we can take to put the most impactful and feasible solutions into action	We reflected on how things worked in the SCL.																																																																																																			
Expressions of Transformative Agency across Sessions: ■ Resisting ■ Criticizing ■ Explicating ■ Envisioning ■ Committing to action ■ Taking action																																																																																																											
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Table 6.1: Session overview with ETA

Session 2 displays a high degree of criticizing as participants continued the discussion of priorities and shared knowledge and perspectives about the status of sustainability integration at the university. The stark change from explicating to criticizing indicates a first turning point in the SCL, which will be examined further below. Having conceived a range of areas ripe for potential changes in the activity in session 1 (see section 5.2.3), the group now examined collaboratively what the status of the priorities they had determined was, identifying problems and contradictions in the current way of integrating sustainability across UNI activities.

Key issues discussed are presented in section 5.3.3 and ranged from systemic problems at macro-level, such as the current capitalist economic model and the current HE system, to institutional issues such as the explicit and implicit values underpinning UNI and the absence of a clear institutional sustainability strategy, the lack of synergies and collaboration across different parts of the university, the lack of incentives and opportunities to engage in sustainability activities, current (transmissive) teaching styles and – importantly – a lack of information and knowledge about existing activities.

Issues at individual level were also mentioned, especially with regards to workload, both for students and for staff. Particularly revealing in this phase was the identification of gaps in knowledge and information about current sustainability initiatives, partly due to participants' diverse roles in the organisation, underlining the importance of the next phase of expansive learning, historical and actual-empirical analysis.

Criticizing continued in session 3 as participants engaged in a discussion about the historical development of the activity based on information they had gathered between sessions (see section 5.4). Discoveries participants had made when exploring the historical development were shared by long-serving staff members, newer arrivals and students alike. In the next task, activity system templates were used to map actual-empirical developments in sustainability integration with the aim to more clearly detect and characterize contradictions and tensions. The group discussions produced a

number of fundamental contradictions in the activity presented in section 5.5.3, providing a valuable basis for the next step in the process.

The quantitative ETA analysis of session 4 demonstrates a marked shift, with explicating and envisioning increasing significantly, while criticizing remains at a high level. This phase is a second turning point in the development of the SCL, warranting closer examination. Based on the contradictions developed in the previous session and the reverse brainstorming activity, participants now developed many ideas to counteract the conflicting motives identified and to resolve the contradictions (see section 5.6.3). In session 5, high levels of envisioning persisted whereas criticizing decreased as participants continued to develop their ideas and started to examine them, first by explaining them to participants absent in the previous session and then by assessing their feasibility and impact using a tool developed for this purpose.

The focus on examining in session 6 produced less criticism than expected (see section 5.9.3), with envisioning expressions increasing again as participants started to plan for implementation of their proposed solutions, devising a range of specific actions required to take their idea forward. The strong increase in envisioning along with a rise in committing to action indicate a third turning point and invite detailed interrogation of data in this phase of the cycle of expansive learning.

The last session focussed on reflection, with participants discussing the process, outcome and further development of their work in the SCL. There was some degree of criticizing, but other ETA were less pronounced (see section 5.10.3). A more detailed examination of the feedback and collective reflection is provided in section 6.5.

6.3 Step 2: Identification of Turning Points

As described in section 3.4.5, turning points (TP) occur when participants start new actions or change how they approach or view the problematic situation and thereby display activation of agency in these instances. In my analysis, I was interested in TP

that mark a shift from paralysis to purposeful action, signaling efforts to address conflicts and advance the transformation of the activity. In the course of the SCL, several TP, observable in significant changes in the quantity and quality of participants' ETA, can be observed as demonstrated in Figure 6.4:

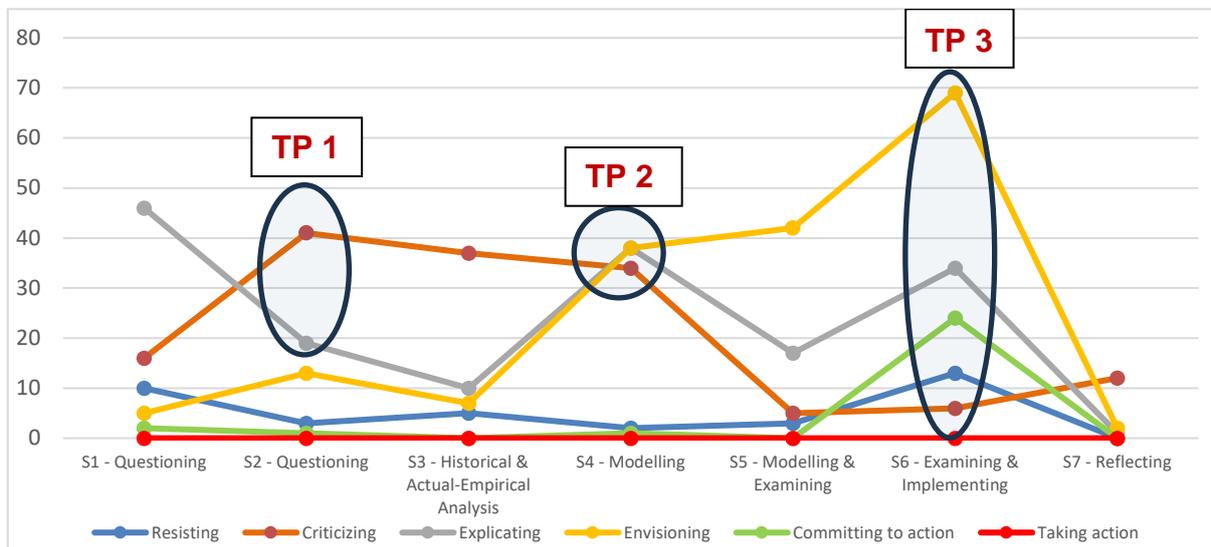


Figure 6.4: ETA and Turning Points across sessions

Quantitative analysis of ETA reveals three marked instances warranting investigation as TP, which is provided in the following section.

6.3.1 Turning Point 1: From explicating priorities to criticizing the current activity system

The change from a high number of explicating ETA in session 1 to a rapid increase of criticizing in session 2 suggests a change in participants' approach to the activity. The general deliberations of possible priority areas for sustainability integration at UNI shift to a critical examination of how participants perceive the activity, indicating a perspective change where issues are more closely related to their own experience and actively intertwined with underlying values and assumptions. The following passages are examples illustrating this shift.

In session 1, participant in group 2 discuss the empowerment of students as a general priority that deserves attention. The tone here is neutral, the agent responsible is framed as impersonal “universities” and the passive voice is used:

S1G2 [00:06:39] P7_int: I also find like the point on empowering the students and throwing the ball back into the hands of the students is very important. Although universities have the role to, you know, to frame the topic or kick-start interest in, you know, in the topic through teaching and research, the ball should still be passed on to the students.

In session 2, the topic is picked up again:

S2MAIN [00:16:31] StP6: Okay. I mean, I would say that, we used to not be taught about how to, respond to sustainability or even how to make a change in it or how to involve ourselves in it. And I think if, if we start teaching that to students from quite a young age, from university like bachelors, then you can somehow empower them with this.

The reference here is personal, with StP6 referring to her own experience. The agent in implementing the change is framed not as an anonymous entity but as “we” and “you”. This TP marks an intensified questioning moment as participants’ stance becomes more involved and issues discussed are much closer to home.

6.3.2 Turning Point 2: From criticizing the lack of a common object to envisioning possible solutions

Session 4 displays a steep rise in envisioning and explicating, while criticizing remains high. The activities in this session are based on the historical and actual-empirical analysis and the identification of contradictions in the activity system in session 3, where criticizing was the most dominant ETA by far, and leads to a continuing rise in envisioning in session 5. It marks the transition to the modelling phase.

In this phase, a much better shared understanding of both the aims of the collective endeavour in the SCL and the contradictions to be tackled are the basis for participants becoming more agentive in their approach to sustainability integration as they activate

their personal perspectives to find possible solution to the issues identified. Before this turning point, participants were still working to individually understand and collectively determine the contradictions at hand as well as to come to terms with their own, partly emotional, investment and stance:

S4G2 [00:01:36] P4_int: So there is no real incentive to do things or like, um, the lack of synergies between departments, like either it's your wish, but there is no, there's no incentive that I get from that. I think that's one of the main problems.

P3_int: So how would you turn that around?

P4_int: To have incentives for, um, I don't know. I mean, we have now the SDG mapping that can also be integrated in the [IT system]. I think that's a big step that you have a system behind that. Uh, but then of course you have to do all the mapping again, you need time for that. So, I don't know, even, um, I don't know, getting also accredited for activities that you do on that, no?

Ideas here are framed in a tentative manner, with many open questions. As the discussion evolves, more concrete ideas are crafted and put forward more boldly such as the following, referring to strategies that can strengthen bottom-up sustainability initiatives:

S4G3 [00:11:16] P1_ext: I have an idea which directly relates to this, um, bottom up idea, uh, where it says "Bottom-up is no longer wanted. Changes can only come from the management team". So, uh, I think something that would contradict this is if, um, UNI would, would offer resources, time and money for an informal sustainability tribe, which is not formal it's just to have people with interest in sustainability. So that would, you know, be a possibility to foster bottom up approaches, you know what I mean?

After this point, there is a sense of possibility, as participants work constructively to build future models of the activity, sparking ideas off each other and developing positive scenarios founded on their previous analysis and critique. A critical examination of the data from this episode will reveal how conflicting motives and second stimuli interplay.

6.3.3 Turning Point 3: From envisioning many solutions to deciding on one course of action and committing to it

The high number of envisioning ETA in session 4 increases markedly again in sessions 5 and especially session 6, where a rise in committing to action can also be observed. In this phase, participants went from brainstorming ideas that could resolve the conflicts of motives they had identified earlier to concrete action planning, indicating another change in the type of evolving transformative agency. This can be illustrated when considering the discussions around the question whether sustainability learning should be mandatory. Earlier exchanges vaguely mentioned this aspect:

S5 [00:02:23] StP3: I remember the discussion with the students. I think, what's the status between choosing and being aware of some topics. I think it was a lot about, is it mandatory or voluntary. And how far you can find access to certain topics if I may summarize it that way, right?

P9_int: Exactly. So that you as a student can have the choice to be more interested and involved in certain subjects. Um, and that there is a mix between being committed and having to involve yourself.

In the next session, agency becomes more palpable as ideas are put forward with strong conviction:

S6G1 [00:11:04] StP2: And for me, it doesn't have to be an elective. Because sustainability ... yeah, we only can survive if you have sustainability in every study programme and we have to implement it. Yeah, there are people, they don't like it. I know. Especially acceptance is a high point. And even if UNI say, oh no, no, we lose the people who are not interested in sustainability. Yeah, for me, and then ... whatever [so what?]. Yeah, we want the people, we have to, yeah, get the people who are interested in this topic because they are the future. Not, it's, it's / You can't get around it in their workspace. Why don't implement it in the studies? Yeah, for me, it don't have to be an elective. That's, that's what I just wanted to say.

StP3: You're totally right.

Another example shows the strong language with which ideas are formulated now. There is nothing tentative in P3_int's suggestion to integrate efforts in sustainability integration into lecturers' career trajectories:

S6G2 [00:25:55] P3_int: All these efforts that you as a lecturer make are also reflected, for example, in your personnel development and then, for example, when lecturers apply for [promotion] that this is also accounted for as their efforts or something like that.

P8_int: Yeah, why not? Yeah, of course.

This assertiveness contrasts sharply with more tentative and cautious formulations of ideas put forward in previous sessions.

Having identified key turning points through the quantity of discursive ETA evidencing the development of transformative agency and illustrating these with selected excerpts, the next section will now analyse the emergence of transformative agency more closely using the TADS model.

6.4 Step 3: Analysis using TADS

This section presents the analysis of emerging transformative agency using the latest version of the TADS model (Sannino, 2022) illustrated in Figure 6.5 and described in more detail in section 3.4.6. It should be noted that I reframed Phase 4 "Implementation" as "(Planning for) Implementation" due to the fact that the actual realisation of the action plans developed in the course of the SCL was out of scope of the sessions, even though implementation was discussed in later sessions.

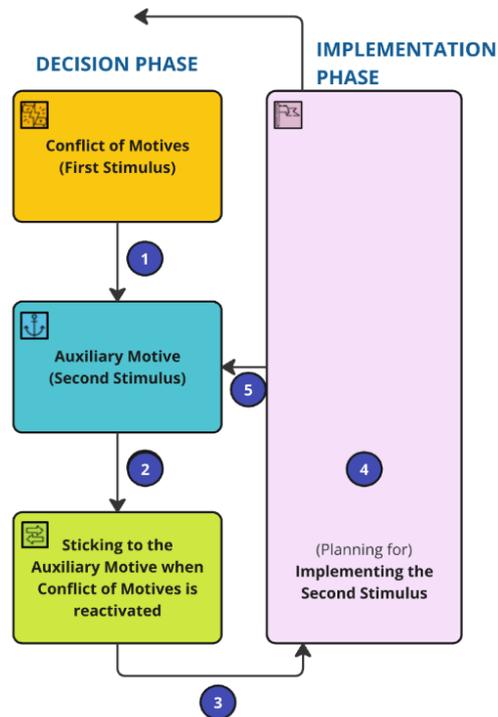


Figure 6.5: TADS model (based on Sannino, 2022)

In order to illustrate the emergence of transformative agency across the change laboratory sessions, I have opted for a visual presentation of the TADS phases using icons inspired by the warping metaphor as described by Sannino (2022). In this metaphor, Sannino employs a nautical theme to explain the TADS process:

We may think of the second stimulus as an anchor. Anchors are commonly understood as stabilising devices to prevent a vessel from moving. However, not all anchors have this function. Beside the heavy-weight anchors, there are also kedge anchors serving the purpose of 'warping,' that is, pulling the anchor once it has settled on the ground, for moving the vessel away from a problem area. (Sannino, 2022)

The kedge anchor, in this context, is a metaphorical tool representing forward-oriented action in problem-solving. Unlike traditional anchors, which stabilize a vessel by holding it in place ("anchoring backward"), the kedge anchor facilitates "warping," a process of pulling the vessel forward to navigate away from trouble. Similarly, in transformative problem-solving, kedge anchors symbolize second stimuli that help

generate new meanings and solutions through experimentation and interaction. This approach combines forward momentum with an acknowledgment of past influences, enabling controlled progression out of problematic situations. Table 6.2 provides an overview of the icons used and an explanation of their meaning.

<i>Icon</i>	<i>TADS phases and meaning</i>	<i>Warping metaphor</i>
	Phase 1 - Conflict of Motives (First Stimulus): Participants are torn between conflicting motives, representing a challenge or dilemma that triggers transformative agency.	Participants find themselves on a ship in turbulent waters, where conflicts of motives disturb the stability and safety of the ship. Action has to be taken to avoid calamity.
	Phase 2 - Uptake of an auxiliary motive (Second Stimulus): Denotes the introduction or uptake of a secondary stimulus, e.g. a tool, concept, or external factor, that helps navigate or address the conflict of motives.	Anchoring is a strategy used to maneuver the ship to safe grounds. In TADS, the focus is on the use of second stimuli for “forward anchoring”, i.e. the use of forward-oriented kedge anchors, which are designed to stabilize the ship. In this phase, second stimuli are devised or emerge through sense-making, social interaction and the elaboration of new meaning.
	Phase 3 - Sticking to the second stimulus in critical situations which reactivate the conflict of motives: Instances where participants persist with the auxiliary motive, despite opposition or further challenges that reactivate the conflict of motives.	Forward anchoring in turbulent waters is a hazardous activity. The crew throws kedge anchors in an attempt to stabilize the ship, but not all anchors find suitable ground where they can be hooked. Only those that “stick” can be used by the crew to navigate the vessel onto a safe course.
	Phase 4 - Implementing the second stimulus: Participants take action to actualize their transformative potential.	The kedge anchor is securely hooked to the ground, and the crew can now maneuver the vessel, pulling it away from dangerous waters into safe waters.

Table 6.2: Use of Icons for TADS Phases (<https://www.flaticon.com/free-icons/>)

6.4.1 Quantitative TADS analysis

In the first stage of TADS analysis, the session transcripts were coded deductively based on the four phases of the TADS model in order to quantitatively represent where the phases emerge throughout the SCL. Table 6.3 shows the quantitative result of this coding process, displaying a predominance of expressions relating to phase 2, especially in sessions 4 and 5, followed by phase 1 expressions, especially in sessions 1-3. Phase 3 and phase 4 expressions are missing entirely up to session 6, where they abound.

	Icon	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Total
Phase 1		17	22	31	7	1	2	0	80
Phase 2		10	14	15	34	52	9	0	134
Phase 3		0	0	0	0	0	14	0	14
Phase 4		0	0	0	0	0	28	0	28

Table 6.3: Number of occurrences of TADS phases across SCL sessions

6.4.2 Quantitative TADS analysis combined with thematic analysis

Following on from this first round of coding and a review of the results, I decided to expand on the analytical methods of previous studies in the next step. Rather than singling out and analysing prominent episodes at micro-level, for example a discussion in a group or in the plenary, to trace and demonstrate the emergence of transformative agency, I made the decision to first conduct an inductive thematic analysis of the dataset in order to elicit core themes discussed by the participants throughout the SCL related to the overarching first stimulus “How can we accelerate sustainability integration at UNI”. Themes were developed from the entire collated data material, including session transcripts, summaries, and the work outputs documented on the

Miro board. Table 6.4 lists the core themes identified through the inductive thematic analysis. They present topics that were brought up and discussed by participants in a manner that was intensive (it took up significant discussion space in one or more sessions) and/or sustained (it was a topic of discussion throughout most of the sessions) and were crafted by subsuming codes into seven major themes.

Identifying overlaps of major themes and TADS phases in the next step using the Co-occurring Codes function in ATLAS.ti allowed me to represent how transformative agency discursively developed within a thematic stream over the course of the SCL. I deemed this approach necessary for two related reasons: First, due to the (for a CL) rather large and diverse group of participants, most of the discussions occurred in separate breakout groups, which were newly mixed from session to session. This resulted in many varied debates and the development of a proliferation of ideas. Similar topics were raised repeatedly in different settings and contexts, with a variety of first and second stimuli identified especially in sessions 1 to 4 (see Table 6.1), whereas the emergence of TADS phase 3 occurred only after session 5, when the task to determine one idea based on the feasibility and impact assessment led to more concrete discussions about the future model of activity, and challenges raised regarding the actual implementation reactivated the conflict of motives. Second, examining the thematic orientation of TADS phases in this way allowed me to identify clusters of agency development within thematic streams, thus adding a dimension to the mere number of TADS phases across session as presented in Table 6.3.

The three-dimensional depiction (themes, sessions, TADS phases) provides a richer picture, bridging quantitative and qualitative representations of instances that indicate the emergence of transformative agency. By using the icons described in Table 6.2, a comprehensive visual picture of emergent transformative agency develops.

Nr	Core Themes	Description
1	Collaboration, interdisciplinarity and overcoming silos	Highlights the need to overcome structural, institutional, and disciplinary boundaries, fostering collaboration within the university (including students) and beyond (with schools, businesses, governments, and communities) to accelerate sustainable development.
2	Communication and Information	Raises aspects related to communication and information (or lack thereof) about sustainability activities, strategies and opportunities in the participants' context.
3	Incentives and resources for students and staff	Addresses issues regarding stakeholder engagement, (lack of) incentives and resources to pursue activities accelerating sustainability, and existing and potential university rules and policies around this.
4	Institutional values and clear object relating to sustainability	Relates to discussions about the values at play in the integration of sustainability at the university, including the lack of clearly articulated and communicated overall purpose/motive and prevailing mindsets and attitudes.
5	Sustainability Learning & Curriculum	Relates to aspects specifically addressing sustainability integration in the university's curricular and extracurricular learning offers, including existing learning opportunities such as electives, badges, and projects as well as potential opportunities such as capstone projects and policies for a minimum of mandatory courses on sustainability topics.
6	Student engagement & empowerment	Relates to the importance of student empowerment and participation in sustainability integration, including discussions about (lack of) existing engagement opportunities and initiatives.
7	Current prevalent systems	Relates to existing systemic aspects impacting on sustainability in general (e.g. capitalism), and on the integration of sustainability in higher education (academic system, accreditation), including different levels of institutional commitment (bottom-up vs top-down strategy, action, and support).

