LOST IN TRANSITION: ADVANCING COLLABORATIVE TRANSFORMATION BETWEEN THE LOGISTICS INDUSTRY AND HIGHER EDUCATION

"The times they are a-changing"

Bob Dylan

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The thesis was completed as part of the Doctoral Programme in Higher Education, Research, Evaluation and Enhancement

The thesis results entirely from my own work and has not been offered previously for any other degree or diploma

I declare that the word-length of this thesis conforms to the permitted maximum

Signature

Abstract

Research on industry–university collaboration and co-production has often focused on the “skills gap”, the difference between what higher education provides and what employers expect. While scholars acknowledge the need for industry-academia collaboration, much of this discussion remains normative and dualistic, framing universities as deficient and industry as the client. Few studies have examined how structural, cultural, and historical factors sustain the industry-academia divide or how collaboration occurs in practice. Within logistics Higher Education (HE), attention has typically focused on aligning curricula with employer needs, while neglecting how evaluative systems, disciplinary hierarchies, and temporalities influence collaboration.

This thesis examines the persistent misalignment between academia and industry within logistics HE. Using Activity Theory (AT) as a framework and the Change Laboratory (CL) as an interventionist methodology, it seeks to create a space for collaboration between stakeholders to explore what is required to achieve meaningful and sustainable change. Empirically, the study draws on three CL workshops and twenty-four semi-structured interviews with participants from higher education, industry, and professional organisations. In the workshops, mirror data were used to stimulate critical reflection and dialogue, enabling participants to analyse their own systems and surface tensions and contradictions, and explore possibilities for change. The semi-structured interviews were used to explore deeper insights into participants’ experiences and perspectives, particularly regarding how transformative agency began to emerge within and across their activity systems.

The findings highlight that the gap is not simply a matter of mismatched expectations but rather arises from a network of systemic contradictions embedded in institutional logics. Academia’s KPI-driven evaluation culture, industry’s short-term priorities, and the weak intermediary role of professional bodies collectively serve to reproduce the divide. Through collaborative engagement, participants began to surface these contradictions, recognise their historical roots, and envision new roles, such as “pracademics” and a stronger role for Professional Organisations that could support sustainable partnerships.

The research makes several contributions to the literature. First, it challenges the framing of the “skills gap” as an input-output failure (assuming that industry needs are fixed and universities simply fail to deliver), suggesting that the divide is instead shaped by relational and systemic dynamics. Secondly, it places the gap in historical context by exposing long-standing structural constraints that maintain it. Thirdly, it extends the focus on co-production beyond curriculum design to include translational practices and shared meaning-making. Finally, it demonstrates that, while dispersed stakeholders can be meaningfully convened to co-create future-oriented, practice-based approaches in logistics higher education, doing so remains a challenging process given the structural and cultural barriers involved.

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List of Abbreviations

Abbreviation	Full Term
AC	Activity Theory
CHAT	Cultural-Historical Activity Theory
CILT	Chartered Institute of Logistics and Transport
CL	Change Laboratory
EL	Expansive Learning
ELA	Expansive Learning Action
ELC	Expansive Learning Cycle
ENQA	European Association for Quality Assurance in Higher Education
FIFA	Fédération Internationale de Football Association
HE	Higher Education
HEI	Higher Education Institution
KEF	Knowledge Exchange Framework
LHE	Logistics Higher Education
LSCM	Logistics and Supply Chain Management
LTA	Learning, Teaching, and Assessment
OL	Organisational Learning
PB	Professional Body
PIS	Participant Information Sheet
PO	Professional Organisation
SE	Sustainable Education
TVET	Technical and Vocation Education and Training
UAS	Universities of Applied Sciences
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organisation

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Use of Generative AI

I acknowledge the use of AI tools during this research. I used mainly ChatGPT (OpenAI, GPT-4, accessed between 2023-2025) to assist with language refinement and restructuring. All writing, analysis, and final decisions remain my own.

Chapter 1 Bridging the Gap

1.0 Introduction

Higher Education (HE) is a dynamic area of scholarly research, involving various disciplinary discussions within the HE environment. This study specifically focuses on the discipline of Logistics and Supply Chain Management (LSCM), which has amassed significant attention since the turn of the previous century. The discourse highlights a persistent divide between industry and academia in this field.

The field of LSCM has gained significant attention since the early 2000s, emphasizing its crucial role in national economies (Lancioni, Forman and Smith, 2001; Gravier and Farris, 2008; Erturgut, 2016; Sezer and Abasiz, 2017), with the logistics industry projected to surpass USD 14.08 trillion (Statista Research Department, 2024). Additionally, there has been a growing interest in this field within the business environment, driven by its critical role in enhancing the profitability and supporting the long-term growth of organisations (Lancioni, Forman and Smith, 2001; Autry and Griffis, 2008). Logistics, according to Wu (2007), has been considered by the International Institute for Management Development a key competitive factor in its annual world competitiveness ranking.

Despite its importance, there exists a persistent disparity between industry needs and academic offerings, often referred to as the “gap” in the literature (Daud, 2012; Chen, Wu and Wu, 2013; Lutz and Birou, 2013; Wu *et al.*, 2013). The discourse surrounding this disparity, which emphasises the lack of relevance between actual work practices, applications and the curriculum on academic logistics programmes (Daud, 2012; Lutz and Birou, 2013; Pateman, Cahoon and Chen, 2016) highlights the challenges that exist for the successful collaboration with stakeholders, including the logistics industry. These challenges are typically seen as stemming from outdated teaching practices and a siloed approach within HE, leading to limited cross-fertilisation with industry, and resulting in the following three criticisms of logistics education as cited by van Hoek (2007) and discussed by Lutz and Birou (2013):

1. A lack of market relevance,
2. A lack of practical and professional skills development, and

3. Poor research capabilities on the part of the students.

Scholarly research has focused on unidimensional elements in its research endeavours. Research methods typically involve independent surveys of students, academics and practitioners to identify best practices and skills requirements (Chen, Wu and Wu, 2013), or involve curriculum revisions based on existing research. However, these methods are insufficient as they frequently overlook the importance of collaborative stakeholder engagement and fail to incorporate diverse industry perspectives (Lancioni, Forman and Smith, 2001; Gravier and Farris, 2008; Lutz and Birou, 2013). The literature consistently emphasises the importance of bridging the gap between industry and academia to ensure the relevance of logistics and SCM HE (Fawcett and Rutner, 2014), while highlighting the urgency for revising curricula to produce graduates that have the necessary balance between theory-based knowledge and applicable skills to meet 21st century challenges (Berkovski and Gottschalk, 1997).

Establishing alignment is essential for implementing meaningful actions that enhance the future of logistics and therefore, this project aims to analyse and address the challenges inherent in the interaction between industry and academia by employing Activity Theory (AT) and Change Laboratory (CL) methodology.

Unlike typical approaches, this project emphasises a holistic, participatory methodology that attempts to engage all stakeholders in an iterative learning process (Garraway, 2006; Virkkunen, 2006; Bligh and Flood, 2017), allowing them to collaboratively analyse the necessity for change and develop new concepts to address current challenges.

In the following sections I outline my personal motivations for undertaking this project, place the study in context, and set out the main research questions it addresses.

1.0.1 The Methodological Choice

Since the project aims to identify the primary causes and obstacles impeding collaboration between industry and academia, leading to a misalignment between HE and the evolving needs of industry (Ozment and Keller, 2011; Erturgut, 2016), the chosen methodology is employed to understand these issues through a collaborative effort amongst the actors involved.

The chosen methodology is a collaborative intervention approach, engaging stakeholders from the logistics ecosystem. It serves to help various stakeholders understand the overall issues, discuss the concerns and perceptions of each party and promote a collective solution. The approach encourages participants to acknowledge shared responsibility for the gap and work together to address it. My motivation in bringing together stakeholders with different perspectives in this project was to provide an opportunity to collectively redesign LSCM HE to better align with industry needs. The application of Activity Theory (AT) plays a central role in both the theoretical and methodological framework of this project.

In developing the methodological stance, I was particularly influenced by Garraway's (2021) application of Activity Theory and the Change Laboratory in South African Universities of Technology. His study illustrated how CL can function as a structured, dialectic environment for surfacing contradictions and supporting collective reflection. His work showed that by providing a "protected space" for academics to move through questioning, analysing, and modelling, the CL enables expansive learning and gradual transformation of practice. This practical orientation aligns closely with the conceptual discussions of Bligh and Flood (2015, 2017), who emphasise AT's value in understanding learning as a socially distributed, mediated activity rather than an individual cognitive process. More recent work by Scahill and Bligh (2022, 2025) and Moffitt and Bligh (2024, 2025) extends these ideas, illustrating how expansive learning and meta-transformation can emerge when participants iteratively reframe their activity systems through dialogue and boundary crossing. Collectively, these studies informed the present project's design by positioning AT and the CL not only as analytical frameworks but as developmental instruments to support multi-voiced, practice-based learning among logistics academics, industry professionals, and members of Professional Organisations (POs).

AT, with its focus on the interaction of multiple actors and the notion of collective, expansive learning, provides a robust lens for understanding how diverse stakeholders in the logistics domain can co-produce knowledge. As Engeström (2005) suggests, AT facilitates the identification of individual challenges while encouraging collective solutions, making it a valuable approach for addressing the industry-academia gap.

Given the geographical dispersion of participants and the need for flexibility, the research was conducted primarily online, allowing both synchronous and asynchronous communication. This mode of engagement not only provided logistical advantages but also aimed to leverage the “disinhibition effect” described by Barak, Boniel-Nissim and Suler (2008), which facilitated more open and honest communication amongst participants.

By synthesising the theoretical insights from co-production literature with the practical realities of logistics industry-university collaboration, this project offers a unique contribution. It critiques the existing scholarship for its lack of focus on actionable frameworks and proposes a new approach grounded in AT and collaborative, multi-voiced engagement. This project builds on these insights to propose solutions that can transform logistics education and create more effective, sustainable collaborations with the industry.

Previous research has often examined these actors independently, but this project aims to facilitate negotiation and coordination between them.

1.0.2 Participants and Motives

The participants in this study represent a diverse group from the logistics ecosystem. They were selected to represent three key stakeholders: industry professionals, academics, and members of professional organisations. These individuals bring varied perspectives and roles, which will contribute to a richer understanding of the challenges identified.

Academics include individuals from both industry backgrounds and traditional academic routes, to capture the range of perspectives on industry collaboration. Industry representatives were chosen through a combination of networking, recommendations, and participation in relevant discussions. The professional organisations involved were assessed for their relevance to the identified gap.

This diverse group of participants is expected to offer a broad array of insights, which will support the bridging of the gap between LSCM HE and industry.

1.1 Personal Motivation

My engagement with Higher Education (HE) commenced about a decade ago. Over this time, I took on a range of roles, including teaching, supervising graduate projects, coordinating student internships, and later transitioning to more administrative responsibilities as the head of a logistics management department. In each role, I gained a deeper understanding of the challenges faced by both students and industry partners. Early on, my focus was on helping students transition from the classroom to the workplace, which revealed a significant disconnect between the skills students developed and what the industry required. For example, during my time coordinating student internships, it became evident that many local companies were reluctant to engage with trainees, as well as to offer them employment upon completion of their internship or after graduation. They frequently voiced concerns that graduates lacked critical skills needed in the workplace, such as problem-solving abilities and practical knowledge. Students also often found it difficult to secure internship placements, frequently expressing their frustration over the difficulty of finding opportunities.

My interest in this research emerges from direct experience with these challenges while teaching in Oman, where industry stakeholders have been particularly vocal in their criticism of both curriculum structure and teaching modes in HE. This growing realisation sparked my interest in addressing these issues more directly. I began to see the problem not just as a gap in internship coordination but as a more extensive misalignment between HE and industry. My impression formed through interactions with students and companies was that whatever educational practices were in place were neither sufficient nor sustainable, as they failed to deliver benefits to both students and the next "natural" stakeholder in line, the industry. This also stems from my personal belief that HE is or should be the connecting link between industry and the cultivation of skilled professionals, fostering a symbiotic relationship that enables knowledge transfer and innovation, while preparing students to meet the evolving needs of the logistics sector.

As I continued exploring the challenges in LSCM HE, I realised that the misalignment was not unique to our context. However, what initially appeared to be a localised issue soon revealed itself to be a far more pervasive problem. Through discussions with colleagues from universities across different countries and continents, I discovered that the disconnect is a recurring concern in diverse geographical and educational

contexts. Research from various other examples, whether locally, regionally, or worldwide, highlighted similar concerns, with industry leaders criticising LSCM HE for not adequately preparing graduates for the workforce (Ozment and Keller, 2011; Lutz and Birou, 2013). These are further addressed in Chapter 2, Section 2.1. This international dimension fundamentally shaped my research perspective, revealing that while the manifestations of the problem may vary across different educational systems and cultural contexts, the underlying tensions between academic preparation and industry requirements remain remarkably consistent. Despite our emphasis on teaching and critical thinking, these skills alone did not seem enough to satisfy the practical needs of the logistics industry.

Motivated by these observations, I decided to focus my efforts on finding sustainable solutions. I have since contributed to developing sustainable logistics HE locally, with a successful publication titled "Sustainable Development: A Developmental Evaluation of Logistics HE in the Sultanate of Oman, based on two innovation approaches (the triple helix of innovation and innovation competences)" (Nikolaou, 2021). The research aimed to explore how innovative elements can be integrated into LSCM HE to create a sustainable development ecosystem, addressing many of the same concerns that had fuelled my earlier concerns about the gap between industry and HE. It is this recognition of a shared global challenge that motivated the international coalition of stakeholders mobilised in this Community of Learning, bringing together diverse perspectives to address what is clearly not merely a regional, but systemic issue in logistics HE. This experience further shaped my understanding and reinforced my belief in the importance of collaborative efforts, particularly the co-production of solutions with stakeholders, which became a central theme of my ongoing research.

1.2 Practice Context

The practice context for this research is logistics HE and more specifically, industry-university collaborations. The logistics realm is as global as it is a complex sector, making it ideal for examining collaboration between industry and HE. Logistics is an industry that spans across borders and continents, involving the movement of goods, services, and information (Davis and Manrodt, 1991). Its global nature requires a diverse set of skills (Wu *et al.*, 2013), cross-cultural competencies (Canen and Canen,

2004), and a deep understanding of international regulations (Grabara, Dabylova and Alibekova, 2020; Suzuki, Murayama and Xing, 2023), making it a dynamic field.

However, the logistics realm that includes academic and professional representatives, has been seen to work independently of one another, with academia focused on developing academically competent graduates, while the industry is concerned about the degree of preparation of those graduates that will form the basis of supply of talent into the industry (Lutz *et al.*, 2013). If we assume that, as seen in Figure 1.1, there should be space (the collaboration zone) between the two actors to work together to make alignment work, the misalignment between the two sides of the realm and other stakeholders that may be involved, leaves little space for the two actors to collaborate, making it particularly worthwhile to examine the underlying reasons for this disconnect.