Table 6.4: Core themes identified through inductive analysis

Table 6.5 displays the combined results of the qualitative and quantitative data analysis across the entire SCL. From the overview, a number of observations can be made.

As already apparent in the quantitative analysis, there is a strong presence of phase 1 (Conflict of Motives) expressions in the first three sessions across all themes, with the most conflicts of motives apparent in the thematic stream “Institutional values & goals”, followed by “Current prevalent systems” and “Collaboration, interdisciplinarity and overcoming silos”. Overall, the prevalence of phase 1 in the early sessions reflects the overall design and development of tasks based on the cycle of expansive learning, which had the intention of surfacing and defining contradictions and tensions in the activity system. An important researcher-provided second stimulus in this process was an Activity System template, which was instrumental in triggering rich discussions across all system elements.

The high number of conflicts of motive evident in “Current prevalent systems” and low quantity of other TADS phases points to the fact that this theme was raised as a significant problem, but was dropped after session 3 with no solution being identified. A similar development can be observed in the theme “Institutional values & goals”, where there is little development past phase 1.

Phase 2 (Uptake of an auxiliary motive) is present in early sessions, increasing significantly in session 4 and especially session 5, most prominently in the thematic cluster “Sustainability Learning & Curriculum”, followed by “Communication and Information”, “Resources and Incentives”, and “Collaboration, Interdisciplinarity, and overcoming Silos.” This trend reflects the design intent, where from session 4 onwards, tasks were geared towards modelling new solutions, which triggered the search for and uptake of auxiliary motives. The high number of phase 2 expressions illustrates the high number of ideas developed throughout the SCL and the creativity and imagination of participants.

An interesting observation in the TADS process is the lack of phase 3 (Sticking to the second stimulus) expressions, which in significant numbers are confined

to only two themes: “Sustainability Learning & Curriculum” and “Communication, interdisciplinarity & overcoming silos”. The emergence of the majority of all but one phase 3 expressions coincides with TP 3 identified above, i.e. the moment in the SCL when participants were tasked with formulating concrete action plans for their chosen idea. Since all groups chose the same idea, “Sustainability Learning & Curriculum”, the discussion was now focused on this thematic cluster, with the strategies developed connecting to “Communication, interdisciplinarity & overcoming silos” and “Student engagement & empowerment” and “Incentives and resources”, all related to curricular integration of sustainability. The lack of phase 3 in other thematic streams reflects this narrowed focus in the design of the SCL, which was in the examination stage at this point.

Finally, phase 4 (implementation), did not occur during the 7 sessions of the SCL. Due to the type of intervention and the ideas developed, real-life implementation was not in the direct remit of participants. However, as participants engaged in specific action planning for their selected second stimuli, many concrete implementation aspects were taken into consideration during session 6, and phase 4 has therefore been included as “Planning for implementation”. Based on the action plans developed by participants, several initiatives are currently underway as a direct result of the inspiration from the SCL.

6.4.3 Qualitative TADS analysis

As demonstrated in section 6.4.1, the analysis reveals that phases 1 and 2 of the TADS model emerged dynamically and broadly across sessions 1-5. In terms of Sannino’s warping metaphor, the discussions in these sessions indicate participants’ attempts to determine where the rips and currents are in the stormy waters they find themselves in, and devising and throwing out warping anchors as they seek safe passage. Having come up with many different ideas but no clear priority towards the end of the SCL, participants were tasked with selecting

one of their many ideas, using an "impact and feasibility" assessment, and to plan for its implementation by developing an action plan. Returning to our metaphor, the participants were now asked to select a single anchor they considered as being the best to help them manoeuvre the vessel, and to test if it sticks as it is challenged by currents and rips. From several options, all three groups chose to focus on one idea: strengthening student sustainability learning in the curriculum, making this the sole theme for action planning. This decision is an indicator of the emergence of transformative agency amidst conflicting motives in pursuing sustainability integration at the university as participants select what they deem individually and collectively as the most impactful and feasible strategy to achieve the overall object, sustainability integration at UNI.

As evident in Table 6.5, TADS phases 3 and 4 are decidedly more manifest within this theme than in others, some of which are not pursued beyond Phase 2, therefore the auxiliary motives in those areas can be considered as unsuccessful second stimuli for this SCL (notwithstanding their relevance as important input for strategies and initiatives beyond the SCL). The remainder of this chapter will therefore focus on the thematic stream "Sustainability Learning & Curriculum" with the aim to trace TADS phases across the SCL by presenting a qualitative analysis of the discourse and participant decisions from defining conflicts of motive to planning for implementation.

I will first report the findings of the analysis of conflicting motives and auxiliary stimuli relevant to the thematic stream "Sustainability Learning & Curriculum" in sessions 1-5 in order to provide qualitative insight into key issues discussed in these stages of the cycle of expansive learning. These are a small selection of the many aspects raised during the SCL and were selected because they build the foundation for the ensuing focus on the discussions in session 6, where TADS phases 3 and 4 are more evident.

6.4.3.1 TADS Phase 1 – Conflict of Motives

This section provides an analysis of the key conflicting motives within the thematic stream “Sustainability Learning & Curricula” identified in the earlier stages of the SCL which stimulated the generation of those auxiliary motives that were selected as successful second stimuli (“warping anchors”) in session 6. Several conflicts of motives were identified by participants, including

- being trapped in a system built on unsustainable values and models
- the absence of a common, university wide goal, strategy and policy, and
- a lack of resources, time and incentives for sustainability learning for students and staff.

We will consider each of these conflicts of motives in turn.

One of the first tasks in session 1 involved prioritising the responsibilities universities have with regards to promoting sustainable development, with participants strongly emphasizing the importance of questioning existing economic and societal systems and underlying values and assumptions:

S1G1 [00:05:11] P2_int: We should give the opportunity also to question underlying assumptions. So do we always have to have, for example, economic growth? How do we measure well-being? What is well-being? Or can we also talk about degrowth? Or why do we always have to, improve, for example? What is with our economic system? Can we question capitalism, for example, at UNI? And how can we also just let students try to question these assumptions and leave a comfortable knowledge behind and say, well, it apparently doesn't work this way. What, how can we change things?

It is obvious that existing values, norms and practices are resisting the integration of sustainability. The discussion soon turns to expressing a conflict of motives affecting not only the subject matter of teaching, but more fundamental aspects:

S1G1 [00:07:05] P1_ext: I think it is more fundamental than just, uh, having lectures with a different way of didactics, so showing you either a neoclassical economics lecture or introducing the Doughnut model, whatever. I think it's more fundamental than this. [...] I mean, UNI is built on the idea that performance matters, and high performance matters, and it's built on the idea of excellence. It's built on the idea that you need incentives for people to do something. [...] Can we challenge this and can we challenge this in such a fundamental way that we build an organization that works more freely or is able to challenge this kind of underlying assumptions?

The issues here are systemic, and transformation would require changes across the entire organisation, including the underlying values and resulting merit system.

P5_int in group 4 used the metaphor of a hamster wheel to describe the paralysing situation:

S1G4 [00:04:30] P5_int: Especially in the UNI, of course, super interesting that you really look at how far you can actually, so to speak, break out of this, from this general economic hamster wheel, if you may say so.

In session 2, the discussion was deepened, with participants questioning the focus on performance that neglects alternative criteria of success such as environmental or social engagement and impact.

S2G2 [00:02:53] P1_ext: It came up almost in three out of four groups. It derives from a dissatisfaction of people with the current economic model and the current economic model is a growth model where we believe that growth is paramount, is a model of excellence where we believe that the excellent will make good careers, where we put less emphasis on values, but more on performance. Uh, it's a model of / a capitalist model. So, I think that the dissatisfaction with these kinds of logics drives this question. And so, I mean, this is, you know ... UNI of course runs on a system of incentives, these incentives are typically monetary incentives, typically. So I think this is what this group wants us to, to question and, and think about issues, think about activities that are already underway that do not do this or that question these models of excellence, performance, growth, et cetera.

S2G2 [01:18:42] P8_int: We're sticking to the conventional assumptions and not, you know, thinking beyond that. [...] It basically runs through more or less, sadly speaking, all through the academia as well as the institutions [...] it's literally cast in stone. And, and, you know, you don't want to change it.

In summary, a sense of being trapped in a paralysing higher education system informed by broader capitalist values and success factors indicates a strong conflict of motives for the SCL participants pursuing the aim of accelerating sustainable development.

The second conflict of motives relates to the absence of a clear university strategy and goal for sustainability integration.

S4G2 [00:10:47] P4_int: Do we actually have an UNI, sustainability strategy or something like that? Does that exist? I know that we have the word sustainability in our mission, but other than that...

Despite several positive reports of how study programmes are already integrating sustainability aspects in the curriculum, there is an overall sense that these activities are driven bottom-up, and that there is no overall strategy or direction for curricular integration. Every study programme is doing what seems right to them, with a lack of collaboration across the university. This is clearly expressed by P6_int, who argues that having a common system or strategy, in this case for curricular SDG integration, would be useful:

S3G2 [00:10:50] P6_int: It's really difficult to implement this in the curriculum [...] because we always end up in long discussions that have nothing directly to do with the topic, but are more about our own sensitivities. It might be about plastic bottles or not and things like that, instead of sitting down and saying okay, now we have a system in which we say the following SDGs are covered in the curriculum in every course.

Even where efforts have been undertaken to streamline integration, such as through an SDG mapping project or cross-programme teaching, the absence of

clear guidelines, a lack of lecturers' expertise in sustainability, and already overcrowded curricula are identified as significant issues, as expressed in the following quote:

S3G2 [00:11:46] P2_int: That we do say we want to implement it, but it is still challenging, and there is also this feeling of, 'Oh God, then I won't have any space left for my other or core content if I now also have to somehow incorporate sustainability.' At least, that is a message I often get from instructors.

In addition, a deficit of knowledge about what is happening in other areas in terms of curricular focus and organisational processes leaves participants with the feeling that they are trapped in a situation where they personally place high value on their university accelerating sustainable development, but the university does not:

S3G1 [00:06:55] P3_int: So why do we want to integrate sustainability at UNI?

P1_ext: I think at least there's two things. The one thing is it's an opportunity, it's seen as an opportunity. At least I think the executive education included this because it's an opportunity. [...] And on the other hand, it seems to me that it is not seen as an opportunity, but it is seen as a marketing tool.

P3_int: Yeah. So to be inherently more sustainable is, I wonder whether, where that is on the priority list.

The dichotomy becoming apparent here exposes a disconnect between institutional-level sustainability commitments (external image) and internal practices (curricular and operational processes).

A third conflict of motives relating to sustainability learning and curriculum is expressed by the students when they relay barriers to their engagement in sustainability learning. Even though there are some curricular offers, these are not consistently available in all study programs, often offered as electives, and depend on lecturer engagement, reducing inclusivity and impact.

S3Main [00:54:17] P6_int: We have a sustainability elective, but it's not accessible to all students, depending on their programmes and lecturers' interest.

Some participants (but not all) are aware of the university's offer of extracurricular sustainability courses, but convey several difficulties with these:

S2G4 [00:09:19] StP4: In the badges "Sustainable Development" and "Responsible Management", there are different courses and workshops with external lectures to topics, which are related to, um, sustainable development or responsible management and sustainability and I thought about this. [...] I think more students should have the opportunity to participate because I think you do the [extracurricular] badge programme if you are very interested in a topic or you have the time to do this. And maybe that could be included in the curricular or the normal lessons courses we have.

S2G4 [00:12:34] P2_ext: She was saying that those badges should be integrated in the curriculum. Because many students do not know about those badges and I fully agree with her because I noticed it when I speak to my students, they have no idea, most of them, about the badges.

In addition to the lack of information about these opportunities, especially working students face challenges completing the extracurricular programmes due to the added workload, which clashes with their regular studies and busy schedules. Costs are also mentioned as a barrier. This conflict of motives shows students feeling stuck in a situation where they would like to learn more about sustainability, but they are not aware of all the options on the one hand and have little time to invest in available extracurricular offerings.

A related question is whether sustainability courses should be voluntary or mandatory for students, reflecting a conflict between fostering intrinsic motivation and ensuring widespread student engagement. This conflict plays out in several dimensions, as students also express frustration about a lack of agency granted to them by the institution:

S3G3 [00:16:41] StP2: I always read from the UNI that they are trying to shape us. And I don't know if you have the same feeling. It's like, I'm not a have a voice in it, how I want to be shaped or something like this. It's ... yeah

StP1: You are right. Yes, you don't have a voice in this.

Overall, the conflicts of motives surfacing here, notably the tension between established educational and wider systems versus the need to question assumptions and underlying values in the transition to sustainable development, the perceived lack of top-down support and strategic direction for sustainability integration, and the barriers constraining wider student engagement in sustainability learning, including lack of information, incentives, resources, and empowerment, create a sense of paralysis that also affects how ongoing initiatives are being viewed. This generates individual and collective dilemmas impacting participants' own motivations and everyday activities in their roles.

As participants move from the questioning and analysis stage to the modelling stage in the cycle of expansive learning, the identification and analysis of these conflicts is a key step in the development of transformative agency. In order to support the progression to the next stage - modelling new solutions - second stimuli in the form of a reverse brainstorming activity and the Activity System template were introduced to activate participants' development of auxiliary motives in TADS phase 2, which are described in the following section.

6.4.3.2 TADS Phase 2 – Search for and uptake of auxiliary motives

Building on the questioning and historical and actual-empirical analysis stages, which resulted in a rich set of contradictions, in session 4 the group developed many ideas, mapped onto Activity System templates, that could begin to address the conflicts of motives. Task 3.1, a “reverse brainstorming” activity identifying things that would make the issues even worse, inspired animated group discussions, where participants were explicitly asked to develop ideas that might

resolve the contradictions, counteracting those that would make them worse. This is a Turning Point where participants have sufficiently analysed the problematic situation to be able to chart a path forward, even though ideas generated were still at a high level, without much detail. The turn from conflict of motives to the uptake of auxiliary motives is expressed poignantly in this contribution by P5_int, who first defines a conflict of motives as follows:

S3G2 [00:12:40] P5_int: That's actually quite interesting that [...] we as degree programmes are basically doing all of this and are already doing everything and really thinking ahead, so to speak, I think in part, and at UNI level your initial question would be: what is the object, so to speak, now at UNI level, because we don't actually find anything there in principle, if you ask, and the little object that you might find is basically all marketing speak, to put it a bit casually, yes, otherwise there is nothing substantial, the substantial comes from the bottom.

P5_int continues with a suggestion to start addressing this issue:

[00:13:05] P5_int: I find that a fascinating insight, or that this is actually the case and the question is basically how we can use this in principle for our goals [...], so the consideration, so to speak, to go into the individual study programmes now and pick up what the degree programmes are doing there. I think I personally would probably be very surprised, there's much, much more to it than just the process that I'm aware of.

We will now consider in more detail the auxiliary motives developed during this stage to address the conflicts of motives identified in the previous section.

Regarding the conflict of motives between established systems and the need to question prevailing assumptions and values, participants proposed curricular innovations that would empower and prepare students for sustainable action. Examples include collaboration with companies and other external stakeholders in sustainability teaching, including case studies and community projects, which would bring real life issues into the classroom and have the potential to challenge existing unsustainable theories and models by tackling authentic challenges.

Further ideas encompassed promoting interdisciplinary collaboration across departments to create holistic approaches to sustainability education and notably, a more active role for students in shaping the curriculum. This includes systematically involving students in curriculum design:

[00:18:27] P3_int: What if students were involved more when we design our study programs? You know, like which courses go into the curriculum, what topics to focus on,

StP6: I like that!

P3_int: Maybe, like maybe it would, that's even mandatory that at least five students have to be involved in the process, like we could even make that a standard procedure.

In another group, P1_int goes further and proposes that students co-create lessons with lecturers:

[00:15:25] P1_int: I don't know if an idea would be that the teaching is, um, more on a level where the discussion about sustainability is important or not only sustainability, but the students view at all, and that the students' views have an impact on how the lecturers prepare their lessons, you know what I mean, that that is not that the lectures think, okay, today we're going to do that and then we do that and that so that it's, it's more like in a cooperating together in creating the lectures.

The underlying auxiliary motive, collaboratively created curricular innovation, could address the conflict of motives caused by seemingly paralysing systems, with a view to creating learning opportunities and practices by a coalition that includes not only lecturers but also students and external stakeholders such as businesses that can work together to question and break out of these.

Reacting to the second conflict of motives, the lack of institutional strategy and top-down support and commitment, participants generate the auxiliary motive of a common narrative around the meaning of and commitment to sustainability at UNI, both in terms of definition and strategic direction. Ideas encompass the

development of an UNI wide sustainability strategy and implementation plan, including sustainability in the induction for new staff and external lecturers, increased communication to all stakeholders about activities that are happening, and the integration of sustainability in UNI signature events and creation of new types of events. What is also mentioned is the need for incentives, with ideas such as teaching credits for engagement in sustainability activities put forward.

S5G2 [00:02:29] P4_int: And I think also for the lecturers, like that also when we are part of the PRME group or whatever that we get accredited for that as well, because at the moment it's sort of the add-on activity for everybody, both for the student side and for the lecturers. And I think it would be important to include that in our standard services or whatever we offer.

From the perspective of curricular integration, institutional commitment would mean making sustainability a core element of student learning by introducing a compulsory part each student needs to complete on the topic of sustainability (either in the form of a minimum number of credit points or a fixed semester in the program) and making the integration of the SDGs compulsory across all curricula.

Regarding the third conflict of motives, barriers to sustainability learning and related lack of student engagement, participants develop a host of ideas to encourage students' engagement with sustainability courses and activities. Again, also from this point of view, integrating sustainability learning in the curriculum and awarding credit points or certificates to students for participating in extracurricular sustainability events was highlighted:

S5G2 [00:00:56] StP4: I can start with the post-it "Students have a minimum ECTS they need to do on the topic of sustainability." We thought about that sustainability should be more included into the curricula and it should not be an add-on because it's very, yeah, difficult to combine additional courses with work and the usual courses you have to do for your bachelor or your master degree. And so we thought about this. We also thought about a certificate for joining sustainability week. Maybe

this would be good to motivate students to join the sustainability week and also to that, they have a profit from it. So it's not only nice to be there. So they can, yeah, they can profit a bit from this.

Further ideas included establishing competitions and a sustainability award for students, adding specific sustainability foci for existing awards, and providing different options to choose sustainability courses.

This section demonstrates a burst of creativity and energy evident in the outcomes of sessions 4 and 5 as participants started developing ideas for strategies that could begin to address the conflicts of motives across most of the thematic streams. However, it was impossible to pursue all of these ideas further within the scope of the SCL, and a decision had to be made where the focus of the further work should be. The introduction a secondary stimulus in the form of the “Feasibility & Impact Tool” was a designed intervention aimed at directing participants’ focus towards auxiliary motives that were both impactful and feasible. As evident in Table 6.5, TADS phases after this decision are almost exclusively related to the selected thematic stream “Sustainability learning & curriculum”. We will now consider the unfolding process of transformative agency through double stimulation from this point onward, as modelling and examining solutions to conflicts of motives become more concrete and participants engage in negotiations not only about the “what” but also about the “how” of realising auxiliary motives.