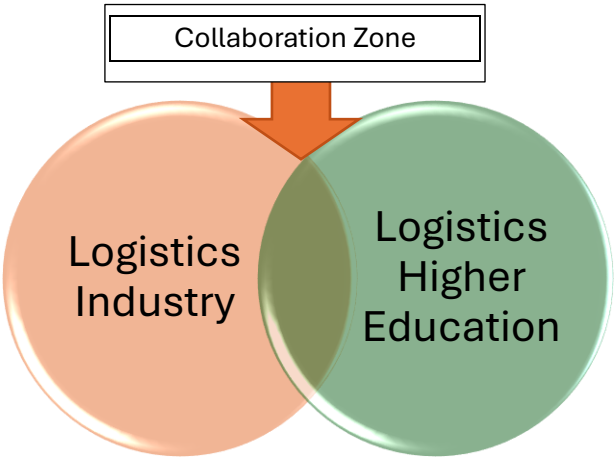


Figure 1.1: Overlapping Activity Systems Revealing Collaborative Potential in the Logistics Domain

The "collaboration zone" between industry and academia focuses on curriculum design and implementation, on greater exposure of students to the industry through internship programmes (Wu, 2007), but also on research and impactful co-production of knowledge (Fabbe-Costes, 2018). If this potential is limited owing to a lack of alignment, it is lost. Beyond co-producing knowledge of interest to the advancement of industry, the supply of graduates could benefit from meeting industry needs, making them more employable and industry ready (Rufai, Bin Bakar and Rashid, 2015).

Since universities around the world overall share a mission, which could be summarised in the following: universities exist to "*advance knowledge, conduct*

research, and contribute to society, economy, and culture", then greater emphasis should be placed on advancing, through collaboration, the needs of industry. Research so far has indicated that this is a long-standing argument already, with several researchers highlighting the disconnect (Wu, 2007; Gravier and Farris, 2008; Daud, Ahmad and Johari, 2012; Lutz and Birou, 2013; Wu *et al.*, 2013; Al Mahrooqi, 2020). And even though research shows that many universities have achieved this connectivity and transcended their role with a great impact to the society (Pfotenhauer and Jasanoff, 2017), others have failed to reflect the international setting and the multi-disciplinary nature of the logistics realm (Wu, 2007), as well as better prepare graduates with practical and professional skills (Gravier and Farris, 2008; Lutz and Birou, 2013). This misalignment impacts the industry on many levels: there is a shortage of industry-ready graduates which is further expected to grow (Lutz and Birou, 2013; Harrington, 2017; Iyer-Raniga and Dalton, 2021), there is a potential for innovation that is being delayed (Hamburg and Vladut, 2019), and finally, the risk of reduced competency on a global scale, particularly in view of today's fast-paced, digitised environment of the 4th industrial revolution (Industry 4.0) (Zeidan and Bishnoi, 2020).

Teaching within logistics HE has historically been dominated by lecture-based delivery and content-heavy curricula focused on operational concepts, frameworks, and quantitative methods (Gravier and Farris, 2008). While some programmes have adopted active learning formats such as case studies, simulations, and guest industry contributions, logistics and supply chain management courses have continued to rely predominantly on traditional lectures as the principal mode of instruction, with the more applied pedagogical approaches remaining the exception rather that the rule (Lukman *et al.*, 2021). Where active methods are used, they tend to combine lectures, case studies, self-study, and simulation exercises, yet transformational learning approaches have received little attention. Project-based learning, practitioner co-creating, and sustained industry-embedded modules remain underdeveloped across the sector, reflecting the broader structural gap between logistics HE and the industry (Lancioni, Forman and Smith, 2001; Salinas-Navarro *et al.*, 2022).

Finally, as Lutz and Birou (2013) suggest, aligning logistics HE with industry needs requires collaboration beyond just universities and industry. Professional bodies and organisations, which advocate extensively for the logistics sector, could also play a

key role in fostering alignment. However despite their influence on setting occupational standards and understanding industry needs, these bodies have had limited success in bridging the gap between academia and industry (Harvey, Mason and Ward, 2014). This gap points to an unrealised potential for professional bodies to support quality assurance in HE, ensuring that academic outcomes align more closely with industry expectations.

To bridge these misalignments, industry and academia collaboration in logistics HE requires supportive policies that empower stakeholders, particularly universities, industry and professional bodies to operate within a cohesive framework. Given this complexity and multi-stakeholder nature of these challenges, I hoped that this project would contribute to addressing them not only through prescriptive solutions imposed from a single perspective, but through the creation of a collaborative space where diverse stakeholders could come together to co-produce knowledge and develop contextually relevant strategies. By establishing a Community of Learning that brought together academics, industry professionals, and representatives from professional organisations/ bodies across different geographical contexts, I aimed to foster dialogue that could illuminate the underlying causes of misalignment and generate practical, implementable approaches to strengthening the collaboration zone. My aspiration was that through this participatory process, the project would not only deepen our collective understanding of the barriers to effective industry-university collaboration but also model a way of working that could be sustained beyond this research itself, demonstrating that meaningful change in logistics HE requires ongoing, inclusive collaboration rather than one-off interventions. Ultimately, I hoped that this work would provide both theoretical insights and actionable pathways for stakeholders seeking to enhance the alignment between logistics education and industry needs in their own contexts. The following section examines existing policies that enable or hinder collaboration, with a view to identifying areas where policy reform could strengthen alignment between logistics, HE and industry needs.

1.3 Policy Context

This section outlines two key areas of policy relevant to this project: 1. The structural configuration of Higher Education Institutions (HEIs) to ensure uniformity and comparability in standards, and 2. Sustainable Education (SE), with its focus on

preparing students for societal, cultural, and economic development. Both areas are crucial in understanding the challenges faced by HE, particularly in logistics, and in shaping this project's approach to addressing the gap between industry and academia.

1.3.1 Structural Configuration in HE

The first area of policy is concerned with the structural configuration of HE, which aims to ensure the quality and comparability of HE qualifications. Policies in this area include standardisation mechanisms, such as those promoted by the European Association for Quality Assurance in HE (ENQA), which seeks to harmonise the procedures and processes that guarantee educational quality (Pechmann and Haase, 2022). This effort is meant to ensure that HEIs meet industry demands and global standards. However, as Tight (2018) notes, quality and quality assurance remain evolving fields within HE. In his work *Higher Education Research*, he dedicates an entire chapter to exploring the contested nature of educational quality. Similarly, several scholars argue that current models of quality assurance are unsustainable, overly bureaucratic and in need of significant reform (Seyfried & Pohlenz, 2018; Yingqiang & Yongjian, 2016; Zhao & Gallant, 2012).

National and international organisations such as the ENQA and UNESCO (UNESCO, 2014) have developed guidelines for assuring educational quality. These bodies emphasise uniformity in qualifications as a means to equip students with the skills required for the global job market (Pechmann and Haase, 2022). This project aligns with these policy concerns because it explores the structural issues that lead to a disconnect (Timmerman and Metcalfe, 1969; Pechmann and Haase, 2022) between logistics education and the skills demanded by industry. By understanding these issues, this research aims to contribute to better alignment between academic standards and industry needs, particularly through collaboration and improved curriculum design.

While the policies aim for standardisation, they often fail to address the practical needs of specific sectors like logistics. They are often conflicting, exhibit gaps, or lack coherence, ultimately causing confusion and deterring effective implementation. This project seeks to fill this gap by providing insights into how logistics education can be tailored to better meet industry requirements, while maintaining academic rigor and comparability.

1.3.2 Sustainable Education

The second area of policy is the concept of Sustainable Education (SE), also referred to as Education for Sustainable Development. This area has gained prominence through initiatives like the Bologna Process and UNESCO's Sustainable Development Agenda. SE focuses on how education can contribute to social, economic, and environmental sustainability, encouraging lifelong learning and the development of a workforce that is adaptable to future challenges.

UNESCO has been a major driver of sustainable education, promoting initiatives that integrate sustainable development principles into all aspects of learning (UNESCO, 2014), while the Bologna process seeks to harmonise HE standards across Europe to promote sustainability, equity, and quality in education. This area of policy is particularly relevant to the study because it emphasises the need for education to prepare students, not only for immediate industry needs, but also for future societal changes. In logistics, this means equipping graduates with the skills necessary to navigate a rapidly evolving industry that is increasingly shaped by sustainability concerns.

Although SE policy promotes the integration of sustainability principles, there is often a disconnect between policy rhetoric and practical implementation. Many HEIs struggle to integrate these principles into LSCM HE in a way that aligns with industry requirements. This project aims to address this by providing connectivity for synergy creation between academia and industry that supports sustainable education practices in logistics.

1.3.3 Contribution of the Project to Policy

This project seeks to address gaps in both areas of policy by proposing a framework for industry-academia collaboration that aims to ensure logistics education is both sustainable and aligned with the evolving industry needs, by examining why there is a lack of communication and synergy between the different stakeholders. In doing so, the project has the potential to contribute to ongoing policy discussions by offering practical insights into how educational standards could be adapted to better serve the logistics sector. It is anticipated that the findings from this collaborative process will inform policy recommendations for transforming quality standards and promoting more

integrated industry-academia partnerships in HE. The actual contributions emerging from this research are discussed in Chapter 7 and 8, where the empirical findings and their policy implications are fully elaborated.

1.4 Scholarly Context – Locating the Project

This project is positioned within the broader scholarly discourse on industry-university collaboration, with a specific focus on co-production between these sectors. The chosen areas of literature are pivotal to defining the project's trajectory, guiding its methodological decisions, and informing its key contributions. By engaging with these specific scholarly fields, the study not only highlights the sources that shape the foundation but also identifies the scholarly gap it aims to address.

The section below provides a brief introduction to the different strands and critiques the body of literature related to each strand. Finally, owing to the gaps identified in the existing literature, it focuses on my significant contributions towards each strand. These literature strands are introduced briefly here to establish the conceptual foundations of this research. However, Chapter 2 provides a comprehensive and detailed review of each area, offering a deeper analysis of the theoretical debates and empirical findings, and scholarly gaps that inform this study.

1.4.1 Industry-University Collaboration

The first strand examines industry-university collaboration, emphasising the "skills gap" between academia and industry – a disconnect often seen as a barrier to effective workforce preparedness and fitness in logistics. Scholars such as Etzkowitz and Leydesdorff (1995) highlight collaboration as central to closing this gap, while others, such as Lutz and Birou (2013), and Zeidan and Bishnoi (2020) point out that effective partnerships must address critical areas like skills development and curriculum alignment. Their work highlights various perceptions of the "skills gap", suggesting that distinct stakeholder expectations contribute to inconsistencies in defining and cultivating these skills (Jackson, 2009; Schwalje, 2011).

However, these studies often assess academia and industry independently, missing the broader collaborative dynamics that could drive curriculum development in LSCM programmes. This research extends beyond these studies by applying a collaborative approach that brings together all stakeholders, academia, industry, and professional

bodies, to identify factors perpetuating the gap. By facilitating dialogue between these groups, this study aims to develop a shared understanding of required skills and knowledge, providing a basis for curriculum reform that can better align with industry needs in the sector.

1.4.2 Co-Production

The second strand represents the concept of co-production in industry-university collaboration. Co-production refers to the joint creation of knowledge and resources by different stakeholders, often with varying interests and perspectives, through mutual participation and engagement (Maffei *et al.*, 2020). This concept has been increasingly emphasised in fields such as innovation studies (Rossi, Ainurul and Yip, 2017) organisational learning, and education policy.

Scholars such as Perkmann *et al.* (2013), and Ankrah and Al-Tabbaa (2015) have extensively discussed the importance of co-production for fostering innovation, but the literature has often fallen short in addressing how such collaboration functions in practice, particularly within logistics. Much of the existing research either focuses on industry-university partnerships in general or highlights the barriers without offering a concrete framework for overcoming them (Ajirah *et al.*, 2023).

Finally, the section considers organisational boundaries and the role of boundary spanning, highlighting how organisations navigate and transcend boundaries to facilitate knowledge exchange, collaboration and innovation. While boundary-crossing dialectics have been explored to some extent (Engeström, Engeström and Kärkkäinen, 1995), the literature remains largely theoretical (van Amstel *et al.*, 2016), with limited explorations of how boundary crossing can be operationalised in closing the gap. While some researchers have explored boundary-spanning as a way to connect academia with industry (Christ *et al.*, 2018), this concept still requires more detailed examination to understand how it can function effectively in bridging the gap between academic and industry knowledge systems.

The study engages with the co-production literature to explore both its potential and limitations. Despite the acknowledged potential of co-production in fostering innovation and collaboration, the absence of concrete examples and practical frameworks within the logistics domain requires further investigation. This study

contributes to the field by proposing a practical framework that encourages sustained collaboration through active knowledge exchange and shared problem solving.

In addition, co-production within logistics academia-industry collaborations could benefit from understanding the concept of multi-voicedness (Engeström, 2007). By incorporating diverse perspectives, co-production acknowledges and utilises varying interests and viewpoints in addressing collective challenges. This research aims to fill a gap in the literature by emphasising the importance of multi-voicedness, offering tailored, actionable solutions to bridge the gap in LSCM HE.

1.4.3 Research Questions

The research questions guiding this research project were carefully developed by considering several key factors to ensure the study's viability, relevance, and depth. These questions align with the project's overarching goals and objectives, the chosen theoretical framework, and personal conviction, as well as the research design and ethical considerations regarding the undertaking of this research project. They were also shaped by a comprehensive understanding of the limitations in the current literature, as outlined earlier in the scholarly context section (see Section 1.4). Addressing these shortcomings is central to the project's aims of exploring how a collaborative approach can bridge the disconnect between industry and academia, particularly within the logistics sector.
The following research questions were formulated.

Research Question 1: How can a collaborative research approach empower participants to advance collaborative transformation efforts and foster alignment between industry and academia through co-production, thereby enhancing graduate capabilities?

This question seeks to address a critical limitation in the literature concerning the disconnect between academic curricula and industry needs. While existing research has identified the barriers to collaboration, few studies provide a practical, co-designed framework that directly tackles these issues. By focusing on collaborative research methods, this question aims to contribute to the reconceptualisation of the activity

systems surrounding the logistics sector and examine how transformative agency can emerge through shared efforts.

Research Question 2: What factors contribute to the communication and collaboration gaps between logistics higher education and the logistics industry, and how do the dynamics and power relationships between these two actors influence these gaps?

The question responds to the identified shortcoming in existing research, which often describes the gap but rarely investigates the root causes of this divide in detail. By exploring the factors at play, this project aims to provide a deeper understanding of why these gaps persist, which can inform future policy and practice.