6.4.3.3 TADS Phases 3 and 4 – Sticking to auxiliary motives and planning for implementation

This section presents the findings of the TADS analysis of group discussions in session 6, where modelling turned to examining and planning for implementation. Sections 6.4.3.1 and 6.4.3.2 have discussed the conflicts of motives and auxiliary stimuli developed throughout the SCL sessions up to here, with a focus on those

related to the key theme “Sustainability Learning & Curriculum”. We will now see these ideas examined and debated in more detail as groups consisting of students, SDG Ambassadors, and lecturers / other staff were tasked with developing action plans for the implementation of one chosen idea from those generated in previous sessions. The findings from these group discussions are presented in the following for each group, using a visual representation of the TADS model to capture key points for each phase, followed by a short commentary with transcript excerpts to highlight the authentic voice of participants at this significant working session of the SCL.

Group 1 consisted of students only, to enable them to freely exert their own agency in the selection of an idea and development of an action plan. They decided to focus on the conflict of motives relating to the dichotomy between students choosing to engage in sustainability learning and a mandatory integration of sustainability in the curriculum. The TADS phases identified during their discussion are illustrated in Figure 6.6.

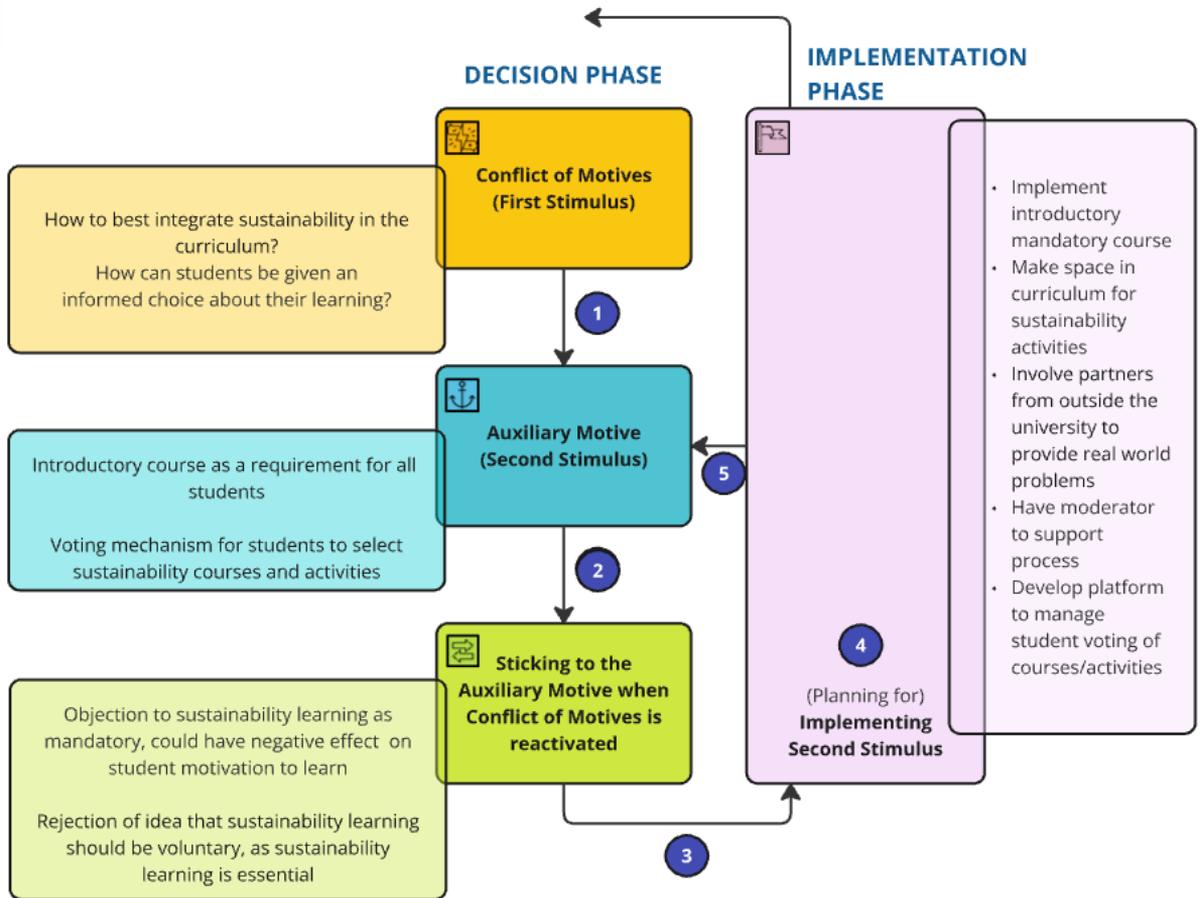


Figure 6.6: TADS in Session 6 Group 1 (Students)

The discussion starts with a debate about how to communicate opportunities for students to engage in sustainability activities, and whether there are sufficient activities for students:

[S6G1] StP3: Definitely as far as I understood, there are not that many options for students to get active. In my opinion, it's like, it's like very important, but before, um, we spread knowledge about the courses or activities, we need activities for students. Right? Or am I wrong?

The focus soon turns to alleviating the tension between competing demands and sustainability engagement.

StP3: Uh, that there is like a self organized group, which is integrated in the study program. Like, there is time and maybe there are ECTS, which do come to that and,

um, but it's, I don't know, maybe some kind of voluntary, but it doesn't make sense if there are people participating who don't really want to do it or which aren't that involved or so. I'm not sure. But, um, that there is time from the study programme where people can go through the whole process, like, um, where, uh, yeah, where is a "Begleitung" (accompaniment) from lectures or so, where the students also get confronted with the whole progress and with the result of really being active and doing something in the end. But understanding what it is about and what it needs and what it costs or whatever. And I think that could be combined to this, yeah, as a whole process, which can also be needed in the future and, um, you know, at work also.

An auxiliary motive emerging here is enabling motivated students to engage in sustainability learning by offering institutional structures that support this engagement such as the integration of activities into the curriculum or awarding of credit points, a mentor who supports students in this process, and creating substantial, holistic and authentic learning experiences. StP2 adds the need for collaboration across departments, to encourage interdisciplinarity and create opportunities to work with other students:

S6G1 [00:10:28] StP2: Yeah, for me, but this is exactly the point for me. We have to find a place in every study because I also think, yeah, we can do the sustainability again in the study programme you already have with the people you already know. But I think the more [better] outcome you would have if you do it over the departments and together with other sciences, and then you have to make space in every study to come to this point.

However, the voluntary nature of StP3' idea is resisted by StP2, who makes a strong argument for the need to include sustainability learning for every student:

S6G1 [00:11:04] StP2: And for me, it doesn't have to be an elective. Because sustainability, we only can survive if you have sustainability in every study programme and we have to implement it. Yeah, there are people, they don't like it. I know. Especially acceptance is a high point. And even if UNI say, oh no, no, we lose the people who are not interested in sustainability. Yeah, for me, and then whatever. Yeah, we want the people, we have to, yeah, get the people who are interested in

this topic because they are the future. Not, it's, it's / You can't get around it in their workspace. Why don't implement it in the studies? Yeah, for me, it don't have to be an elective. That's, that's what I just wanted to say.

StP3: You're totally right.

This leads to the generation of a second auxiliary motive, a mandatory, introductory course on sustainability including a test that has to be completed before students can move on in their studies. This is met with resistance. StP3 argues:

S6G1 [00:13:19] StP3: Yeah, but couldn't it also then be like, you have to do it like really good because otherwise it could be "negativ behaftet" (transl. have a negative connotation)?

StP5: Yeah. But it doesn't have to be that it's really hard or that you have to do much to get through the course, maybe just a little multiple choice test at the end, and it's just about the input and what you can get from it. Not that you could fail it in any way [...].

StP3: Okay. I think, yeah, that's good but I think, like ... correct me, but I think we thought about activities for students to get more active, like at the UNI and I think this test might not be to get students more active. Like it, it's a very good point, I think but it wouldn't ... maybe it's a point to start to get a, um, a whole idea of it and that, um, yeah, this can be the base for more activities also.

They agree on "a small little course that you have to finish" as one of their implementation ideas, and the discussion turns to the establishment of a voting mechanism to provide students with a choice in the types of sustainability activities they want to engage:

StP3: I could imagine doing something like a voting where you spread ideas of courses or opportunities where people can get active, and that people can vote for three of those topics or maybe only two.

Planning for action takes on a detailed focus now, as students debate how this could be implemented, including identifying the various stakeholders needing to be involved, a platform for sharing information and voting, creating space in the curricula, and appointing a moderator or even information office to support the process. The participants also discuss the type of learning in these courses, describing a problem-based approach:

S6G1 [00:24:40] StP3: because also, um, if you think about the options which are given, you also have to think about the time which is needed to solve those problems, or you also have to think about how concrete do the students have to think about it? Like, do they have to think about it from the bottom? Do they have to think about where to start or do they already know where to start? Do they have to debate about options, how to solve this problem, this concrete problem or is it just about getting active and doing something in the process and which, yeah... I dunno. I think it could be quite good if students also have to think about what kind of options there are to solve this problem and what it means to do it, what it also needs.

StP2 also proposes engaging external partners to present real-world problems, reflecting a practical approach to embedding sustainability into student activities.

In summary, the outcome of their group discussion involves an action plan that combines a mandatory, introductory course with a comprehensive programme of sustainability related activities and courses where students can choose learning opportunities based on their interests by voting for them, with support from the university. The types of learning activities proposed are problem based and integrated with real world sustainability challenges. Through debate and negotiation, participants managed to develop a model that includes mandatory and elective elements and provides choice and ownership of their learning to the students whilst providing for institutional support.

Group 2 consisted of internal and external lecturers and staff. They broached the issue of how institutional acceleration of sustainability learning and curricular integration can work in the absence of a clear strategy, mandate and directive

from university leadership for this integration. Figure 6.7 presents the TADS phases identified in their discussion.

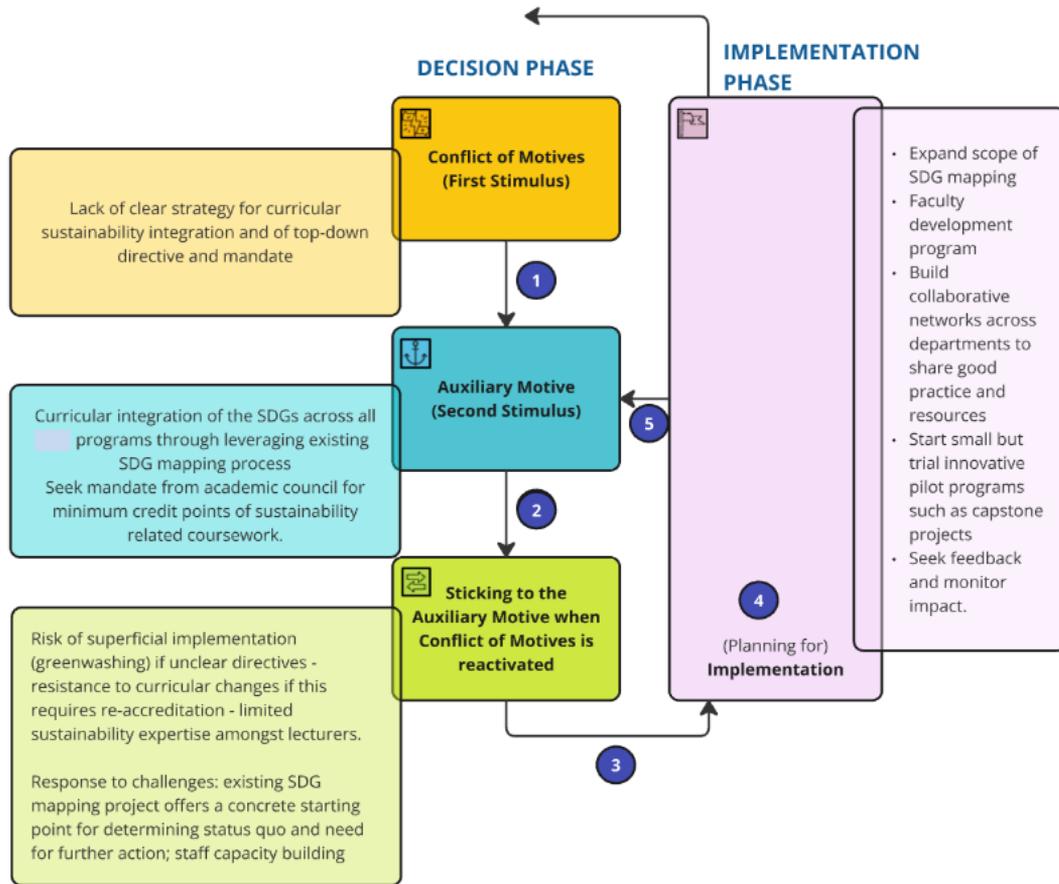


Figure 6.7: TADS in Session 6 Group 2 (Staff)

In a discussion about implementing an entire “sustainability semester” as proposed in a previous session, participants debate who would be in charge of making such as decision and whether this would be met with institutional resistance:

S6G2 [00:06:59] P3_int: So, So the academic council could give out a directive that all study programmes in the next three years have to accommodate four, five or six ECTS in their curriculum.

P8_int: Yeah, within, I mean, whatever, the number of ECTS will be decided by, you know, the academic council, we just said five or six. Whatever is our suggestion. So, but at least two courses would make sense. What do you think, P5_int?

P5_int: I'm not quite sure if it's ... if the organizational challenge is too high because if you need to re-accredit the program, that's quite a high... You won't get it through otherwise, you won't have it in any programme if it doesn't come top down.

P8_int: You know, so, but, so what would you, if you have this as an extracurricular option, nobody's doing it.

P3_int: And that's also like what the students in the change lab said, it's always something we do on top of the traditional course load.

P8_int: So if it is part of the institution, it has to come from top down.

The conflict of motives here is the lack of a clear mandate for sustainability integration, combined with concerns about administrative burdens due to accreditation requirements. Bottom-up activities are underway but are at risk of a piecemeal approach with less impact, and there is no top-down directive and strategy participants are aware of. This tension between making sustainability a significant focus in curriculum and risking failure due to excessive administrative requirements leads to a discussion about incorporating sustainability in a more distributed way across programs. A further challenge is raised by P3_int:

S6G2 [00:09:01] P3_int: I'm just afraid that what might happen is some sort of greenwashing of courses, that now everyone just comes up with one learning goal that's related to sustainability, that they include just to accommodate that new rule.

An auxiliary motive is generated in the form of curricular integration of the SDGs across all UNI programmes through leveraging the existing SDG mapping process that can provide information about gaps and areas needing further integration:

S6G2 [00:11:01] P8_int: So then let's start saying, yeah, then let's start saying is basically to find out who's doing what again, that could be the first step in every program. And, and to just start off with is to implement it in every, in those programmes where it's not being offered in, in the courses, uh, in any of the courses of their choice. And, and, um, next step would be, if that's not happening, next step would be then having it as a subject or two or whatever included from top down.

[00:11:39] P3_int: I am wondering because there's the plan with the SDG mapping, right? All the courses, right? So I feel like that's that also targets the same idea to make it visible what is already happening in courses.

P8_int: I guess so.

[...]

[00:13:24] P3_int: So, how could we build on that?

P3_int: For the first step, we make visible what is happening in existing courses.

P8_int: The mapping will tell us what is being done already. Right? And then based on the mapping, we get to know what is missing, what can be added.

P3_int: So kind of identifying white spots?

P8_int: Right, where the gaps are. Yeah, where the gaps are and white spots and gaps are.

The ensuing discussion about the existing SDG mapping process reveals that participants are not fully aware of the scope and details of this activity, but they still agree on leveraging this process to determine the status quo. At this point, however, further challenges are raised that reactivate the conflict of motives:

S6G2 [00:16:52] P5_int: My question would be, what does it actually mean? What does it actually mean if some programme has some kind of mapping of SDGs to their classes or to their lectures or whatever? Because you can name it. It's easy to say, well, it's SDG 1, 3 and 7. But the important point is what actually happens in class. And, um, I'm not quite sure if this SDG mapping project looks that deeply. So this could be a task, um, which we could add in addition.

P8_int: What I also feel, maybe I'm digressing a bit, but I also feel, I mean, um, uh, that we lecturers when we are interested in it, that we are also given a course in this ourselves.

P8_int relays her own experience when trying to implement sustainability in her teaching, and the challenges of going further than just raising awareness amongst students.

S6G2 [00:18:35] P8_int: I think if I knew more, I could dig definitely more deeper into the whole thing and, you know, and add it even better in my curriculum. This is what I personally feel.

P5_int: If you knew more about what, about sustainability?

P8_int: Oh, different models, sustainability, you know [...]. I don't feel super, super comfortable in this field. So it's not expected also, you get me, I'm not teaching a class on sustainability, but, uh, uh, it's a different approach altogether. It's, I kind of feel, I don't know how you guys do it.

P5_int: But I always try to find examples that are closely connected to these kind of topics, yeah. SDGs is everything, so it's easy to adapt to SDGs, yeah. But nothing, there is no effect in the end, yeah. Other than raising awareness.

This conflict is met with another auxiliary motive, i.e. providing staff training for the integration of sustainability in their teaching:

S6G2 [00:20:28] P3_int: So what offers would help us go deeper, like more staff training?

P8_int: Yeah, I think so, that would definitely help.

P3_int: So, for example, I mean, we have this, this internal staff training programme with different focus areas, but if there were more offers on sustainability.

P8_int: Yeah, I think so, because it should come up at all levels, isn't it?

P3_int: And of course, that includes external lecturers as well, not just internal staff, right?

P5_int: Definitely!

Having found an agreed direction forward, participants now develop concrete action plans for implementing the auxiliary motives. Staff training is discussed in more detail, with P5_int also painting an ideal picture of deep sustainability integration:

S6G2 [00:21:39] P3_int: Okay, so action step: lecturers participate in more staff training on the subject matter of sustainability and then, like, one thing is educating yourself, but then also bringing it back into the classroom. So, how to teach about it.

P8_int: Exactly, how to teach, exactly. [...]

P5_int: It's all about the question of impact in the end, right? What is the impact of your personal action? This question would be addressed in every single case, in every single seminar paper, in every single class. Yeah, but to answer this question, you have to really know how ... you have to know much about your topic. You have to really live in your topic. And you have to teach your student to think in this complexity. Otherwise you will never be able to answer this question about possible or optional impact. So this is a challenge. To teach the teachers to be more complex in their teaching.

CHAT [00:22:19] P2_ext: That would be soooo useful!

Further strategies include ideas on expanding the SDG mapping scope (depth of mapping), building collaborative networks across departments to share good practice and resources, and interdisciplinary and peer teaching, culminating in the idea of introducing interdisciplinary capstone projects working on real life challenges. The active involvement of students is also mentioned.

S6G2 [00:27:51] P3_int: You know, P5_int, I had one more thought for how we could, as lecturers, go deeper in the content, like we have, our students also have rich experiences or expertise just because they study management, they might be technicians. So we could try to learn from our students too. I don't know how yet, but...

Participants also discuss incentives for lecturers, such as consideration of their sustainability efforts in career progression models, and the involvement of the HR department in both staff development and providing incentives.

In this group, plans for implementation are directly articulated in terms of participants' personal actions:

S6G2 [00:27:01] P5_int: I personally could find some contacts and colleagues who would be able and would like to share their classes with me.

[...]

[00:27:21] P3_int: Yeah. I'm thinking in my role as an assistant, I have like, I'm in contact with a lot of lecturers. So, I'm thinking like I could be a contact person to get them to interact. Like I know who is working on what topic, so I could make recommendations. Yeah, like if you're interested in this, get in touch with this person.

In summary, group 2 worked through a number of significant contradictions and produced tangible implementation strategies for sustainability integration, paired with a demonstration of personal agency within their roles as part of this discussion.

Group 3 consisted of the participants who were also SDG Ambassadors, i.e. they represent their department or service area in the SDG Ambassador group and act as communication link and ambassador for sustainability integration in their respective teams. Their discussion includes more references to ongoing activities than in the other groups as they have more awareness of these. An overview of the TADS phases in their discussion is presented in Figure 6.8.

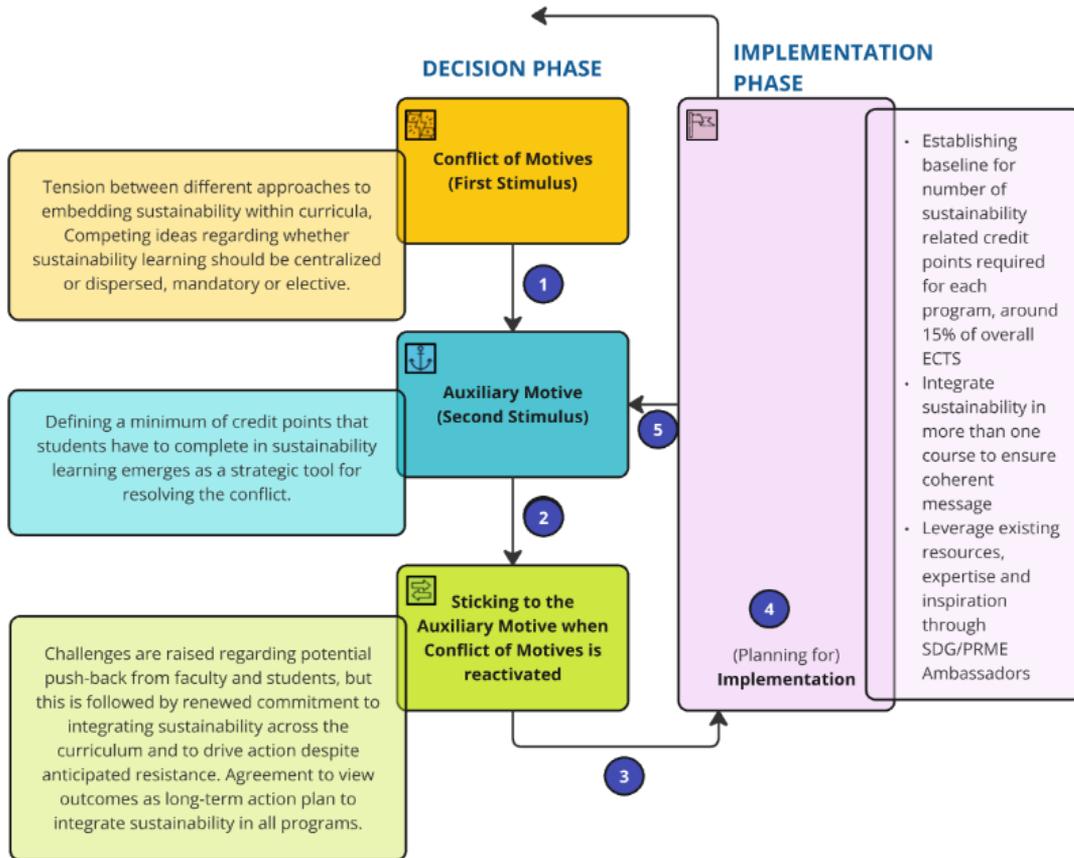


Figure 6.8: TADS in Session 6 Group 3 (SDG Ambassadors)

At the start of this task, participants discuss the level of SDG integration, i.e. is it at the level of the program, dedicated courses, or integrated in other courses, and the conversation quickly turns to the question about whether sustainability learning should be mandatory or if students should have a choice:

S6G3 [00:05:02] P7_int: My idea was based on, uh, selection by students' interests because they have to be interested and motivated. If we put it out there already, for example, in the course description, then their selection is motivated by their interests maybe in the topic.

[00:08:00] P2_int: And one thought in regards to student selection, should we not also strive that every student at UNI hears about sustainability? So why are we only targeting students that elect sustainability courses?

Defining a minimum of credit points students have to complete in sustainability learning emerges as a strategic tool for resolving the conflict, as students would be able to choose the type of learning they engage in but have to complete a minimum number of ECTS:

S6G3 [00:10:52] P4_int: So, like we have electives, I don't know, various electives on sustainability and people have to choose at least, I dunno, one or two of them. Or we have the Badge system or something like that. So they need to have a minimum of ECTS from these courses. So that they can sort of still choose what they're more interested in. Um, but there is a minimum that they have to take. And I think that would be more a long-term process because then you need to somehow need to adapt these.

Challenges are raised regarding potential push-back from faculty and students, also based on previous experience with resistance to the SDG mapping process:

S6G3 [00:15:27] P4_int: I think it's easier with the internal ones. But I already saw when we like did the SDG mapping, there were a lot of people who were like critical. Why do we need to add SDGs to every course now? What sense does it make? And blah, blah, blah. And I was saying, yeah, long term, that's sort of a process. And, uh, but if you have people who are not willing to do that, it's difficult.

[00:15:52] P9_int: Yeah, that's from the side of the offer, I think, but then it's also a similar point from the side of the students, so the client side, because they would also need to be fine with this. And it could also be different for every student, uh, study program. So what do you think would be a good idea to be sure that it works?

However, these reservations are followed by a renewed commitment to integrating sustainability across the curriculum and to drive action despite anticipated resistance:

S6G3 [00:16:26] P2_int: Um, I would say that it also makes sense to integrate it in more than one course, because if you like, if you have like one sustainability course in a curriculum, for example, then it might look to students that it's like a closed off topic that doesn't influence any other courses. And I think especially when we talk about sustainability, we can, like P4_int mentioned, we can talk in HR about it, in accounting. So there are so many aspects that are involved there. And if you like narrow it down to one sustainability course, it's just a bit disjointed, I would say. So I would argue for including it at least a little bit in different courses. It doesn't have to

be every course, but I would say more than one. And not only in electives where I can opt out, I really, really would like every student at UNI to hear about sustainability during their time here, at least, I don't know, five times.

P7_int summarises the vision as follows:

S6G3 [00:17:26] P7_int: So then the context here would be, I mean, the context of this action plan would be a long term action plan where sustainability is a consistent idea, concept, language goal across curriculum. And then your goal is to that every student or every UNI graduate is educated in SDGs.

Despite lengthy discussion, there is still no clear agreement on the type of integration, until another auxiliary motive emerges: a baseline of sustainability integration that needs to be fulfilled by each study program. The question about where this baseline is applied (course level, programme level) is still not resolved, and the conversation returns to electives and extracurricular programmes as possible examples to determine the amount of credit points that should be dedicated to sustainability learning. P9_int however sticks with the auxiliary motive and demands concrete decisions, also proposing explicit criteria for sustainability integration:

S6G3 [00:26:14] P9_int: Um, so. If, um, I would like to go back to, uh, the numbers, I know I can get annoying with getting numbers, but I think it would be good to maybe just, it's, it's not important how high the number is actually, but, um, I was, I was thinking, and this is a good idea with the badge, that do you have like five ECTS, which is, uh, like one sixth of, um, one semester. So, uh, let me calculate. These are like 15%, no, 17% of each year. If we reach this, so one sixth of five ECTS per semester, this would be already massive and, then for sure we need to define how much it would be. It's like ... when is a course sustainable, but I think there would need to be like some targets you have to fulfil, for example, talking about SDGs, having examples in your courses, um, having for us, for example, having, um, processes or explaining processes which are related to, uh, to sustainability which would be three I could think of right now.

The focus now turns to implementation planning, with participants listing concrete targets and mentioning training programmes for staff as tangible actions derived from the auxiliary motive. The group also talks about the proactive role of the

SDG Ambassador group in operationalizing sustainability goals by providing structured support for faculty:

S6G3 [00:27:47] P2_int: And that would also be probably our role in that process, right? Also offering different types of learning or teaching materials or inspiration of how to integrate that.

P7_int: Yes.

P2_int: Our role [00:28:00] as SDG ambassadors.

The group finally agrees on a minimum amount of credit points of 15% in each program, on a set of criteria to determine the type of integration, and on the stakeholders who would need to be involved in implementing this initiative. The target should be achieved within 2 years.

As the group discussion results are reported back in the plenary, ideas were received with much enthusiasm by the entire group. When asked about the potential of realising them, there was much positive feedback in the chat:

S6Main [01:35:26] Researcher: Do you have the feeling this could be something that we can actually put into practice?

[CHAT 13:37] P4_int: Definitely!

[CHAT 13:37] StP1: YES!

[CHAT 13:37] P9_int: i think a mix of all of those ideas would be wonderful 😊

[CHAT 13:37] P2_int: Great ideas!

[CHAT 13:37] P3_int: they complement each other nicely

Participants' agency becomes palpable as they are asked about possible next steps and come up with even more ideas:

S6Main [01:36:29] Researcher: Also, how you would like these ideas that you have developed now maybe be reported, presented, um, taken forward. So what might be possible, um, for where we can do that?

[CHAT 13:39] P3_int: I am thinking about pitching some of our ideas within the department to see whether we can find some allies 😊

[CHAT 13:39] P4_int: Need to be presented to the Monday meeting of representatives of all study programs

[CHAT 13:39] P9_int: report those ideas to PRME and Klimateam (climate team) and to find someone responsible for the idea.

[CHAT 13:39] StP2: maybe present it at also in social media as an addition to all the other ideas

[CHAT 13:39] P3_int: aaa, yes, P4_int!!

[CHAT 13:39] P4_int: And yes, finding allies in your own study group and PRME group

[CHAT 13:40] P2_int: Sharing student voices also within UNI

[CHAT 13:40] StP5: As P3_int said, to execute the idea in one way or another, it is necessary to have allies and partners... so the first step should be to find other people who are supporting the idea 😊

[CHAT 13:40] P3_int: our student participants could approach the head of programmes where they study

[CHAT 13:40] P4_int: I would like to continue the discussion with students, I think this is very helpful to get their direct input

[CHAT 13:40] P2_int: Totally agree, P4_int.

[CHAT 13:40] P9_int: i agree too

[CHAT 13:41] StP1: I also. A great idea

[CHAT 13:44] P3_int: Approach Personal (HR) for staff training? Express our wishes for more content

[CHAT 13:44] P4_int: As a long-term strategy I liked the UNI - the sustainable school idea

[CHAT 13:47] P2_int: I wondered how we can push our top management a bit more

[CHAT 13:47] P2_int: I'll try to lobby for that in my team

[CHAT 13:48] P3_int: I'm here for it, P2_int

[CHAT 13:48] P2_int: 🙌

Session 6 thus ends on a high note, with participants visibly energized and transformative agency clearly observable at individual and collective level. The following section presents the findings of session 7, which had the purpose of reflecting on participants' experience in the SCL. We will focus on aspects of transformative agency evident in participants' feedback.

6.5 Transformative Agency: Reflections on the SCL experience

As the SCL draws to a close, the focus turns to reflecting on the participants' experience and their perception of the collective and individual impact their participation could have. Session 7 was dedicated to joint reflection, but as more than half of the participants were not able to attend the session, a survey with open questions was sent out ahead of the session to solicit feedback on participants' experience in the SCL. The response to the question about the long-term impact of the SCL on sustainability integration at UNI paints a mixed picture. Some participants believe that meaningful change is possible if there is enough collective pressure from staff and students. Others express concern that without ongoing reminders and commitment, the proposed actions may not be implemented and sustained. While participants indicate that the ideas generated are well thought out and could influence UNI's development, some doubt whether they will be truly integrated or heard by decision-makers. SCL sessions helped highlight the strong interest in sustainability on the side of both staff and students, but also revealed frustrations over the feasibility of certain solutions. Overall, the SCL is seen as a valuable starting point, sparking ideas and motivation, but participants remain uncertain regarding its long-term impact.

When asked about the impact of the SCL on their individual practice and behaviours, respondents suggest that participation in the Change Laboratory

sessions has had a range of impacts on them. Several participants note an increased awareness of different disciplinary perspectives and the value of diverse opinions in problem-solving. Some feel re-energized to push for change, particularly in teaching, while others consider new opportunities, such as supervising Ph.D. students working in different disciplines. Participants also express intentions to bring sustainability discussions into their teams and decision-making processes. However, some found it challenging to stay engaged due to scheduling conflicts and a perceived lack of concrete outcomes, which can lead to moments of demotivation. Despite this, many report lasting takeaways, such as increased reflection on sustainability and a greater appreciation for collaborative work and incremental changes.

6.6 Chapter summary

This chapter has presented the findings of the data analysis, which was focussed on identifying and portraying the development of transformative agency through double stimulation and was carried out in an iterative and multi-pronged process.

In step 1, the outcomes of the quantitative analysis of expressions of transformative agency (ETA) were presented and discussed in the context of the design of the SCL along the cycle of expansive learning. The early stages of the cycle were dominated by expressions of explicating and questioning as participants probed and determined priorities and critically analysed the historical emergence and actual-empirical status of sustainability integration at UNI, producing a rich set of contradictions and tensions in session 3. Based on a deepened collective understanding of the status quo and the historical background as well as the issues hindering successful sustainability integration, expressions of envisioning soared from session 4 onwards as the group started generating ideas that could help address and resolve the contradictions during the modelling phase, and increased even more as ideas were examined and

plans for implementation were developed in session 6. The findings indicate that the SCL produced many ideas and visions, however expressions indicating taking action are virtually absent, pointing to the lack of actual implementation of ideas.

In step 2, the focus turned to identifying notable shifts in ETA, indicating transitions from paralysis to action. Three turning points were identified based on the data derived in step 1, demonstrating shifts from explicating of priorities to criticizing the current system (Turning Point 1), from criticizing the lack of a common strategy, goal and institutional commitment to envisioning possible solutions (Turning Point 2), and from an abundance of (vague) ideas to committing to a focus and working out concrete actions (Turning Point 3). The findings of this step of analysis are illustrated in qualitative analyses of key episodes marking these turning points.

Step 3 presents the findings of the TADS analysis. The quantitative findings of the identification of the four TADS phases in a deductive coding process were combined with major themes developed through an inductive qualitative analysis and depicted in a table, showing how the TADS process unfolds along the cycle of expansive learning. Findings indicate that the early stages of the SCL display a high number of conflicts of motives and auxiliary motives, but virtually no expressions indicating sticking to the auxiliary motive or implementation. Only session 6, where action planning starts, sees the emergence of TADS phase 3 and 4 alongside the first two phases. The final step in the TADS analysis, a close examination of three key episodes in session 6, resulted in the identification of several conflicts of motives and illustrates how participants develop second stimuli to address these, including planning concrete steps for implementation.

The final section reports on the outcomes of the reflection session and the findings of the participant survey regarding their experience in the SCL, revealing mixed expectations about its long-term influence on sustainability at UNI. On a

personal level, many participants gained new perspectives, felt motivated to integrate sustainability into their work, and planned to foster discussions within their teams, though some struggled with engagement due to logistical challenges and the lack of concrete outcomes.

This concludes the presentation of the findings. In the next chapter, we will take a step back from the detail and consider these findings in the context of the core research question in a critical discussion of the study's implications for the conceptualization of transformative agency through double stimulation in the context of HESD.

7 Chapter 7: Discussion

7.1 Introduction

In chapters 5 and 6, I have presented the research findings and discussed the empirical data showing how transformative agency developed over the course of the Sustainability Change Laboratory (SCL). It is now time to take a step back and consider these results in the light of the quest to foster and understand transformative agency in HE sustainability integration efforts. The purpose of this chapter is to provide an interpretation of the findings and explain how they answer the research questions on the one hand and contribute to responding to the limitations identified in the literature on the other.

The chapter is structured as follows:

Section 7.2 reconnects the reader with the purpose of this project by reiterating the limitations identified in the literature review and restating the research question arising from these.

Section 7.3 sets out my contribution to the literature on sustainability integration in HE (as reviewed in section 2.3) and on stakeholder participation in such integration efforts (see section 2.4) by employing CL as a deeply process-oriented, participant-driven and generative methodology. I will apply the analytical lens of “motives, mediation and motion” (Hopwood & Sannino, 2023b) as explained in section 3.4.7 to argue how the SCL can contribute to understanding the development of transformative agency as process through in-depth analysis of conflicts of motive, the role of mediating tools, and motion in terms of actual transformation in the SCL. This section addresses limitations in the literature on HE sustainability integration related to an overly technical and structural focus and a static treatment of barriers and drivers while neglecting

micro-level dynamics and attention to process and downplaying contradictions and tensions.

Section 7.4 is an attempt to contribute to the strand of the literature about sustainability agency as an emerging concept reviewed in section 2.5. Due to the fact that this strand of literature differs substantially from the literature reviewed in 2.3 and 2.4, this aspect is dealt with in a separate section where I put forward a proposal to conceptualize sustainability agency as transformative agency (TA). This section discusses how my findings can advance the understanding of agency in the sustainability context by applying a theoretical lens using CHAT. Based on the discussion in section 7.3, I will argue that the theoretically sound and conceptually mature understanding of transformative agency in CHAT is a promising avenue for focussing the research on sustainability agency. This argument contributes to the limitations identified in the literature regarding an underdeveloped, fragmented and undertheorized conceptualization of sustainability agency.

The chapter closes with a summary in section 7.6.

7.2 Reconnecting with research purpose and questions

The initial intent of this project was to accelerate sustainability integration at my university using a CL intervention and focussing on TA of participants as a key aspect. As I set out to achieve this practice-based goal, my understanding was expanded through engagement with current knowledge about HE sustainability integration and stakeholder engagement, with the key limitations identified in the literature review sharpening my research focus. The resulting research questions are reiterated and answered in this section. I will first remind the reader briefly of the key limitations identified in the literature review and the research questions I set out to explore. I will then address each of the two sub-research questions individually and finally answer the main research question, drawing high level

conclusions about how my findings make a contribution which address the limitations identified in the literature. More specific contributions will then be discussed in detail in sections 7.3 and 7.4.

As outlined in section 2.3, much of the existing literature about HE sustainability integration tends to adopt a predominantly technical, structural and managerial perspective, often overlooking the contested nature inherent in sustainability efforts. The literature review also highlighted a tendency to treat barriers and drivers as static rather than dynamic, with limited attention to the evolving nature of change processes. Section 2.4 revealed a lack of studies tracing the micro-level dynamics of involving stakeholders as individuals and groups in HE sustainability change processes, and highlighted a lack of process-oriented research that captures how integration efforts unfold over time. Furthermore, the literature pays insufficient attention to contradictions and tensions impacting on sustainability integration, particularly those shaped by historical and power-related factors. Notably, the concept of sustainability agency remains underdeveloped, fragmented and inconsistently applied, often being reduced to an outcome rather than examined as an emergent, negotiated, and collective process. These limitations collectively underscore the need for a more dynamic, process-oriented, and context-sensitive approach to understanding sustainability integration in HE generally, and offer opportunities to advance the concept of sustainability agency specifically.

Based on the shortcomings detailed above, this project set out to explore the following research questions:

RQ: How can a Change Laboratory research-intervention stimulate Transformative Agency in participants to accelerate the integration of sustainable development at a university of applied sciences?

SRQ 1: *How does Transformative Agency develop over the course of the CL intervention, as manifested in discursive expressions of agency, and what turning points can be identified indicating a transition from paralysis to action?*

SRQ 2: *How does Transformative Agency develop as participants work through conflicts of motive and engage with mediating tools in the process of double stimulation during the SCL?*

In the remainder of this section, I will summarise what the findings detailed in chapter 5 and 6 tell us with regards to the research questions, starting with the sub-research questions and cumulating in the main research question. Finally, I will discuss how these results contribute to the literature.