Together, these questions address significant limitations in the literature regarding industry-academia collaboration in logistics. They reflect the project's commitment to proposing actionable solutions that benefit both sectors and contribute to advancing the field.

1.5 Thesis Overview

This thesis comprises eight chapters, starting with the introductory chapter, which intends to place this research into context about identifying the underlying factors that cause the disconnect between logistics education and HE, and briefly outlines the motivation for undertaking this project, the development of the thinking and the research questions, the outline of the research methodology, and the goals that this approach serves.

Chapter 2 – Literature Review provides a comprehensive literature review, delineating the proximate areas of scholarly discourse the research addresses and draws insights from while also portraying its anticipated contributions. Additionally, a brief discussion is undertaken to acknowledge the areas that were considered but ultimately excluded from the project.

Chapter 3 – Theoretical Framework outlines the personal epistemological position and ontological stance and highlights the theoretical framework, and the underpinning methodology employed as the analytical lens of this collaborative formal intervention.

Chapter 4 – Research Design describes in detail the research design and the reasons for choosing a CL approach. Moreover, the intervention's temporal

development addresses the limitations of online workshops and employs semi-structured interviews to complement the workshops. Finally, the issue of insiderness of the researcher and the ethical implications for the completion of this project are addressed.

Chapter 5 – Data Presentation portrays the data in the form of natural history and in raw format. Here, the sessions are documented in detail regarding the formulated design, the actual implementation of the session, and their outcomes. Synchronous and asynchronous engagement is also described following the above sequence. Finally, the implications of each session to the research, the subsequent sessions, and the different data collection methods employed are discussed.

Chapter 6 – Data Analysis encompasses the unfolding of the various expansive actions that arise from the analysis of historical and empirical nature, emerging as a result of the implementation of the ELC and the contradictions during the course of the CL intervention.

Chapter 7 – Discussion collates the previous chapter's findings and untangles the development of the ELC and the thematic schemata that arise from the analysis of these findings and the contradictions created. Here, the main question of this research project and its contribution to knowledge are addressed.

Chapter 8 – Conclusion provides a conclusion of the thesis, followed by a delineation of the study's inherent limitations. Additionally, the closing chapter expounds upon the implications of the research findings for theory, policy, and practice while identifying opportunities for potential future research. Finally, a reflection of the contribution of this project to new knowledge is addressed.

Chapter 2 Literature Review

2.0 Introduction

This chapter examines existing literature utilised to guide the research and broadly inform the position of the project. This review situates the study within its scholarly context and justifies its position relative to existing work. It intends to present a summary of previous literature to demonstrate the project's importance and feasibility in relation to existing studies. The review enables the project to contextualise the empirical research within the broader academic discourse and the existing body of knowledge, establish the context in which the current project is located, and emphasise the areas of potential scholarly contribution.

Therefore, this review examines the relevant fields of study pertaining to industry-university collaboration and co-production. Under this primary theme, the review explores topics that arise in literature, are relevant to the central theme, and contribute to a better understanding of it. These align with the concept of the disconnect between industry and academia, the nuances of boundary crossing between industry and academia, and the contribution of boundary spanning within the context of organisational learning. Additionally, a section dedicated to logistics HE within the context of the above topics will better support comprehending how these concepts have been considered in logistics-related literature and the challenges facing the logistics domain regarding co-production and organisational learning. These are presented sequentially, primarily categorised and described, followed by a contextual summary.

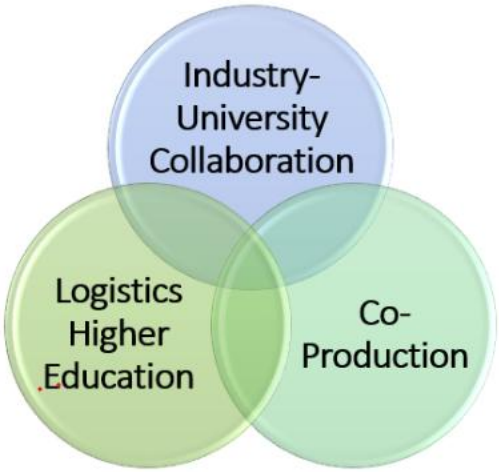
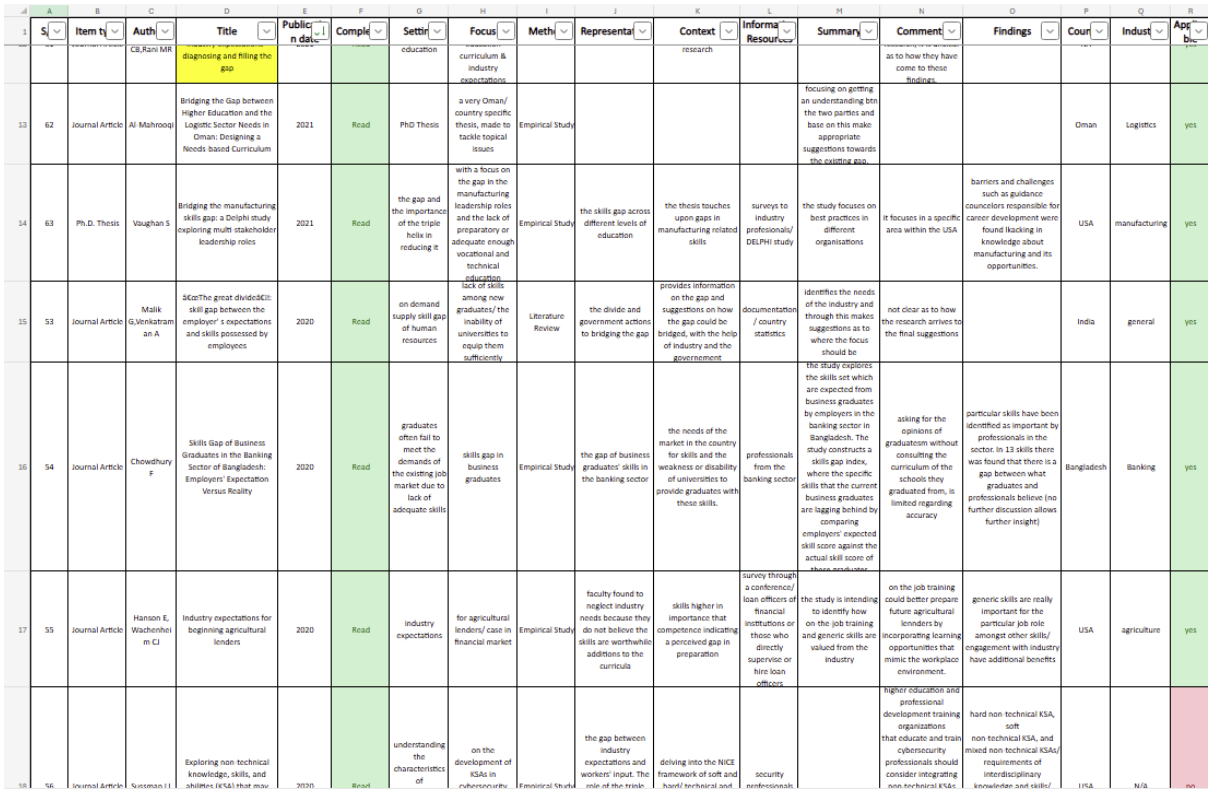


Figure 2.1: Diagram depicting the areas of the literature review

In the sections following the introduction, I will briefly discuss the different processes for collecting, filtering, and examining existing literature. The literature review will then continue to examine the theme of industry-university collaboration, structured into three distinct subsections that highlight the dynamics and challenges of these partnerships. Following this, I will explore the existing misalignment or disconnect between industry and academia, emphasising the specific skills and content that are lacking in curricula as a result of this disconnect. Finally, the review will transition to the concept of co-production, where I will review the literature surrounding boundary-crossing and boundary-spanning, providing insights into how these practices can enhance collaboration and address the identified gaps.