7.2.1 Answering the sub-research questions

Let us first consider Sub-Research Question 1, which is focussed on the empirical tracing of evolving TA. To address this question we will draw most on the findings presented in section 6.2, where Expressions of Transformative Agency (ETA) are analysed (Figure 6.2), and section 6.3, where the Turning Points identified are considered (Figure 6.4). The analysis of ETA shows that the early stages of the cycle of expansive learning were characterized by explicating and questioning, leading to the identification of a range of contradictions in the university's overall efforts to integrate sustainability. Making these contradictions explicit in the light of both historical analysis of the activity and the actual-empirical analysis of current developments based on participants' own experience, reports, and data collected from others, created a generative thrust, which is evident in envisioning increasing significantly from session 4 onwards as participants started to propose solutions. Envisioning reached its peak during concrete action planning in session 6, however, expressions of taking action were largely absent, indicating a gap between idea generation and actual implementation.

The ETA analysis facilitated the identification of turning points occurring in the course of the SCL, where three key shifts were identified. First, participants went from explicating priorities of sustainability integration in higher education to criticizing how they perceive this integration within their own context, which they experienced as limiting and unsupportive overall. In a second turn, the group went from critiquing the lack of institutional commitment and support to envisioning solutions, generating a range of ideas to foster sustainability across the institution. In a third turning point, these manifold but vague ideas were evaluated according to impact and feasibility, and concrete action planning started for the most impactful and feasible idea: to develop alternative pathways for students' sustainability learning in the curriculum.

Combined, the ETA and turning point analyses present a productive empirical technique for tracing the emergence of TA and provide a solid basis for further discussion. This analysis does, however, not directly explore how the development of TA is linked to conflicts of motives, mediation, and transformative action or motion, which become much more explicit in the TADS analysis conducted in the next step of analysis and discussed in response to SRQ 2.

Regarding Sub-Research Question 2, the TADS analysis (section 6.4) shows that early SCL sessions exhibited numerous conflicts of motives (first stimuli), leading to the development of a range of auxiliary motives (second stimuli) but with minimal indications of commitment to action or implementation (see table 6.5). In fact, participants developed so many ideas of how to transform (parts of) the activity that collective progress beyond this stage was challenging and required further mediation to facilitate a decision on where to focus. Only in session 6, where action planning for implementation started, can the emergence of later TADS phases be traced.

These findings suggest that while the SCL facilitated critical productive discussions and idea generation, the transition to actionable change came late

and implementation was not carried out within the SCL itself. Nevertheless, we can observe significant progress in identifying and tackling contradictions through mediation in the process of double stimulation, leading on to the development of new models of the activity participants collectively inhabit. Despite a seeming lack of real action, change was achieved as a result of the SCL, both in terms of participants' expansive learning (see section 5.9.3) and in terms of the gradual implementation of the ideas developed after the SCL ended. These observations warrant closer investigation, and we will consider how the engagement with conflicts of motive through the creative appropriation and collective production of mediating tools fostered TA development and ultimately facilitated progress in sustainability integration in more detail in section 7.3. I will address these aspects employing a theoretical lens utilising the motifs of motive, mediation and motion as discussed by Hopwood and Sannino (2023b) and described in section 3.4.7 in order to expound how my findings can be understood within the notion of CHAT-based TA development.

Overall, we can conclude that the design of SCL as well as the methods of empirically analysing agency have proven useful instruments for stimulating and discursively tracing the process of emerging agency, for triggering and identifying significant shifts in the SCLs, and for guiding and observing participants as they moved through the stages of the expansive learning cycle through double stimulation. From this perspective, my project is an addition to the growing number of research projects aiming to foster and explore transformative agency based on CL methodology and empirical analysis employing ETA, turning points and TADS. Notably, this is one of the few instances of application in the area of HE sustainability integration and thus contributes to that particular stream of knowledge from a methodological point of view. This is significant also in light of the limitations identified in the literature review regarding investigations that take a more dynamic and process-focussed approach in contrast to those viewing

sustainability integration as a matter of top-down implementation focussing structural and technical aspects in a more static manner.

7.2.2 Answering the main research question

Having addressed both Sub-Research Questions, it is now time to take a step back and focus on the main research question:

RQ: How can a Change Laboratory research-intervention stimulate Transformative Agency in participants to accelerate the integration of sustainable development at a university of applied sciences?

While both sub-research questions focus on tracing the development of transformative agency throughout the SCL, the main research question is focussed on how this form of research intervention stimulated transformative agency development in the given context. Building on the analysis presented in relation to SQR1 and SQR2, which provides evidence that TA did indeed develop, we can conclude that the SCL research intervention proved to be a productive way of facilitating stakeholder-centred and process-focussed efforts to integrate sustainability in this project, and of stimulating TA development in this specific context. In order to answer the “How” in this question, we will first recap the approach and key design features employed in the SCL with a description of the role they each had in stimulating transformative agency (Table 7.1). Based on this, we will then consider how the answers to the research question contribute to addressing the limitations identified in the literature about HE sustainability integration and stakeholder engagement in this context (Table 7.2.).

To answer the question of how the SCL intervention fostered the development of TA, we need to review the methodological approach employed as the group progressed through the cycle of expansive learning and consider what role

specific aspects played in stimulating Transformative Agency. Table 7.1 provides a structured overview of the approach I employed in the SCL, set in relation to the stimulation of TA.

Rather than offering an exhaustive narrative account, the table is used to distil the SCL methodological process into essential components and provide a concise and structured framework. Each column serves a specific analytical purpose: the *SCL Approach* column highlights the central mechanisms or principles employed; the *Description* column clarifies their meaning and scope; the *Role in stimulating Transformative Agency* column makes explicit the theoretical and practical significance of each feature; and the *Examples and References* column anchors these insights in my empirical work. Taken together, the table thus provides an integrated framework for understanding how the different elements contribute to the emergence of TA.

SCL Approach	Description	Role in stimulating Transformative Agency	Examples and References
Design along the Expansive Learning Cycle	Structured progression from questioning to implementation	Supported systematic movement from critique to actionable planning; built collective understanding	Cycle of expansive learning was used at the beginning of each session to show where the group was at, what we had achieved and where we were going (see Figure 6.3)
Double Stimulation	Intentional use of first stimuli (problems) and second stimuli (tools/concepts)	Helped participants identify contradictions and develop purposeful responses; moved participant actions along the stages of the cycle of expansive learning; fostered agency development and generation of new models of activity	First and second stimuli were used to intentionally progress SCL work (see table 6.1)
Iterative and Cumulative Session Design	Ideas were generated, revisited, refined, and built on across multiple sessions	Facilitated deeper understanding; encouraged commitment and shared ownership; allowed participants to deepen reflection, engagement and clarify action pathways	Ideas were continually revisited and built on throughout the SCL, with visual record available on Miro and summaries of each session made available also for absent participants (see table 6.1 for progression)
Focus on Contradictions and Tensions	Encouraged surfacing of systemic barriers to sustainability integration	Made implicit institutional challenges explicit, prompted shared understanding and impetus to generate solutions; surfaced lack of knowledge about existing initiatives	Task 2.2, Task 3.1 and Task 3.2 built on each other to clearly determine contradictions, which were then used as a basis for new ideas and models.

SCL Approach	Description	Role in stimulating Transformative Agency	Examples and References
Participant-Centred and Dialogical	Emphasized egalitarian dialogue and inclusion of diverse institutional voices	Enhanced motivation, shared responsibility and collective understanding of other perspectives (e.g. student vs. staff perspective), facilitated collective agency;	Small groups (usually 3-4 participants) worked together to ensure each voice was heard, concerns about unequal power equilibrium were there initially but did not transpire (see section 5.9.3).
Foregrounding multiple views of diverse stakeholder groups	Participants included general staff, faculty and students from multiple departments and levels of the organisation	Enabled diverse perspectives; enriched collective vision and understanding; encouraged holistic problem-solving; heightened legitimacy of SCL;	Participants highlighted the importance of having students and staff participants to learn from other perspectives (see section 5.9.3)
Fully Online Format of SCL	Sessions were conducted entirely online using collaborative tools	Increased accessibility and widened participation; enabled flexible engagement despite logistical constraints; facilitated comprehensive recording of data	Several participants mentioned that they would not have been able or wanted to participate in face-to-face format (see section 5.9.3)
Use of Analytical Tools (TADS, TP, ETA)	Application of tools for tracking expressions of agency and stages of TADS	Enabled tracking and evidencing of learning and agency throughout the SCL	See chapter 6

Table 7.1: SCL approach and related contributions to Transformative Agency

Despite some limitations, which are discussed in chapter 8, we can claim that the SCL offered a structured, participatory approach to stimulating transformative agency among university stakeholders. The findings show how participants, following the cycle of expansive learning, were guided from critical reflection that identified a range of contradictions in the way sustainability was being (or not being) integrated at the university to envisioning new practices in teaching and learning, ideas to increase student and staff engagement, and policy suggestions to embed sustainability in the fabric of the institution. Through double stimulation, they first engaged deeply with historical and current contradictions hindering sustainability integration. This led to heightened expressions of transformative agency, particularly envisioning, during the modelling phase, where collective understanding was translated into forward-looking ideas.

The participant-centred and dialogic nature of the SCL and the inclusion of diverse stakeholders including staff, faculty and students from a range of different areas of the university led to a broader understanding of different perspectives relating to sustainability integration, motivated participants and furthered the development of collective ownership and responsibility. The fully online format facilitated wider participation, and the use of analytical tools to track ETA and stages of TADS allowed for the systematic examination of transformative agency development throughout the SCL. These characteristics address several limitations identified in the literature review in chapter 2 (see Table 2.4), which are discussed in the next section, where I will directly address the limitations identified in areas 1 and 2 of the literature review.

7.2.3 Contributions directly addressing limitations in the literature

Table 7.2 provides an overview of how this study, via the very approach of CL methodology, can be understood as addressing the limitations identified in the literature (cf. Table 2.4), which are listed in the first column. The second column

shows the specific SCL features speaking to these shortcomings, and the third column spells out what the contribution to the literature is. Column four provides selected references and examples for illustration purposes.

Building on the analytical synthesis presented earlier, this table moves from identifying limitations in existing research toward demonstrating how CL methodology as employed in the present study responds to them. It thus functions not only as a summary, but as a bridge between diagnosis and contribution, showing how each aspect of the SCL process operationally engages with theoretical or empirical limitations.

By mapping limitations and responses side by side, the table provides a systematic account of how the study advances current understanding. This comparative structure also underscores the coherence between the conceptual framework and the methodological logic of CL interventions. In doing so, Table 7.2 is intended to offer a transparent, coherent and concise representation of the study's contribution to the literature, situating its outcomes within the broader scholarly conversation.

Limitations in the Literature	SCL Approach	Contribution to the literature	Specific examples
Overly technical / structural focus	Foregrounding multiple roles within the project; fully online format; participant-centred approach	The SCL shifted the focus from technical, top-down solutions to learning, systemic understanding, and transformative agency of participants, foregrounding multiple perspectives (including student voices) bottom-up. It surfaced some normative and epistemological debates, and enabled dialogue across roles and power levels.	Normative and epistemological debates about sustainability, the constraining effects of established (economic) systems such as capitalism, and the purpose of higher education in sustainable development, especially in session 1 and session 2. The new models of the activity (see section 5.8.3) resulted in several proposals that would require top-down implementation, but they were developed bottom-up by those who would be engaged in them (students, educators).
Static treatment of barriers and drivers	Iterative and cumulative session design; Expansive learning cycle; intensive focus on contradictions and tensions	Barriers identified by participants were intentionally used as drivers of change. The iterative process fostered continually developing collective understanding of integration issues, allowing participants to reframe their perception of challenges and enablers over time, and using emerging insights to inform co-creative modelling of solution.	Barriers in the form of contradictions were explored deeply in sessions 3 and 4, building on the discussion about current and historical determinants of the state of integration at the university. The identification of contradictions was used productively as a launch-pad for a reverse-brainstorming activity imagining how things could be made even worse, and then developing ideas to create better, future models of the activity (see section 5.6).
Neglect of micro-level dynamics and limited process-oriented research	Expansive learning cycle; fully online format; participant-centred dialogue	My findings offer a granular, temporal account of how individuals and groups navigated change in the SCL, exposing the situated and social nature of transformative agency through iterative engagement across sessions. These dynamics were expressed discursively and tracked empirically, allowing for a clear presentation of the evolving process.	The analysis of ETA, turning points, and TADS in chapter 6 provides empirical evidence of the process-oriented approach taken in this study and demonstrates the dynamics of development at micro-level (discursively through ETA and processually through TADS).
Insufficient attention to contradictions and tensions	Focus on contradictions and tensions; Double Stimulation	The SCL explicitly identified and engaged with contradictions as drivers of change, encouraging participants to identify and confront systemic tensions and co-construct new possibilities through mediated, reflective activity and discourse.	Tasks 2.2, 3.1 and 3.2 were fully devoted to systemic contradictions and tensions. Participants used the activity system triangle to identify contradictions and tensions, and productive discussions emerged about their nature and impact, providing a fertile basis for the development of solutions due to a better

			understanding of historical and current conditions and causes of contradictions and tensions.
Underdeveloped and undertheorized concept of agency	Double stimulation; Participant-centred approach	In this project, agency is theorized as a developmental process, activated and shaped through engagement with contradictions. Collective agency emerged, fostered through the process of double-stimulation.	Addressed in section 7.4
Fragmented conceptualizations of agency	Reflexive tools (e.g., ETA and TADS analysis); Structured intervention design	The SCL operationalized agency using consistent, trackable measures (ETA, TADS), providing both conceptual coherence and empirical richness that supports comparison, theorization, and practical use.	Addressed in section 7.4

Table 7.2: Overview of contributions to the literature based on the SCL approach

These findings make a compelling case for the success of the SCL in fostering and cultivating transformative agency. The concise overview given above, however, cannot do justice to the intricate and complex nature of the underlying generative and transformative processes participants engaged in during the SCL, and the contributions this project can make to better understand these in the context of HE sustainability integration. The next section will delve deeper into motives, mediation and motion as key aspects helping to generate a more nuanced understanding of how transformative agency was triggered based on conflicts of motive, stimulated via mediation, and manifested in motion in the SCL. I will discuss how these findings contribute to the literature regarding HE sustainability integration and related stakeholder engagement and highlight some observations that make a contribution to advancing the methodological and theoretical foundations of this project as discussed in chapter 3.

7.3 Diving deeper: Transformative Agency Through Motives, Mediation, and Motion

In section 7.2, we have established that transformative agency did indeed develop as SCL participants moved through the cycle of expansive learning and created positive alternatives for existing paralysing circumstances. We have also determined how the design of the SCL has supported this development. Whilst this addresses the research questions at a high level, there is much more to be learned from the findings that can help us address limitations in the literature as identified in chapter 2.

This section will now dive deeper and examine aspects key to transformative agency development with the aim of providing in-depth insights into central learnings from the SCL research intervention. Building on the theoretical explanation set out in chapter 3 and employing the dynamically interrelated motifs of motives, mediation and motion illustrated in Figure 7.1 (Hopwood & Sannino,

2023b), I will discuss the findings and explore in depth how transformative agency develops throughout the SCL as participants move from feeling trapped in a system that they perceive as lacking commitment, resources, time and strategy to co-developing new sustainability learning pathways through the use of conceptual tools and collaborative efforts. In this treatment, I will consider the specific context of the SCL, its overall aim of accelerating sustainability integration, and the way stakeholders were engaged in this process in order to explain how my findings address the limitations identified in the literature review regarding these aspects (section 2.3 and 2.4).

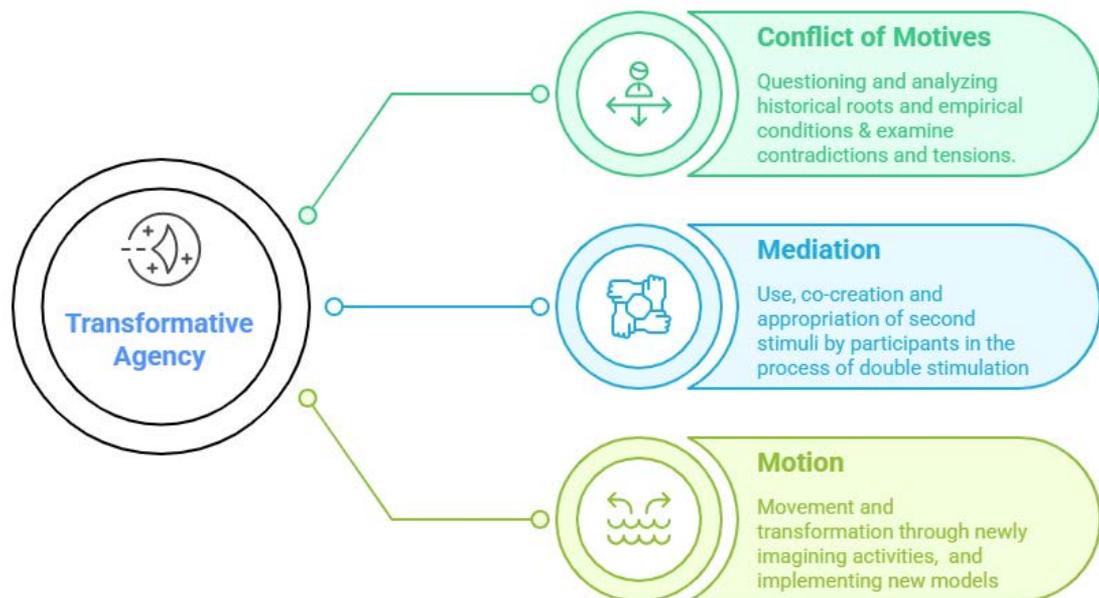


Figure 7.1: Transformative Agency and Motive, Mediation and Motion (created by author using Napkin.ai based on Hopwood & Sannino, 2023b)

The remainder of this section is structured as follows: I will discuss each of the three motifs shown in Figure 7.1 in turn in sections 7.3.1, 7.3.2 and 7.3.3. Each section briefly reminds the reader of the relevant motif's meaning (which is discussed in more detail in section 3.4.7) and provides interpretation of the most

relevant findings related to this motif. The aspects discussed were selected based on their impact in terms of accelerating progress in the SCL specifically and their significance regarding HE sustainability integration and stakeholder engagement more generally. Section 7.3.4 concludes this part with reference to the contributions to the literature emerging from this analysis for areas 1 and 2 as discussed in sections 2.3 and 2.4.

7.3.1 Conflicts of Motive: Contradictions as a source of agency

This section explores conflicts of motive. I will begin with a brief reminder of the meaning of contradictions and conflict of motive and their role in activity systems. I will then review the contradictions identified in section 5.5.3 and proceed to unpack two main types of conflicting motives triggered through the process of identifying contradictions in the SCL: those rooted in value tensions and those stemming from institutional barriers and constraints. The section concludes by synthesizing the contributions to the literature emerging from the understanding how these conflicts of motive, rather than stalling change, served as generative forces for expansive learning and the emergence of sustainability agency.

As established in section 3.4.1, contradictions in CHAT are systemic tensions within or between activity systems that drive change, while conflicts of motive refer to the internal struggles individuals experience when navigating these contradictions in their own actions and decisions. Several key conflicts of motives recognised by participants can be determined resulting from these contradictions, and I will discuss the most central conflicts in depth below.

As early as in session 1 of the SCL, conflicting motives abounded as participants shared their experience of feeling stuck in prevalent systems underpinned by historically founded, entrenched but partly tacit values and practices of the university and the wider system (see section 5.2.3 and 5.3.3). The tensions and contradictions identified especially in task 2.2 and task 3.1 (see section 5.5.3 and

5.6.3) point to significant conflicts of motives implicit in the activity in question, and the reality participants perceive they are operating in. The contradictions identified are summarized Figure 7.2. It is noteworthy that they correspond closely with the barriers to sustainability integration identified in the body of literature discussed in section 2.3 and confirm the difficulties common to HEIs in their sustainability efforts.

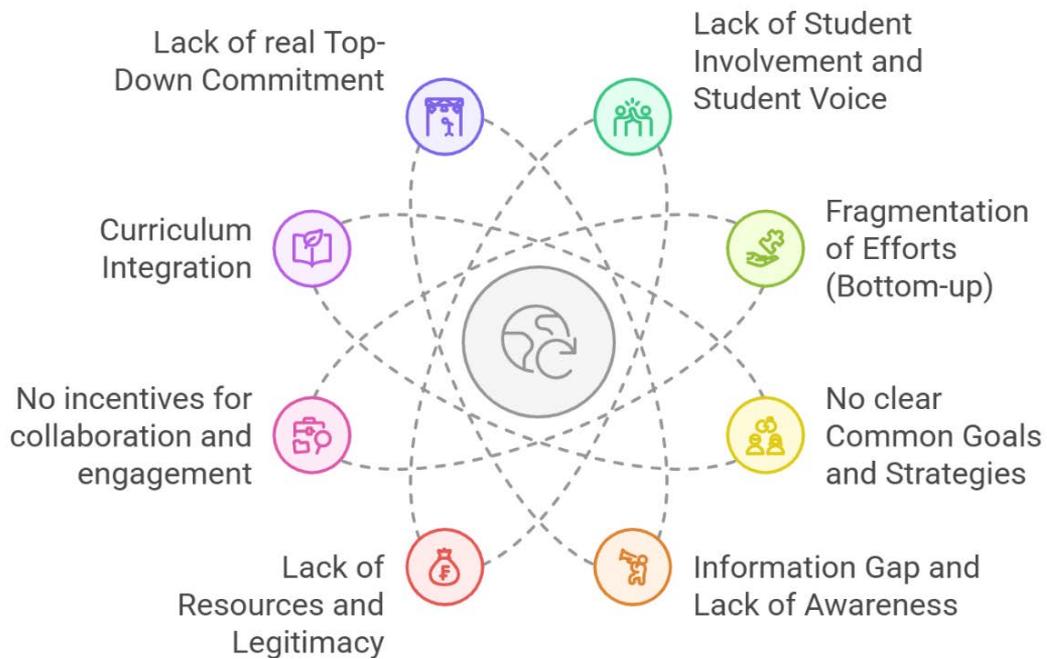


Figure 7.2: Overview of contradictions determined in session 3 (created by author using Napkin.ai)

When we consider the initial motivation of participants for joining the SCL, a collective pursuit seems to be clear: to accelerate sustainability integration at the university. This was both the formal aim of the Change Laboratory and a clear theme in participants' reasons for joining. However, beneath this surface-level alignment, several key points reveal deeper contradictions. First of all, participants did not create this motive themselves, but signed up for it as they registered for the SCL. Secondly, there was a lack of discussion around the meaning of "sustainability" itself, pointing to an unexplored collective conceptual

understanding of the object of the activity. Third, there was an unclear, fragmented sense of what the institutional purpose of sustainability integration actually entails. Interestingly, these issues were only partly surfaced and were not identified as major contradictions by the group. What became clear early on (see e.g. section 5.3.3), however, was that the (albeit somewhat unexplored) motives of participants to accelerate sustainability integration at their university clashed with their perception of the (implicit) values and inertia of the university system on the one hand and institutional barriers on the other. We will consider each of these aspects in more detail in the next two subsections.

7.3.1.1 Conflicts of motive related to values and purpose

The findings reveal a significant number of contradictions expressed in terms of opposing values and purpose as participants feel they are trapped in a system that is determined by capitalist principles and inertia, with a sense of powerlessness and even anger coming through in early discussions. The feeling of paralysis is manifest in several dimensions, including the sense of being stuck in a neoliberal, consumerist society that also translates to the academic space.

Table 7.3 provides an overview of conflicts of motives and contradictions identified by participants and described in detail in section 6.4.3.1.

Conflict of Motive	Contradictions	Examples
Feeling trapped and powerless; questioning whether critique is "allowed"	Dominance of unsustainable systems in academia	Participants feel unable to challenge dominant economic paradigms, especially in business education, leading to emotional tension (anger, paralysis). There is uncertainty about including alternative economic theories (e.g. de-growth) into mainstream business courses.
Commitment to whole-institution approach vs. perceived institutional inertia	Discrepancy between institutional priorities and sustainability goals	Individuals want systemic transformation, but feel blocked by a university culture focused on other values or priorities. They perceive a lack of transparent and explicit strategic direction regarding sustainability.
Tension between personal values and institutional reward structures	Assessment and other academic systems reinforcing the status quo	Staff participants struggle to align sustainability values with work pressures and institutional expectations. There is a sense of powerlessness to change the academic system, e.g. relating to changes in student assessment or in recognition through research and publications.
Uncertainty about institutional purpose; doubt over authenticity of sustainability agenda	Lack of a common purpose for sustainability transformation within the university	Participants feel confused and disillusioned about the university's real sustainability goals, suspecting superficial or performative action rather than authentic motives.
Resistance to being instrumentalized; demand for hearing student voice	Top-down "shaping" of students without their genuine participation	Students resent being positioned as passive recipients rather than co-creators in sustainability education, feeling that they have no voice in their education.
Moral discomfort about what is seen as institutional pretence; cynicism;	Sustainability used for branding/marketing rather than genuine transformation	Perceived gap between espoused and enacted values leads to mistrust and disengagement.
Conflict between feeling responsible and feeling limited	(Own) expectations of individual initiative despite systemic constraints	Participants recognize their agency (e.g. by suggesting initiatives and highlight their personal options to act), but also feel it is insufficient against structural constraints.

Table 7.3: Conflicts of motive and contradictions related to values and purpose

These strong conflicts of motive confirm many aspects discussed in the literature (see section 2.4.2), shedding light on deeply seated value conflicts which are mentioned but often not explored in much detail in the scholarly discourse. What becomes apparent here is a lack of a common object in the activity, as participants are unclear about or disagree with what they perceive to be the

university's underlying values and strategic purpose in sustainability integration. While the literature points to the need for a clear sustainability vision and strategy (see section 2.3.2), which participants identify as missing at the university, there are also a few instances where participants reflect on their own responsibility, for example when referring to everyone's ability to raise issues with management and make suggestions (e.g. integrating the SDGs in their own teaching or suggesting that fair trade coffee is purchased for campus coffee machines). Overall, however, the conflicts of motive identified here point to a feeling of paralysis and powerlessness within an institutional value system that is perceived as not explicitly against but also not proactively for sustainability.

7.3.1.2 Conflicts of motive related to institutional barriers

A second cluster of conflicts of motives is expressed as staff and students perceive their individual commitment and desire to act being constrained by institutional barriers, especially through a lack of formal support, time and resources, which would provide legitimacy for this engagement. Table 7.4 provides an overview of these conflicts of motive and the contradictions identified by participants as described in section 5.5.3.

Conflict of Motive	Contradictions	Explanation
Desire to contribute vs. inability due to workload and lack of legitimacy	Lack of formal support, time, and resources for sustainability engagement	Staff and students want to invest more in sustainability, but institutional constraints make this feel like an “illegitimate” or extra activity.
Personal cost of engagement without institutional reward	Lack of incentives for sustainability-related work	Individuals perceive sustainability efforts as optional and unrewarded, creating tension between values and self-preservation. Sustainability activities are not seen as part of jobs or study, but additional or extra-curricular.
Motivation for interdisciplinary collaboration vs. frustration over unrealized potential	Siloed organizational structure (fragmentation)	Participants see value in interdisciplinary teamwork and learning but experience barriers due to institutional fragmentation across different campi, disciplines and departments.
Frustration and powerlessness vs. sense of responsibility	Limited influence over work/study conditions (top-down governance)	People feel they should help drive change but perceive themselves as disempowered under institutional constraints.
Hope, engagement and initiative vs. discouragement due to poor communication and coordination	Existence of grassroots initiatives (e.g., PRME/SDG Ambassadors) vs. lack of institutional integration or visibility	Positive experiences with bottom-up efforts are undermined by broader lack of awareness and support.
Willingness to engage vs. confusion and uncertainty	Absence of clear, shared information about existing sustainability strategies and initiatives	Lack of clarity creates ambiguity about where and how to act, dampening initiative.

Table 7.4: Conflicts of motive and contradictions related to institutional barriers

Participants’ accounts reveal deeply felt tensions between their personal motivation to pursue sustainability and the structural limitations imposed by university systems. Staff and students alike describe being caught between a

desire to engage more meaningfully in sustainability-related work or learning and the reality that such efforts are often marginalized, lacking time, resources, and formal recognition. These constraints render sustainability a personal rather than institutional priority, pursued at individual cost. Participants also report a gap between the promise of interdisciplinary collaboration and the fragmentation they experience, reflecting structural and cultural barriers noted in the literature (see sections 2.3.2, 2.4.1, 2.4.2). While some bottom-up efforts such as the SDG Ambassador group are seen as encouraging (see section 5.5.3), the overall lack of coordination, visibility, and institutional support limits both the impact and perception of sustainability integration.

7.3.2 Mediation: Navigating contradictions through second stimuli

This section explores how mediation supported the development of transformative agency throughout the SCL process. It is structured in three parts. First, I provide a short definition of mediation and propose a distinction into three different types of mediating tools: those introduced by me, the researcher-interventionist; those appropriated and further developed by participants; and those generated independently by participants. I also examine how these different forms of mediating tools contributed to collective movement through the SCL. Second, I reflect on the methodological implications of mediating decision-making in heterogeneous groups, focussing on the challenges posed by the virtual nature of the SCL and the difficulties faced when selecting a shared direction from multiple ideas. Section 7.3.4 situates these findings in relation to the broader debate in the literature, highlighting this study's contribution to understanding how mediation enables the shift from problem recognition to collective action in sustainability transformations.

7.3.2.1 *Types of mediating tools*

As explained in section 3.4.7, mediation plays a central role in stimulating transformative agency by enabling participants to externalize, reflect on, and transform their activity. In the process of mediation, participants use conceptual, social, and material (including digital) tools to work their way out of conflicts of motives and develop actionable solutions. Drawing on Sannino (2023), such second stimuli can be seen as deliberately constructed devices that help expose contradictions and support individuals and collectives in regaining control over their activity. In order to better differentiate the functions of different mediating tools, I propose a distinction into three types of mediating tools: those introduced by me, the researcher-interventionist; those appropriated and further developed by participants; and those generated independently by participants. These categories reflect a trajectory from externally introduced mediation to participant-led transformation.

Table 6.1 illustrates the use of mediating tools throughout the SCL sessions, but it is important to highlight the evolving use and development of these tools in the shift from researcher-introduced stimuli to participant-generated innovations. In the first two sessions, I offered conceptual tools and task instructions designed to stimulate identification and engagement with contradictions. These included the status wall, brainstorming activities, and discussion instructions as described in section 5.3.2 and 5.3.3. As participants appropriated these tools, they began making them their own, for example by using the activity system to create representations of contradictions as shown in section 5.5.3. Increasingly, tools provided by me were based on the work produced by participants, mostly in groups, such as the table of contradictions described in section 5.6.3. or the outcomes of task 3.2 described in section 5.6.3. From session 4 onwards, growing ownership and deepening engagement within the expansive learning process can be observed as participants generated new mediating tools and started envisioning practical responses to institutional constraints. These

included ideas such as a sustainability champion guerrilla tactic (i.e. sustainability champions keeping sustainability on the agenda at high level meetings), a sustainability tribe (community and platform for exchange open to all UNI students and staff), incentives such as a sustainability award, and others as described in sections 5.6.3 and 5.7.3. The most productive development of tools occurred in session 6 as role-based groups worked to develop action plans for their chosen priority strategy to invent new pathways for sustainability learning and teaching as described in detail in section 6.4. Transformative agency was fostered through this dialectical interplay of researcher-offered tools, their appropriation and adaptation, and the creation of new tools by participants.

Table 7.5 illustrates the distinctive categories of tools, their purpose and SCL examples.

Category	Explanation	SCL Examples
Researcher-Introduced (RI)	Tools devised and provided by the researcher to initiate discussion, stimulate agency and guide the journey.	Status wall, brainstorming instructions, impact/feasibility rating tool, timeline template
Participant-Appropriated (PA)	Tools that were RI but then actively shaped, adapted and blended into participants' experience and practice.	Activity systems, historical development template, table of contradictions with reverse brainstorming, action plan
Participant-Generated (PG)	Tools that arise from within the CL from participants' own motives and needs, reflecting authentic innovation or adaptation.	Sustainability tribe, sustainability award, capstone course, sustainability boot camp (research or learning), peer learning model, SDG mapping and policy, sustainability course selection tool/platform

Table 7.5: Categories and examples of mediating tools

Using this categorization to trace how tools are taken up and transformed in the course of the SCL serves as a useful dimension demonstrating the emergence of transformative agency. As the increasing development of participant generated tools, especially after session 4, demonstrates, this progression reflects not just the uptake of mediational means but their transformation into instruments of change. Viewed through the lens of expansive learning, this shows how the SCL participants collectively shifted from recognizing structural limitations to shaping new models of activity and forging a path toward implementation.

7.3.2.2 Methodological observations

From a methodological perspective, there are two important aspects worth highlighting with regards to the dynamics of mediation in the SCL: the fully virtual nature of the SCL and the difficulty in making collective decisions about the way forward.

Even though an in-depth discussion of the fully virtual nature of the SCL is beyond the scope of this thesis, we should note here that the entire process was conducted online, with SCL participants and researcher never meeting in person. In terms of the mediation process, this created challenges and benefits. On the one hand, the rich features available through the online collaboration tools used provided extensive opportunity for participants to co-create ideas and appropriate and generate mediating tools. The dynamics in collaborative activities show that also less vocal participants added their voices, for example in brainstorming tasks. This format also ensures that there is a full digital record of all artefacts produced (the digital environment used for the SCL is explained in detail in Obexer, 2024). However, it was noted that the purely online interaction limited the personal connection and possibly the intensity of discourse in the SCL. Whilst breakout group discussions were lively and productive throughout, plenary

discussion were characterized by a lack of active participation beyond the report-backs of group rapporteurs (nominated by the researcher in each group task) and contributions via chat. The limited interaction in plenary sessions had the consequence that the emergence of transformative agency at the whole group level was difficult to trace, and collective processes had to be orchestrated more intentionally, which is an issue related to the second methodological aspect deserving attention.

What was particularly problematic was the process of selecting ideas to take forward from the many suggestions developed by the individual groups. There were two points in the SCL where this was particularly poignant: in session 2, as priorities were developed to focus on, and in session 5, as participants had developed a range of ideas to counter the contradictions identified earlier. In session 2, I attempted to facilitate a decision via a voting process, where participants selected priorities from a list generated from their previous work and we continued with those that were most often selected (see section 5.3.1). For session 5, I developed an impact/feasibility tool in order to facilitate a more structured and reasoned decision process (see section 5.7.2). However, in both processes I felt that we were leaving important aspects aside and that the decision was somewhat arbitrary. These kinds of decisions are qualitatively different from the “should I stay or should I leave” decision as described in Sannino’s waiting experiments (Sannino, 2016). When (too) many options are created, decisions have to be made in a pragmatic manner as not all ideas can be taken forward to the next phase in the process of expansive learning. The resulting situation can be seen as constituting a conflict of motives, which in the instance above was mediated using second stimuli (voting and decision tool). The question can also be framed in relation to Sannino’s kedge anchor metaphor (Sannino, 2022) and might point to the need to include a phase that is about searching, evaluating and deciding on the most suitable kedge anchor (amongst many others) in the TADS process between phase 2 and 3. The resurgence of

the first stimulus in TADS phase 3 tests this decision, but a decision about which option to put to the test has to be made earlier. From a methodological point of view, this question impacts on the scope and scale of running a Change Laboratory.

7.3.3 Motion: Breaking free from paralysis and taking action

We will now turn to the motif of motion, i.e. the transition from paralysis, rooted in conflicts of motive and perceived institutional inertia, to the creation and implementation of new practices for sustainability integration. Section 7.3.1 and 7.3.2 have outlined how participants identified contradictions within the university's activity system, uncovering deep-seated tensions that often led to inaction. Through the process of double stimulation, participants began to move from problem recognition to generative thinking. A range of ideas and tentative strategies emerged which laid the groundwork for potential transformation. In this section, we will now consider how the tangible outcomes of the SCL as presented in sections 5.9.3 and 6.4.3 can be understood as motion, employing the concept of the Zone of Proximal Development (ZPD) described in section 3.4.4. I will first explain the nexus between motion and the ZPD and illustrate how the new models developed in the SCL can be understood as motion within the ZPD. Next, I will discuss the limitations of motion within the SCL's particular context. The section concludes with a discussion of the contributions to the literature relating to motion.

7.3.3.1 Motion and the ZPD in the SCL

As discussed in chapter 3, motion embodies the processual and collective nature of transformative agency. Participants began to initiate change by navigating conflicting motives and creatively using and developing mediating tools. Within the SCL, movement toward change unfolded gradually. Sessions 1 to 5 involved

small steps, culminating in the generation of a wide array of options (see section 5.7.3). However, true breakthrough moments occurred when participants chose specific projects to pursue and began action planning in session 6. These decisions marked a transition from ideation to directed movement, where students envisioned mandatory sustainability courses but greater student choice, lecturers crafted faculty capacity-building strategies and new teaching models, and SDG Ambassadors designed policy-level interventions to embed sustainability in curricula. Each group moved beyond abstract planning, creating action plans with the explicit intent to bring about lasting, systemic transformation, not temporary fixes. This emergent movement from constraint to creative possibility can be understood through the concept of the Zone of Proximal Development (ZPD) framed by Engeström as

the distance between the present everyday actions of the individuals and the historically new form of the societal activity that can be collectively generated as a solution to the double bind potentially embedded in the everyday actions.
(Engeström, 2014)

Within the SCL, the collaborative environment nurtured the establishment of a collective ZPD in which new ways of thinking, planning, and envisioning sustainability practices became possible, even if not yet fully enacted. The group dynamics, mediated by double stimulation and facilitated dialogue, allowed participants to move beyond their individual capabilities as they learned from different stakeholder groups and perspectives, becoming more aware of existing institutional practices but also identifying information gaps (see section 5.10.3). Building on collective analysis, discussion and co-creation of ideas, the groups were able to envision new models of activity that consider a more holistic view of sustainability integration and how it can be promoted. In the following section, I will use the concept of the ZPD to assess in how far the models generated in session 6 can be seen as motion towards sustainability integration before discussing some of the limitations of motion within the SCL.

To illustrate this motion, we will consider the action plans of each group (cf. section 5.8.3), mapping them onto a four-field model featuring sustainability integration on the x-axis and stakeholder engagement on the y-axis. Mapping the participants' ideas within this model reveals their relative proximity to the ZPD. Figure 7.3 shows the four-field model and describes the characteristics of SCL models based on stakeholder engagement and sustainability integration and their position relative to the ZPD. In the context of the SCL, the ZPD is positioned just beyond the capacity of the participants but could be realized with engaging allies to gain institutional support. This aligns with Vygotsky's understanding of the ZPD as the distance between what can be achieved independently and what becomes possible through mediated, collective effort. Mapping SCL outcomes in terms of their proximity to the ZPD helps to distinguish between ideas that were aspirational but actionable, those that required further developmental support, and those that, while ambitious, lay beyond the participants' immediate reach. This framing provides a powerful lens to understand how transformative motion is generated and sustained in complex institutional contexts.