2.0.1 Conduct and Structure of the Literature Review

The review's construct consists of the following four activities, as outlined by Hart (1998), Jesson, Matheson and Lacey (2011), and Galvan and Galvan (2017): **Scoping, searching**, **filtering,** and **analysis** of identified papers. I used Mendeley to store and organise these papers. Additionally, an Excel sheet (see Figure 2.2.) served as a tool for documenting bibliographic records of identified articles and organising data through the different stages, allowing comments and applying inductive descriptive codes (refer to Appendix 1).



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	S	Item t	Auth	Title	Public n dat	Comple	Settin	Focus	Meth	Representa	Context	Informa Resourc	Summar	Comment	Findings	Coun	Indust	Ap Dis
			CB,Rani MR	diagnosing and filling the gap			education	curriculum & industry expectations			research			as to how they have come to these findings.				
13	62	Journal Article	Al Mahrooqi	Bridging the Gap between Higher Education and the Logistic Sector Needs in Oman: Designing a Needs-based Curriculum	2021	Read	PhD Thesis	a very Oman/ country specific thesis, made to tackle topical issues	Empirical Study				focusing on getting an understanding btn the two parties and base on this make appropriate suggestions towards the existing gap.			Oman	Logistics	yes
14	63	Ph.D. Thesis	Vaughan S	Bridging the manufacturing skills gap: a Delphi study exploring multi-stakeholder leadership roles	2021	Read	the gap and the importance of the triple helix in reducing it	with a focus on the gap in the manufacturing leadership roles and the lack of preparatory or adequate enough vocational and technical education	Empirical Study	the skills gap across different levels of education	the thesis touches upon gaps in manufacturing related skills	surveys to industry profesionals/ DELPHI study	the study focuses on best practices in different organisations	it focuses in a specific area within the USA	barriers and challenges such as guidance councelors responsible for career development were found lkacking in knowledge about manufacturing and its opportunities.	USA	manufacturing	yes
15	53	Journal Article	Malik G,Venkatram an A	â€œThe great divideâ€: skill gap between the employer' s expectations and skills possessed by employees	2020	Read	on demand supply skill gap of human resources	lack of skills among new graduates/ the inability of universities to equip them sufficiently	Literature Review	the divide and government actions to bridging the gap	provides information on the gap and suggestions on how the gap could be bridged, with the help of industry and the government	documentation / country statistics	identifies the needs of the industry and through this makes suggestions as to where the focus should be	not clear as to how the research arrives to the final suggestions		India	general	yes
16	54	Journal Article	Chowdhury F	Skills Gap of Business Graduates in the Banking Sector of Bangladesh: Employers' Expectation Versus Reality	2020	Read	graduates often fail to meet the demands of the existing job market due to lack of adequate skills	skills gap in business graduates	Empirical Study	the gap of business graduates' skills in the banking sector	the needs of the market in the country for skills and the weakness or disability of universities to provide graduates with these skills.	professionals from the banking sector	the study explores the skills set which are expected from business graduates by employers in the banking sector in Bangladesh. The study constructs a skills gap index, where the specific skills that the current business graduates are lagging behind by comparing employers' expected skill score against the actual skill score of	asking for the opinions of graduatesm without consulting the curriculum of the schools they graduated from, is limited regarding accuracy	particular skills have been identified as important by professionals in the sector. In 13 skills there was found that there is a gap between what graduates and professionals believe (no further discussion allows further insight)	Bangladesh	Banking	yes
17	55	Journal Article	Hanson E, Wachenhei m CJ	Industry expectations for beginning agricultural lenders	2020	Read	industry expectations	for agricultural lenders/ case in financial market	Empirical Study	faculty found to neglect industry needs because they do not believe the skills are worthwhile additions to the curricula	skills higher in importance that competence indicating a perceived gap in preparation	survey through a conference/ loan officers of financial institutions or those who directly supervise or hire loan officers	the study is intending to identify how on the job training and generic skills are valued from the industry	on the job training could better prepare future agricultural lennders by incorporating learning opportunities that mimic the workplace environment.	generic skills are really important for the particular job role amongst other skills/ engagement with industry have additional benefits	USA	agriculture	yes
18	56	Journal Article	Sussman J	Exploring non-technical knowledge, skills, and abilities (KSA) that may	2020	Read	understanding the characteristics of	on the development of KSAs in cybersecurity	Empirical Study	the gap between industry expectations and workers' input. The role of the triple	delving into the NICE framework of soft and hard/ technical and	security professionals		higher education and professional development training organizations that educate and train cybersecurity professionals should consider integrating non-technical KSAs	hard non-technical KSA, soft non technical KSA, and mixed non-technical KSAs/ requirements of interdisciplinary knowledge and skills/	USA	N/A	no

Figure 2.2: Excel listing of relevant articles from different sources

The first step in the process is **scoping** (Booth, Papaioannou and Sutton, 2012a). This, as discussed in the introduction of this chapter, led to the determination of the scope of the research and placed this literature into context: to identify key factors, benefits, and challenges in university-industry collaborations, particularly in the context of logistics HE. The scope of this research is "*the dynamics of industry-university collaboration in HE, with particular attention to the logistics realm and to co-production issues".* I aimed to use a qualitative approach to identify and critique key strategies and arguments in the literature which implicate these issues. The scoping came after aligning the project's broader intent with my supervisor, peers involved in the CL workshops, and other stakeholders engaged through different methods of inquiry (refer to Chapter 4, Research Design).

It is appropriate at this stage to discuss those areas of literature that are not considered in this review. The field of industry-university collaborations that arises from Etskowitz and Lydersdorff's theorising works of the Triple-Helix of Innovation (Etzkowitz and Leydesdorff, 1995) but focuses on research collaboration for the purposes of monetisation and commercialisation of such interactions between industry and

academia, would yield very little information for the project. Additionally, a field of study that will not be considered, even though it was originally a source of motivation for this research project, is that of curriculum (co-)design and development, with the participation and increased input of suggestions from industry practitioners. While this study addresses the gap between industry and academia, it does not focus on curriculum design itself, as the primary purpose of the research is to explore the dynamics and limitations of industry-university collaborations and current co-production strategies. Finally, the field of employability skills development and related pedagogical approaches is not considered in this study. While the body of literature engages with industry-academia relations and offers insights into the nature of the gap, it does so primarily in relation to informing educational and pedagogical practices. This research extends beyond this focus by examining the underlying factors that contribute to the persistence of the gap.

The scoping process yielded initial keywords (that were refined at later stages) and established inclusion and exclusion criteria. These were determined early in formulating the research questions and further refined through expert consultation and by reviewing articles, reports and other online documents.

The next step in the process is **searching.** Searching is the attempt to adopt an integrative approach, systematically reviewing and critically assessing pertinent literature (Booth, Papaioannou and Sutton, 2012b). The tools utilised were primarily online databases, such as Elsevier Scopus, Google Scholar, Lancaster University's OneSearch, Elsevier Open Access Journals and the Web of Science Master Journal list. This directed the search to appropriate journals in different publications of leading academic publishers and allowed for the refinement of research into specific areas of interest. Through the refinement process, specific keywords and topics emerged. These are:

- Industry-university Collaboration [collaboration AND industry AND academia]
- Co-production between industry and academia [co-production AND industry AND academia];
- Bridging the gap between industry and HE [bridging AND gap + industry + higher education/ academia/ university].