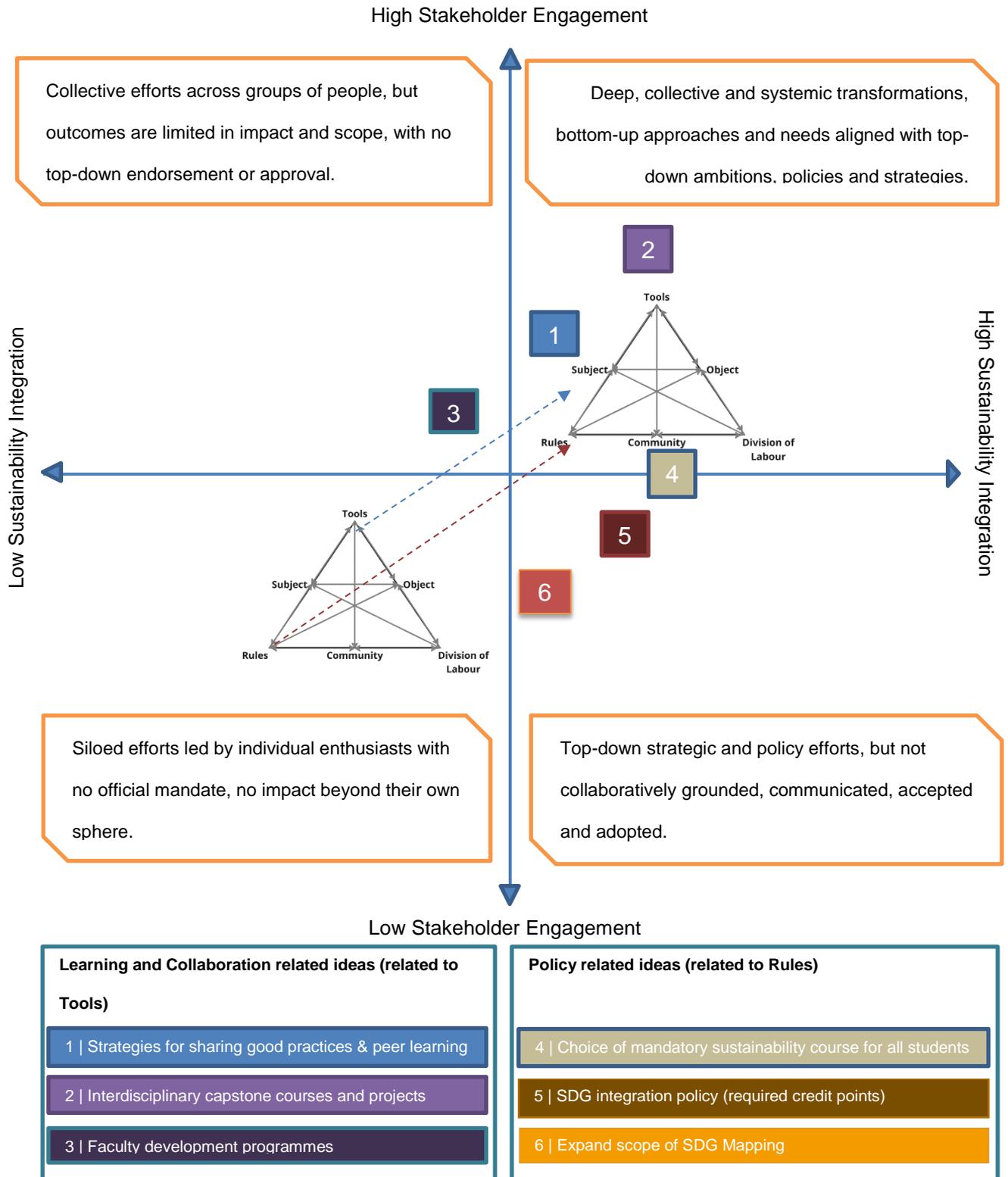


Figure 7.3: Four-field model mapping SCL ideas relative to ZPD (created by author)

As becomes apparent from Figure 7.3, several of the new models of the activity developed by SCL participants are partly in the ZPD, whereas others fall beyond the current ZPD. The proposals for students being able to choose what sustainability courses to take, faculty development programs, sharing of good practice and peer learning amongst faculty as well as expanding the scope of the SDG mapping activity are all activities which partly exist already, and where the participants of the SCL may be able to act in their own right or do so with support from others. For example, lecturers could encourage peers to engage in events where good practice relating to sustainability education is shared, or they could find colleagues who are prepared to peer teach a sustainability course with them. SDG Ambassadors, who are already engaged in SDG integration, could make an effort to share their work with others who are not as advanced. A system of interdisciplinary electives where students can choose what courses to take already exists and had been discussed repeatedly in previous sessions, even though the students in the SCL were not aware of this. While these ideas might be seen as requiring less radical change and buy-in of institutional structures, their prominence in the discussion confirms the importance of such foundational support activities highlighted in the literature. They are, however, also less effective in terms of deep integration and stakeholder engagement, in fact they could be interpreted as prerequisites mechanisms supporting the ideas lying beyond the ZPD.

The more ambitious ideas, the establishment of policies for SDG integration, a minimum number of credit points required in sustainability learning, and mandatory introductory courses for students, all require much more fundamental and systemic changes in curricula to be made, involving different governance structures to make such decisions and policies. Interdisciplinary capstone projects also require cross-department collaboration and support from deans. These models of initiative therefore lie beyond the collective ZPD, underscoring that motion toward transformation depends not only on an idea's ambition but

also on the institutional willingness and support available to scaffold its development into practice. It is not surprising that the ideas close to the ZPD are all rated lower in sustainability integration and stakeholder engagement, highlighting the need for leadership engagement, broader stakeholder coalitions and policy alignment when pursuing the more ambitious and potentially transformative models mapped as being beyond the current ZPD. We will discuss the key limitations underlying this observation in more detail in the next section.

7.3.3.2 Limitations of motion within the SCL

Section 7.3.3.2 points to the challenges of enactment as one of the limits to motion within the SCL. While action plans were crafted in session 6, their implementation was largely outside of the remit of the group. This reflects earlier findings from the ETA analysis (cf. section 6.2), which revealed a low level of expressed commitment to action and an absence of statements indicating action-taking, and can be partly explained by virtue of the format, scope and participant characteristics of the SCL. While the SCL enabled conceptual motion, the conversion of agency into sustained activity was limited due to the group's temporary structure, the organizational context and the stakeholder ecosystem.

The literature affirms that transformative sustainability efforts in HE depend on distributed leadership, faculty-student engagement, and heterogeneous coalitions (cf. section 2.4). The SCL embodied these characteristics, with 18 participants from diverse institutional areas and roles, differing degrees of institutional knowledge and variable levels of commitment due to transient affiliations and competing responsibilities. This diversity was a significant strength of the SCL in that it enriched the participants' perspectives and enabled significant learning. However, it also impacted on the consistency and durability of motion. Unlike CLs involving stable, cohesive work teams, the SCL's participant configuration made sustained collective movement more difficult.

Participants' motivation, engagement, and sense of ownership varied considerably. The resulting motion was thus fragmented, which was reflected in high initial engagement but disparate levels of attendance and ambiguity around implementation responsibility and success, as was expressed in the reflection session (see sections 5.9 and 6.5).

My tripartite role as facilitator, researcher, and institutional actor may also have inadvertently redirected or absorbed agency. There may have been an implicit expectation that I would assume responsibility for implementation of the ideas, which could have reduced participants' sense of ownership or perceived capacity to act. Nonetheless, several initiatives developed in the SCL are being carried forward, including engaging management and sustainability committees. This continued engagement suggests that motion, while dispersed, is persisting beyond the SCL, with some participants continuing to be involved at different levels.

If we expand our understanding of motion to include long-term pursuit of systemic transformation, then motion must be seen as a continuous process, not a singular event. It requires reinforcement through institutional channels, reflection and learning among diverse stakeholders, and expansion beyond the initial intervention group. As Sannino (2023) notes, TADS is about deliberate, iterative efforts to gain collective momentum, even if such motion initially appears limited or inconsequential. In this light, the SCL exemplifies a foundational phase of motion where transformative agency is developed and seeds further action, even though this is not yet fully realized and does not involve the same group of people.

7.3.4 Contributions to the literature resulting from the framing of outcomes through motive, mediation, and motion

The previous sections have discussed the outcomes of the SCL through the lens of motive, mediation and motion. This section now discussed how the learnings from this framing contribute to the literature.

In section 7.3.1, the findings confirm the conclusions of existing literature on barriers to sustainability in higher education, such as insufficient incentives, fragmented structures, and lack of institutional alignment (see section 2.3.2). However, this study contributes to the literature by moving beyond descriptive lists of obstacles. First, it grounds these barriers in participants' lived experiences within the SCL, offering a more nuanced and situated understanding of how abstract barriers manifest in everyday academic life. Second, and more significantly, it addresses a critical limitation in existing scholarship: the static treatment of barriers and drivers (see section 2.3.2). Drawing on CHAT, this analysis frames contradictions not as impediments but as potential catalysts for change. By foregrounding conflicts of motive between personal values and institutional constraints, it highlights how such tensions can become generative forces that drive expansive learning and collective agency. This reframing offers a dynamic, process-oriented perspective on sustainability integration that challenges dominant narratives and opens new theoretical and practical pathways for transformative change, stimulating expansive learning and collective agency.

Section 7.3.2 discusses how, in the SCL, the conflicts of motives triggered the development of new forms of action through mediation in the form of second stimuli. This discussion offers two contributions to the literature, one conceptual and one methodological.

The first contribution addresses a limitation in the literature relating to the conceptualization of mediating tools for sustainability integration created in situ as generative stimuli. As argued in section 2.3.2, the HESD literature discusses a range of models designed to accelerate the integration of sustainable development in HE. These models and frameworks are useful tools in that they help understand the conditions which hinder and boost sustainability integration and the dynamic interplay between them. However, there is little evidence in the literature about how second stimuli are developed by stakeholders in the attempt to overcome contradictions, and how conceptual tools such as sustainability frameworks and collaborative practices are put to use in order to mediate transformative agency and support the shift from recognizing and cataloguing barriers and drivers to generating solutions. My research provides a modest contribution to filling this gap by demonstrating how participant-generated and context dependent stimuli are introduced, appropriated and co-generated in the agentic effort to shift from mapping barriers to constructing solutions.

The second contribution resulting from this section informs the ongoing development of Change Laboratory methodology by addressing the issues of collective decision making in heterogeneous CL participant groups. CLs designed in the spirit of fourth generation activity theory work with “heterogeneous work coalitions aimed at resolving critical societal problems, or runaway objects, and creating sustainable alternatives to capitalism” (Engeström & Sannino, 2020). If such heterogeneous coalitions are to work together productively, the question of collective decision making (amongst others) needs consideration. The literature discussing TADS remains silent about this issue so far. Sannino refers to the selection of “spearhead projects” in her description of a CL in the context of combatting homelessness in Finland (Sannino, 2022), but there is no explicit consideration of how such projects were determined by the group. The broader the scope of the problematic situation to be addressed in a CL and the more diverse the group of participants, the higher the likelihood that

multiple and divergent conflicts of motives are identified in the activity in question. In order to transform these into more concrete future models, choices have to be made about avenues to be pursued further and others to be abandoned. My modest contribution in this project is first of all to highlight this as an issue requiring attention and secondly to offer examples of two mediating tools I employed to overcome this challenge, providing a basis for further discussion.

Finally, section 7.3.3 contributes to the literature on sustainability integration in higher education in three ways.

First, it introduces the concept of the Zone of Proximal Development (ZPD) as an analytical lens novel to the HESD literature that can help understand transformative motion within institutional contexts related to sustainability integration and stakeholder engagement. By mapping participants' ideas and action plans in relation to their proximity to the ZPD, the analysis offers a dynamic framework for assessing how far sustainability initiatives extend beyond existing practices and what kinds of support can help realize them.

Second, building on the contribution relating to transient and heterogeneous CL participant groups discussed in section 7.3.2.3, this section continues the exploration of how the nature of the participant group has shaped the outcomes of the SCL. By examining the potentials and challenges of using the CL approach in this particular context beyond stable teams and hierarchical authority structures, the motif of motion contributes further nuanced understanding as a dimension of fostering transformative agency, drawing attention to capabilities, power dynamics and limitations of agency, but also reframing motion as an ongoing process in which the SCL can be seen as a trigger. This is particularly pertinent in the context of the ambitions of fourth generation CHAT.

Third, the analysis confirms the findings in the literature addressed in section 2.3.3 regarding the importance of support activities such as faculty development,

peer learning, and information sharing in sustainability integration efforts. By viewing these activities as critical mechanisms that lie within the current ZPD and have the potential to enable more ambitious forms of sustainability integration, the section adds a nuanced perspective to the development of such efforts, which may also be useful for practice.

7.3.5 Section summary

This section has considered the development of transformative agency in the course of the SCL in depth, using the motifs of motive, mediation and motion. I have discussed the conflicts of motives identified by the participants in the questioning and analysis stages of the SCL, reviewed the second stimuli introduced, appropriated and created in the process of double stimulation in order to address these, and argued that motion as the overcoming of these contradictions indicates the emergence of transformative agency, but is contingent on several aspects impacting on participants and should be conceptualised as an ongoing, reflective and agentic process that goes beyond the actual intervention. In the next section I will discuss the concept of transformative agency in the SCL and propose a framing of sustainability agency aligning with this understanding of agency.

7.4 A conceptual proposition: Transformative Agency for sustainability transitions

As argued in section 2.5, a key limitation in the HESD literature remains in understanding how sustainability agency develops and how it can be theoretically framed, methodologically fostered and cultivated, and empirically traced. In this section, I put forward three arguments to support the framing of sustainability agency in terms of transformative agency in the context of sustainability integration. First, by employing the strong theoretical foundation in expansive

learning and CHAT, I will argue that the concept of sustainability agency can be meaningfully explained within the dynamic, expansive capacity building process central to CHAT and Expansive Learning. Second, I will posit that the powerful methodological approaches using double stimulation with mediating tools such as TADS and Change Laboratory provide proven and well described ways of fostering and cultivating transformative agency in the area of sustainability. Third, I will put forward that such conceptualization makes it possible to empirically trace emerging sustainability agency, which can then reconcile perceived contention between individual and collective agency as it understands their development as a dialectic relationship in which one type of agency accelerates the other. Let us consider each of these arguments in turn.

My first argument is that CHAT and Expansive Learning Theory offer theoretically robust and powerful concepts for exploring, explaining and describing sustainability integration. Transformative Agency is here positioned as a critical conceptual tool for addressing the complex and evolving challenges inherent in transformations aimed at overcoming “wicked” sustainability issues (see section 2.4). My analysis employed several indicators (ETA, Turning Points, TADS) to provide multi-dimensional and conceptually sound evidence of the emergence and central role of transformative agency in the SCL as a diverse group of stakeholders engaged in the collaborative and generative transformation of the activity systems they inhabit. This perspective aligns with the body of literature that understands sustainability integration not as a matter of “implementation” of fixed solutions but as a dynamic and ongoing process of organisational change and capacity (cf. section 2.3.3). This theoretical foundation allows us to frame sustainability agency as both a driver and an outcome of a participatory, emergent, co-constructed, and evolving practice that views learning as proactive and collaborative transformation of paralysing conditions and can therefore cope with the complex and dynamic requirements inherent in sustainability contexts.

The second argument refers to the strength of methodological approaches based on CHAT. The area of HE sustainability is rife with conflicts of motives as evident in the literature about barriers (cf. section 2.3.2), and so is the sheer nature of sustainable development as contested territory characterized by manifold contradictions, tensions and necessary trade-offs. My study provides an example of how such contradictions and tensions can be productively addressed in order to foster the development of genuine sustainability agency. As the findings demonstrate, transformative agency was indeed developed in the SCL, and future models of the activity that address the identified conflicts of motives were constructed. The literature reviewed indicates that typical approaches to HE sustainability integration emphasize the importance of institutional strategy, shared vision, and top-down commitment (see section 2.2) and employ modes of stakeholder participation in the form of faculty development workshops, sustainability courses, and similar conventional learning options (see section 2.3). There is a risk that such approaches might act to constrain the development of genuine sustainability agency as they often bypass (deliberately or unintentionally) the deep exploration of complex, historically rooted and systemic contradictions and tensions underlying sustainability efforts. CHAT informed methods provide promising approaches to enable expansive learning that can lead to more fundamental transformations. From a methodological point of view, the (pedagogical) aim to foster sustainability agency can be facilitated using the process of double stimulation through mediating tools as described in TADS. More specifically, the Change Laboratory methodology is a powerful, well described and proven approach to cultivating transformative agency as many empirical studies (albeit mostly outside of the HE sustainability integration setting) show.

The third argument emphasizes the ability of conceptual CHAT tools to track how individual and collective transformative agency develops in a dialectical relationship in the course of the collaborative and co-creative work during the

intervention. As shown in chapter 6, in this study I have traced the emergence of such agency empirically through agentic epistemic actions performed by individuals in collaboration, stimulated by the need to resolve conflicting motives within activity systems. I have identified these traces through discursive expressions of agency (ETA), turning points, and the TADS model. While the existing literature addresses both individual and collective agency (see Sections 2.5.1 and 2.5.2), it often falls short in conceptualizing sustainability agency in an integrated way, particularly in articulating the relationship between its individual and collective dimensions. My analysis has primarily focused on the development of collective transformative agency, which is also expressed in the future models and participants-generated tools resulting from the SCL. However, the data also suggests that the process can nurture individual agency both within and beyond the Change Laboratory. This is evident, for instance, when participants appropriate conceptual tools (such as the Activity System) for use in other contexts, reflect on and renegotiate their roles and identities within the university, or take personal initiative inspired by their SCL experience. Such expressions were particularly visible during the reflection session (see section 5.9), indicating that both individual and collective agency emerged in the SCL. In the context of sustainable development, which demands profound transformations of socio-economic systems, this dialectical development can generate a "virtuous cycle," wherein individual sustainability agency fuels collective efforts and collective agency, in turn, empowers individual transformation, amplifying the potential for sustained, transformative action.

Based on the arguments offered in this section, I propose that recasting sustainability agency as transformative agency in the CHAT tradition offers productive avenues for further discourse, interventions and research in the context of sustainability integration in HE. CHAT based transformative sustainability agency provides a strong dialectical, contradiction-driven and expansive learning perspective that integrates historical, power-sensitive and

future-oriented dimensions. The emphasis on dynamically emerging but systematically mediated processes avoids a static and overly controlled understanding of sustainable development in a normative sense. Instead, it allows for the articulation of sustainability efforts as individual and collective striving and expansive learning for better futures in contested, highly political and dynamically changing contexts.

7.5 Chapter summary

This chapter has discussed the findings of my research exploring the SCL as a space for fostering transformative agency in the context of sustainability integration. I have revisited the purpose of my study, providing high level answers to the research question and sub-questions. In this, I have reaffirmed the limitations in the literature on HE sustainability integration and outlined the study's contribution through the application of the process-oriented and participatory CL methodology. Using the analytical lens of "motives, mediation, and motion," I have highlighted the dynamic, micro-level processes involved in fostering transformative agency in the SCL, with a specific focus on how conflicts of motive were identified and productively used, mediating tools were introduced, appropriated and generated in the course of double stimulation, and explaining how participants were able to move from paralysis towards future models of sustainability integration in the zone of proximal development. These interpretations culminate in section 7.4, where, based on the discussion in the sections before, I propose the conceptualization of sustainability agency as transformative agency through the lens of CHAT and Expansive Learning Theory, thereby offering a more robust theoretical foundation for an emerging and fragmented field.

The next chapter concludes this thesis, highlighting the implications and learnings from the research project and describing limitations and opportunities for future research.

8 Chapter 8: Conclusion

8.1 Introduction

I argued in the introduction to this thesis that sustainability transformation in higher education has become an increasingly urgent priority. Yet despite strong policy momentum and institutional rhetoric evident in declarations, commitments, and strategies, universities continue to fall short of realizing their transformative potential. Rather than acting as beacons of sustainability and drivers of progress towards the Sustainable Development Goals, many institutions remain constrained by conflicting pressures and limited institutional support for deep organizational change, highlighting the challenges of translating aspirational goals into effective organizational and ultimately societal transformation. This disconnect between aspiration and real change underscores the need for practice-oriented, participatory approaches that not only signal commitment but also foster the conditions for genuine institutional learning and transformation.

This study set out to respond to that need by exploring how a research-intervention using the Change Laboratory (CL) methodology could be mobilized to stimulate transformative agency and accelerate the integration of sustainability at my university, and the preceding chapters provide a detailed analysis of this research venture and its outcomes.

Beyond the period of the research analysed in this thesis, the Sustainability Change Laboratory (SCL) has already had a tangible impact on my institution since the completion of the sessions. Several ideas generated by the group are now being implemented, including the development of a university-wide sustainability strategy, the founding of a student sustainability club, new policies on integrating the SDGs into teaching, and the creation of a sustainability module for students to be implemented across different study programmes. The growth

of the SDG ambassadors who have taken ownership of their areas and progressed their own projects reflects the cultivation of sustainability agency as participants not only contributed ideas but also developed the capacity and confidence to act as change agents within their own spheres of influence.

This thesis therefore captures a certain period of time in the recent past, but sustainability integration at my institution, just as the wider context of sustainable development globally, are constantly developing and moving on a forward trajectory. This chapter has the purpose of drawing the thesis to a conclusion by looking back on its key contributions, and looking ahead to their implications. Section 8.2 highlights the key contributions of the research to scholarship and methodology. Section 8.3 draws out implications for practice and policy. In sections 8.4 and 8.5, I discuss the limitations of the study and avenues for further research, before closing with final reflections in section 8.6.

8.2 Summary of contributions

Building on the detailed analyses and discussion in chapters 6 and 7, this section synthesizes the insights presented in sections 7.2.3 and 7.3.4 and foregrounds the most significant contributions to both the scholarship of Higher Education for Sustainable Development (HESD) and the methodological development of the CL. Rather than reiterating all findings, the aim here is to highlight those contributions that carry particular significance and to frame them in ways that clarify their wider implications. Table 8.1 provides an overview of the key contributions of my study.

Contribution & Explanation	
Contributions to HESD Scholarship	<p>Reframing Barriers and Contradictions</p> <ul style="list-style-type: none"> • Highlights conflicts of motive as catalysts for expansive learning and collective agency. • Bridges the gap between cataloguing barriers and generating solutions in sustainability integration by employing second stimuli to mediate transformative agency.
	<p>Introducing the Zone of Proximal Development (ZPD) into HESD</p> <ul style="list-style-type: none"> • Applies ZPD as a novel analytical lens for understanding transformative motion in HEIs based on engagement and depth of integration • Assesses sustainability initiatives in relation to proximity to existing practices and needed supports.
	<p>Conceptual development of sustainability agency</p> <ul style="list-style-type: none"> • Sustainability agency understood and enacted as Transformative Agency • Reframed as collective, evolving capacity that can be nurtured through participatory interventions
Contributions to CL Methodology	<p>Dynamics of Heterogeneous Participant Groups</p> <ul style="list-style-type: none"> • Explores potentials and challenges of CL interventions beyond stable (work) teams. • Highlights the importance of group diversity, power dynamics, and transient membership in shaping outcomes. • Identifies a need to further develop CL methodology to engage with “runaway objects”
	<p>Decision making in heterogeneous groups</p> <ul style="list-style-type: none"> • Identifies collective decision-making as a neglected issue in heterogeneous CL groups. • Provides examples of mediating tools for navigating divergent motives and reaching shared decisions.

Table 8.1: Overview of highlighted contributions

8.2.1 Contributions to HESD scholarship

One significant contribution of this thesis is to move beyond static and descriptive accounts of barriers to sustainability integration in higher education. While the literature frequently catalogues obstacles such as insufficient incentives, fragmented structures, and lack of institutional alignment, it often presents these in fixed terms (see section 2.3). My analysis, however, adds a dynamic

perspective by examining how such barriers are both experienced by participants as conflicts of motives in lived practice and can be reframed through the lens of CHAT as underlying contradictions within the activity system.

Through this dual framing, contradictions are not seen merely as impediments but as potential catalysts for change. In particular, the analysis shows how participants' conflicts of motives, arising between individual values and institutional constraints, manifest these contradictions in practice and can become generative forces for expansive learning and agency through collective reflection and engagement. The study thus integrates experiential and theoretical dimensions to challenge static, descriptive accounts and offers a process-oriented understanding of transformation.

A second contribution is the introduction of the Zone of Proximal Development (ZPD) as a novel analytical lens within HESD research. While the ZPD has been extensively used in other disciplines, it has not, to the best of my knowledge, been applied to analyse sustainability transformation in universities. By mapping ideas and action plans in relation to their proximity to the ZPD, along the dimensions of engagement and depth of integration, this study offers a novel way to assess transformative motion, identifying which forms of action remain within existing practices and which require new forms of support. This lens enriches current understandings of how sustainability initiatives can be nurtured and scaled within institutional contexts.

A third contribution is the conceptual development of sustainability agency. I have argued in section 2.5 that sustainability agency is an emerging but to date fragmented and under-researched concept, which is, however, critical for understanding and theorizing sustainability transformation. This study demonstrates that transformative agency can be understood, enacted and empirically investigated as sustainability agency within higher education institutions. My findings show that, when participants collectively recognize

contradictions between their values and institutional constraints, they begin to articulate new possibilities for action that transcend individual roles or structural barriers. This emergent agency is transformative because it does not merely adapt to existing conditions but actively seeks to reconfigure them by modelling desirable alternative versions of the activity systems participants inhabit. I therefore propose to reframe sustainability agency as a situated form of transformative agency that is oriented towards long-term ecological and societal futures. This conceptual move both grounds sustainability agency empirically within higher education practice and provides a new theoretical vocabulary for understanding how universities can act as sites of collective sustainability transformation. Importantly, the study shows that this form of agency is not a static trait of individuals but a collective, evolving capacity that can be nurtured through participatory interventions such as CLs.

8.2.2 Contributions to Change Laboratory methodology

The study also makes modest contributions to the methodological development of CL interventions, with three aspects being of particular relevance.

First, this study sheds light on the dynamics of heterogeneous and transient participant groups in CL settings. While much of the existing literature presumes relatively stable (work) teams or balanced hierarchical structures, this study demonstrates that diversity of background, levels of authority, and continuity in terms of institutional membership can significantly influence the development of transformative agency. For instance, SCL participants expressed a strong opinion that including students as equal participants in the SCL was particularly valuable (see section 5.9). Even though most student participants are now no longer at the university, their at times passionate stance and authentic contributions show that also transient members co-inhabiting an activity are important in shaping collective agency. At the same time, the research affirms

the importance of anticipating and managing aspects such as power imbalances, varied participant commitment, and divergent levels of familiarity with the issues at hand in such participant groups.

Second, while fourth generation CHAT emphasizes heterogeneous coalitions tackling societal “runaway objects” (Engeström & Sannino, 2020), the literature remains largely silent on the issue of collective decision-making in such groups, for example when several good ideas are on the table, or when diverse proposals have been made. My study identifies this as a critical yet underexplored challenge, showing how divergent motives can stall progress unless explicitly mediated. My research offers examples of mediating tools introduced to support decision-making, such as the feasibility/impact tool (see section 5.8), thereby opening a new line of discussion on how CLs can be designed to facilitate collaboration among diverse stakeholders. In doing so, the study extends the application of fourth-generation Activity Theory to sustainability challenges and provides concrete examples of how CL can be mobilised as a practice-oriented research intervention in universities.

Third, this thesis proposes a methodological extension of the CL framework to better engage with “runaway objects” (Engeström & Sannino, 2020) related to sustainability (for instance the climate crisis) - complex, transboundary challenges that exceed the scope of single institutions or activity systems. In such contexts, participants are not merely organizational actors or clients but often activists or practitioners motivated by a desire to drive societal transformation, whose expertise and commitments vary widely. This contrasts with traditional CL assumptions of recruiting participants within bounded institutional teams responding to crises in their immediate context. Working with activists introduces a broader spectrum of engagement, ranging from institutional insiders to passionate outsiders, reflecting shared yet unevenly distributed conditions under which all actors operate amid global crises like climate change. Addressing this

methodological shift is crucial for making CL methodology responsive to the scale and complexity of sustainability transformations.

Together, these contributions extend theoretical, methodological, and practical debates in the field of higher education for sustainable development and offer new pathways for fostering transformative agency in universities.

8.3 Implications for practice and policy

Beyond the theoretical and methodological contributions described in section 8.2, this study also generates important implications for practice within higher education institutions and for the policy frameworks that shape them.

8.3.1 Implications for practice

As discussed in section 1.3, sustainability integration in HE remains slow and fragmented, often with much rhetorical commitment and high aspirations, but insufficient real progress. A first implication of my study for this context concerns the value of participatory, practice-oriented, and context-specific approaches such as the Change Laboratory for sustainability integration efforts in HE. The findings suggest that universities can accelerate sustainability transformation when they create spaces in which contradictions are openly surfaced and collectively addressed. Rather than positioning sustainability as a managerial or compliance-driven task, institutions can foster deeper engagement by enabling staff and students to act as co-creators of solutions, thereby cultivating a sense of shared ownership and agency and empowering stakeholders engaged in these processes. In the SCL, the students' rebellion against being "shaped by the university" as future change makers (see section 6.4.3) is an example of institutional rhetoric that denies agency rather than fostering engagement and

empowerment, whereas their appreciation to be seen as equal partners in the SCL (see section 5.9.3) points to the importance of genuine inclusion.

For managers within universities, the study highlights the need to create enabling conditions that support such participatory work. This includes aspects mentioned as lacking (see section 1.3), such as allocating time and resources for collaborative initiatives, offering recognition and incentives for sustainability engagement, and embedding ongoing support activities such as faculty development, peer learning, and information-sharing, also across stakeholder groups (see section 5.8.2, where such aspects are identified as crucial by SCL staff participants). These activities, which the study identified as critical mechanisms within the current Zone of Proximal Development, can provide the scaffolding needed for more ambitious forms of sustainability integration to take root. Equally, the heterogeneity of stakeholder groups should be viewed as a strength rather than an obstacle, provided that suitable mediating tools for decision-making, dealing with power imbalances, and conflict resolution are built into the process.

8.3.2 Implications for policy

At the policy level, the findings underline the limitations of symbolic commitments, high level frameworks, and ambitious declarations that set direction but often fail to activate meaningful institutional change, a significant issue highlighted in section 1.4. An implication of my findings is that effective policy driving sustainability transformation should move beyond aspirational statements and provide concrete conditions that enable institutional learning and transformative agency. This may include funding schemes that reward collaborative experimentation, performance metrics that value organizational learning alongside traditional outputs, and recognition systems that validate sustainability leadership within institutions.

More broadly, the study suggests that participatory interventions like Change Laboratories hold potential not only at the level of individual institutions but also as scalable models that can be encouraged, supported, and shared across national or regional higher education systems and beyond. Policies that enable such cross-institutional learning could serve as powerful levers for accelerating progress towards sustainability transformation in the sector as a whole, and in collaborative ventures between HEIs and partners in other sectors.

In addition, the study also contributes to policy efforts by advancing a conceptual understanding and vocabulary, identified as lacking in current policy documents (see section 1.4) to describe sustainability agency, which might add clarity and transparency to policy discussions.

8.4 Limitations of the study

When interpreting the outcomes of this study, several limitations need to be acknowledged.

A first limitation relates to the selection of participants. The group of participants in the SCL consisted entirely of individuals who were already highly motivated and enthusiastic about sustainability, as discussed in section 8.2.2. While their commitment contributed positively to the process, the absence of more diverse perspectives meant that deeper contradictions or more critical issues may not have surfaced, or that the vision of the potential for change may have been more optimistic than possible in reality. For example, the participation of a head of studies might have introduced administrative complexities relating to curriculum management that the participants were not aware of. This limitation was amplified by the lack of participation from the leadership team, which also undermined the group's confidence that the results would be implemented. In this sense, the study faced the "double-edged sword" of working with participants eager to create

change but without the counterbalancing perspectives of those less inclined or positioned differently within the institution.

Second, contrary to my expectations, there was little discussion within the SCL about the meaning of “sustainability” or “sustainable development.” In similar Change Laboratory interventions (e.g., Scahill & Bligh, 2025), creating a shared definition of such concepts has been a crucial mediating step. In this study, the issue arose only once and was not pursued collectively. While negotiating a shared understanding could have helped participants articulate motives more directly and perhaps generate productive disagreements, it was not identified as a priority by the group. Yet, following Spinuzzi’s (2021) argument that Change Laboratories can serve to explore epistemic questions, the absence of such conceptual work may represent a missed opportunity for deeper exploration of underlying conflicts of motives, which might have generated more foundational insights or also divergence in participants’ understanding of sustainability transformation in their context.

Third, several practical limitations also shaped the study, including time constraints, the online format, and my own role as insider-researcher-interventionist.

With respect to time constraints, the relatively short duration of the intervention, both in terms of the number and length of sessions, limited the group’s capacity to engage deeply with emerging issues and constrained my ability to observe longer-term impacts. Nonetheless, the concentrated three-month timeframe, with sessions scheduled during lunchtime, facilitated participation from a diverse group of staff and students. This structure accommodated participants’ demanding schedules and competing commitments, thereby enabling broader engagement than might have been possible with a more extended intervention.

Conducting the SCL entirely in an online format presented both notable advantages and inherent limitations. The virtual setting enhanced accessibility and flexibility, allowing participants to engage despite spatial and temporal constraints, while also facilitating comprehensive data generation and recording. However, the absence of physical co-presence may have constrained opportunities for relationship-building, trust development, and the cultivation of a cohesive group identity. These relational dynamics are often critical for fostering sustained collaboration and collective ownership of outcomes. It is possible that incorporating occasional in-person interactions could have strengthened participants' commitment and deepened the sense of shared purpose and impact within the group.

My dual role as insider-researcher-interventionist presented both significant advantages and inherent limitations. While my deep familiarity with the institutional context, culture, and ongoing sustainability initiatives was invaluable for interpreting the dynamics of the intervention and situating findings within their practical realities, this positionality also introduced potential biases. Despite continuous reflexive engagement and efforts to maintain critical distance, my professional involvement may have shaped both the facilitation process and the interpretation of outcomes. Furthermore, my established role within the institution could have influenced participants' openness, potentially affecting the depth or direction of dialogue during the Change Laboratory sessions. Nevertheless, the contextual insight and trust afforded by my insider position were essential for navigating the complex organisational environment and enabling a nuanced understanding that might have been less accessible to an external researcher.

Finally, as this was my first experience conducting a Change Laboratory, my limited prior expertise in designing and facilitating such interventions may have influenced the process and outcomes. Although I received strong supervisory guidance, challenges emerged in moderating discussions and managing the overall flow of sessions. Reflecting on these experiences, several methodological

refinements could enhance future interventions, for instance, allocating additional time for complex tasks, prioritizing plenary over small-group discussions for key issues, encouraging verbal rather than chat-based contributions during plenary exchanges, and integrating homework as a core rather than optional component. These reflections underscore the iterative and developmental nature of interventionist research, where facilitation competence evolves through practice and critical self-evaluation.

8.5 Suggestions for future research

This study has opened up several promising directions for advancing both sustainability research in higher education and the methodological development of the Change Laboratory. Rather than closing the discussion, the findings point to a range of opportunities for deepening and extending knowledge in this field. Future research could usefully explore the following areas to further develop the theoretical and practical implications of my work:

- *Further conceptual development of sustainability agency:* Further work is necessary to explore how sustainability agency manifests and evolves across different social configurations, including studies that empirically analyse how participatory interventions can nurture collective and transformative agency in different contexts. This strand of work could benefit from integrating sociocultural, psychological, and institutional perspectives to work towards a more refined and empirically evidenced conceptual and practical meaning of sustainability agency.
- *Further developing the Zone of Proximal Development (ZPD) in HESD:* Subsequent work could operationalize the ZPD for institutional learning by developing indicators of developmental distance and scaffolding within HEIs. Investigations could trace how proximity to existing practices

influences the uptake of sustainability initiatives and also how shared ZPDs form in collaborations between universities and external actors.

- *Investigating heterogeneous group dynamics in formative interventions:* Future inquiry could compare the conditions under which heterogeneity enhances or constrains collective learning, paying close attention to power relations, communication patterns, and boundary-crossing dynamics. Such work could result in the development of facilitation methods and tools suited to diverse, transient groups, which would have both theoretical and applied value.
- *Investigating and supporting collective decision making in CL settings:* Further research relating more specifically to CL methodology might focus on modelling collective decision-making within CL settings and assessing how mediating artefacts shape negotiation and consensus-building. This could include the design and evaluation of decision-support tools that enable divergent perspectives to contribute constructively to transformative outcomes.
- *Adaptations of the Change Laboratory in HE sustainability efforts, including long-term studies of impact:* Future studies could examine how CL interventions can be tailored to different higher education settings, rather than applying a one-size-fits-all methodology, and study the impact of such interventions longitudinally.

Together, these avenues build on the insights of this thesis and point towards the continued need of collective, process- and context-oriented efforts to support sustainability transformation.

8.6 Closing remarks

As this project draws to a close, the urgency for decisive action to accelerate sustainability transformation has never been greater. Rather than uniting to

address the complex environmental, social, and economic challenges of the 21st century, the global community appears increasingly fragmented, leaning towards confrontation and division instead of collaboration and solidarity. These trends are deeply concerning, yet they remain neither irreversible nor inevitable.

Universities hold a critical responsibility in responding to this moment. By empowering students and engaging communities, HEIs can help co-create a just and thriving future on a healthy planet - one that safeguards the wellbeing of both present and future generations.

The Sustainability Change Laboratory (SCL) represents a contribution to this collective effort. It advances understanding of how sustainability agency can be cultivated within higher education by identifying and constructively leveraging the contradictions and tensions inherent in sustainability transitions and employing mediating tools to support transformative change. These dynamics, rather than being obstacles, can become powerful drivers of change and expansive learning. Framing sustainability agency as transformative agency in line with the CHAT tradition offers a valuable lens for understanding and articulating the collective processes required to advance sustainability transitions. In doing so, it provides both researchers and practitioners with conceptual and practical tools to foster meaningful, systemic change toward more sustainable futures.

Conducting this study as my first Change Laboratory has been both a challenge and a profound learning journey. Balancing the dual roles of researcher and practitioner demanded reflexivity, humility, and trust in participants' agency. While there are moments I might approach differently in hindsight, the process of experimentation was itself generative - this project became a lived experience of learning by doing, and those lessons will shape any future interventions I design.

As described in Section 8.1, the SCL's influence has extended well beyond the research itself, sparking tangible institutional change. Ideas generated within the

group have inspired concrete initiatives that are being implemented as I write. Although many participants have since moved on, the visions co-created through the SCL continue to shape practice, both through my ongoing work within my team and through the continued efforts of others across the institution who were part of this shared journey.

This work has also profoundly reshaped my own professional practice as a sustainability coordinator. Gaining a deeper, theoretically grounded understanding of the diverse perspectives within the institution has transformed how I approach collaboration, policy development, and strategy-building. Working with sustainability as a complex “runaway object” has reinforced for me the necessity of bridging the gap between high-level rhetoric and the everyday practices that make change real. In this sense, the study has not only advanced my academic understanding but also enriched my professional trajectory, leaving me better equipped to champion meaningful institutional transformation and support others in developing sustainability agency.

Looking ahead, this research reaffirms my conviction that participatory and dialogical approaches such as the Change Laboratory are essential to the future of sustainability in higher education. By embracing complexity, fostering shared ownership, and nurturing transformative agency, HEIs can move beyond symbolic commitments toward genuine, systemic change. In a world that too often chooses division over cooperation, such approaches illuminate a hopeful path forward - one where collective learning and action become the means through which we realize a just, sustainable, and thriving future for all.

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