In combination, making use of the different search engines available and utilising the keywords identified above, a wealth of results was presented, amounting to more than 20,000 articles. The sheer volume of articles, required further refinement is required, hence, moving to the next step in the process: **Filtering**.

Through this step, I focused on identifying articles that aligned with my research objectives, specifically prioritising studies related to industry-university collaboration and co-production in the HE context. A systematic approach using various research engines to ensure a comprehensive selection of relevant literature, was employed. Scopus amongst others, for instance, offers an extensive refinement tool that allows filtering by year, range, language, and open access status, which facilitated the initial selection process. Google Scholar, on the other hand, while less restrictive, required a more significant investment of time to shift through a large volume of returned articles. This approach yielded a diverse range of articles, prompting further investigation into additional sources. Ultimately, all results were screened in accordance with a set of inclusion and exclusion criteria (see criteria in Table 2.1).

Separate sections were created in the Excel sheet (mentioned above), with predefined drop-down menus for each inclusion/ exclusion criterion, as suggested by Booth, Papaioannou and Sutton's (2012a) "Guidelines for Reference Management".

Criteria	**Inclusion**	**Peer reviewed articles, conference proceeding, and policy documents from various disciplines, with a focus on logistics HE.**
		Studies published between 2000 and 2024 (older sources, prior to 2000 may only be considered if offering significant insights).
		Sources from various countries, without placing an emphasis on developed or developing countries.
		Both quantitative and qualitative studies, with a focus on empirical research and case studies.
		Studies that are in English and are open access.
	Exclusion	Non-peer reviewed sources or sources of theoretical nature or opinion-based pieces lacking empirical data or methodological rigour.
		Studies that focus on different educational levels.
		Language other than English and paid access options

Table 2.1: List of inclusion and exclusion criteria to identify relevant sources.

The documents were inspected to reduce the amassed titles to relevant, original, and empirical results. The filtering process ensured that unoriginal or conceptual studies and false returns were excluded from the research.

Research is filtered to include studies, the conclusions of which are strictly drawn from concretely empirical evidence and are, therefore, verifiable.

Area of Research	Documents Found	After Filtering
Industry-university collaboration	+1,351	108
Bridging the gap between industry and academia	+2,851	105
Co-production between industry and academia	+4,401	112
Total	+8,603	325

Table 2.2: Tables of documents returned upon research in various search engines.

The final step in the process of reviewing literature is **analysis,** which entails a comprehensive examination of the selected articles to extract meaningful insights relevant to my research on industry-university collaboration and co-production. The research employed a thematic analysis to identify key themes in literature and further explore these themes within these categories (U-I collaboration and Co-production). Each article was critically evaluated for methodological rigour, allowing for a better assessment of the reliability of their conclusions and the applicability to this study. Additionally, a comparison of the results took place to identify patterns and discrepancies, which further illuminated gaps in the literature that this research seeks to address. This analytical process not only clarified the rationale of this research but also articulated it potential contribution to advancing the understanding of collaborative practices in the logistics realm.

2.0.2. Structure and Areas of Discussion

The focus of this research is to shed light on the dynamics between industry and academia to understand and elucidate the existence of the gap. The sections that follow review the relevant literature, organised around the two core paradigms introduced above:

1. the fact that HE carries the responsibility for supplying industry with human resources, which highlights the role of HE in responding to these needs, as well as actively engaging in collaboration with industry, fostering strong partnerships, which is expected to help them better align with industry needs (Berkovski and Gottschalk, 1997; Fawcett and Rutner, 2014; Noth *et al.*, 2015; Stibbe, Reid and Gilbert, 2018; *The Sustainable Development Agenda*, 2019), and
2. to go beyond traditional models of education, involving industry and academia in a long-term co-production relationship where both collaborate in developing relevant programmes and research initiatives, that facilitate a two-way exchange and allow for a more dynamic response to the evolving needs of industry (Gravier and Farris, 2008; Daud, 2012; Erturgut, 2016).

Based on these two constants, there is the need for continuous cooperation, which is reflected in the following theme of Industry-University Collaboration. Finally, organisations need to access and utilise knowledge, skills, and techniques (knowledge exchange and learning) presently limited to one organisation (Wallin et al., 2014), which is reflected in the following theme of Co-Production.

2.1. Industry-University Collaboration

The literature surrounding the industry-academia gap, often centres on the ailment of HE, the failure to equip graduates with the right mix of skills and appropriate knowledge needed by the industry, while increased collaboration between industry and academia/ university has been widely prescribed as a potential solution. However, while the prescription of increased collaboration has been widely discussed, much of the discourse remains focused on normative solutions rather than rigorous empirical investigation of the systemic factors that sustain this gap. A critical question arises here: to what extent have the theoretical frameworks developed to address this gap adequately addressed the complexities they entail, and how have these frameworks fallen short in offering practical, sustainable solutions?

Parker (2024) suggests that academic researchers, who have traditionally been positioned as central to bridging the research-practice divide, may lack the practical experience and skills necessary to effect meaningful change. This highlights an

important, though often overlooked, factor in the industry academia gap – the limited ability of academic institutions to translate theoretical research into actionable insights that are relevant to industry needs. Moreover, as Romero-Silva, Santos and Hurtado-Hernández (2024) emphasise, the theory-practice divide is not unique to academia at large, but is particularly pronounced in fields like logistics HE, where practical applications and theory remain largely disconnected.

The early research on collaboration, particularly from the late 20th century, focused on enhancing the relationship between academia, industry and government. The introduction of the Triple Helix model by Etzkowitz and Leydesdorff (1995) aimed at conceptualising this collaboration in a tripartite framework, emphasising the importance of cooperation between universities, industry, and government for fostering innovation (refer to Figure 2.3). The model provides a better visualisation of value creation from the initial model of overlapping spheres suggested by (Etzkowitz, 2002). However, despite the theoretical appeal of the Triple Helix, its practical implementation has remained limited.

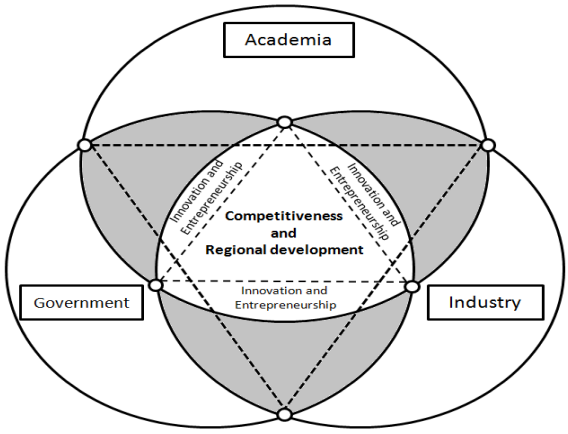


Figure 2.3: The Triple Helix model as conceptualised by Farinha and Ferreira (2013).

Pfotenhauer and Jasanoff (2017) suggest that this model, often presented as a universal solution to socio-economic challenges, functions more as an idealised concept than a feasible blueprint for achieving systemic change. The failure to implement the Triple Helix across all HEIs suggests that the model's universality may be overstated, overlooking the significant differences in institutional contexts, resources, and goals between various HEIs.

Moreover, the evolution of the Triple Helix into Quadruple Helix to include the community or civil society (Schütz, Heidingsfelder and Schraudner, 2019) and Quintuple Helix, introduced the sphere of the environment in the concept of knowledge-based society and economy (Carayannis and Campbell, 2011) further complicates the model. While these expanded frameworks incorporate additional actors, they do not fully address the persistent challenges of collaboration that arise from structural and cultural differences between academia and industry. As such, the discourse on innovation, as framed by these models, risks generalising the issues and complexities of industry-academia collaboration by treating it as a universal one-fit-all-solution to broader socio-economic problems (Pfotenhauer and Jasanoff, 2017).

Further complicating the issue, some scholars emphasise that the responsibility for robust industry-academia relations lies with industry itself, citing the need for continuous communication (Taylor, 2012; Lucietto *et al.*, 2021). However, such arguments often fail to consider the historical and empirical challenges that impeded collaboration. As noted by Freitas, Geuna and Rossi (2011) and McKinney and Truss (2023), the organisational differences between academia and industry (such as contrasting goals, structures, and cultures) are seldom addressed in depth, despite being central to understanding the nature of the divide. Zeidan and Bishnoi (2020) and Passos *et al.* (2022) point out that the persistent organisational silos of both actors are a major barrier, yet these insights are rarely incorporated into the prevailing literature on collaboration.

In fact, much of the existing research on industry-academia collaboration remains embedded in a binary, blame-oriented narrative. Industry and academia are often depicted as being in conflict, with both sides blamed for the lack of effective collaboration. This has led to a generalisation of the issue, reducing it to a “blame game” rather than offering a functional analysis of the root causes of the gap. As Perkmann (2011) and Corsino and Torrisi (2023) indicate, much of the research has focused on commercialisation issues, particularly concerning intellectual property rights, without sufficiently exploring the underlying institutional barriers that complicate meaningful collaboration.

Finally, while many studies have focused on identifying best practices for collaboration, these often fail to consider the full spectrum of challenges faced by different HEIs. As

Etzkowitz (2002) suggests, the lateral relationships that span boundaries may be more effective in fostering innovation than rigid hierarchical structures. This perspective challenges the traditional top-down model of collaboration, calling for a more flexible, network-based approach. However, this shift remains under-explored in the existing literature, and more work is required to understand how such lateral relationships might function in practice, particularly in the context of logistics HE.

My thesis is expected to contribute to this body of literature by critically examining the nuances of industry-academia collaboration within the context of logistics HE. Specifically, it will explore the historical, empirical and structural factors that perpetuate the theory-practice gap and investigate how these barriers can be addressed through the understanding of the current relationship dynamics between the two actors. By engaging with both, the theoretical and practical dimensions of the issue, this research seeks to not only enrich the discourse on collaboration, but also to provide actionable recommendations for improving the relationship between industry and academia.

The next section will further explore how the gaps in collaboration have contributed to broader challenges, exacerbating the divide between industry and academia.

2.1.1 Gaps between Industry and HE

The industry-academia gap, a persistent topic for over 50 years, has been extensively discussed, argued, and debated. However, while the persistence of this gap is widely acknowledged (Bartunek and Rynes, 2014), the focus of the discussion has often leaned more towards normative opinions rather than a deep empirical inquiry into the systemic factors maintaining the divide. Bartunek and Rynes (2014) conceptualise this gap as a metaphorical divide between academics and practitioners, rigour and relevance, theory and practice. This conceptualisation creates the risk of oversimplifying the complexity of the issue, neglecting the deeper, structural factors that may underlie these forces. The reliance on such broad dichotomies may hinder more targeted, context specific approaches that could address the challenges of bridging the gap.

The discourse on industry-academia collaboration, and particularly the role of the university in this dynamic, goes back several decades (Powell and Dayson, 2013). However, despite its long-standing presence in academic and policy circles, this

concept has struggled to gain substantial consensus. Powell and Dayson (2013) argue that the discussion has often been trapped within binary oppositions, such as vocational vs liberal education or socio-economic vs mass education, amongst others, for too long. The emphasis on these dualities may have prevented attention from the more pressing question of how universities can more effectively engage with industry to meet the demands of the modern workplace.

Sadiq Sait (2022) indicates the importance of industry-academia collaboration for technological advancement and innovation in the era of the 4th Industrial Revolution but also critical for developing a qualified workforce. However, the literature suggests that communication breakdowns between industry and academia remain a key barrier to successful collaboration. Some scholars have addressed the issue directly, such as Zeidan and Bishnoi (2020), Rico *et al.* (2021), and Ahmed *et al.* (2022), while others, including Farkas and Nagy (2008), Bjerregaard (2010) and Stergiou and Airey (2015), have approached it indirectly. Yet, while these studies acknowledge the communication gap, they often fail to explore the root causes of this disconnect in sufficient detail. By focusing on superficial solutions, such as improving dialogue, much of the literature overlooks the deeper, systemic challenges that need to be addressed to facilitate genuine, long-term collaboration between these sectors.

When writing the literature review, research on gaps between industry and HE focused on the lack of collaboration between industry and academia and extends to the following areas. 1. Employability and skills, and 2. Curriculum and content.

2.1.2 Employability and Skills

A significant body of research (Trauth, Farwell and Lee, 1993; Maisiri, Darwish and van Dyk, 2019; Meyer and Norman, 2020) highlights the misalignment between skills required by the logistics industry and those provided by HEIs, often advocating for greater industry involvement in curriculum design. However, these studies primarily focus on identifying the gaps or suggesting broad collaborative efforts between industry and academia. There is a relative lack of research that examines how these collaborative processes can be effectively facilitated and what specific mechanisms can bridge the differing expectations and perspectives of industry and academia in practice. This is a critical gap that this thesis aims to address through a collaborative interventionist methodology.

Scholarly research on the gap between industry and academia has been discussed extensively since the late 20th century, with key works such as Trauth, Farwell and Lee (1993), and Gonzenbach (1998) acknowledging the persistent lack of understanding between these sectors. While early studies laid the groundwork for identifying the gap, the underlying causes and consequences of this misalignment remain underexplored. Tasker and Packham (1993) and Willmott (2003), for instance, agree that efforts to bridge the divide have often led to unintended outcomes, exacerbating rather than mitigating the gap between industry and HE. This suggests that the issue is not merely one of miscommunication but involves deeper structural discrepancies between the values and priorities of both sectors.

A recurring theme in the literature is the misalignment between the skills expected by employers and those possessed by graduates (Tushar and Sooraksa, 2023). This gap appears not only in the mismatch between academic curricula and industry demands, but also in the divergence of expectations amongst key stakeholders – industry professionals, academics, and students. While studies like those by Alshare and Sewailem (2018), Kralj (2018), Uzoka *et al.* (2018), and Succi and Canovi (2020) identify these groups as central to the issue, they often focus on isolated feedback rather than exploring the underlying reasons for the persistent disconnect. A more nuanced analysis could reveal how each group's distinct perspectives shape their expectations and interactions, and how these expectations evolve over time.

Evidence of the disconnect can be identified in the terminology used to describe the misalignment. Jackson (2009) and Schwalje (2011) emphasise the role of unclear definitions in perpetuating the divide, noting that "this lack of clarity and uniformity" heightens the risk of HEIs developing competencies that are irrelevant or outdated. However, while the research highlights the practical implications of such disconnect, such as inefficient public spending and diminished educational impact, the broader theoretical implications of these discrepancies remain insufficiently addressed.

Much of the existing research relies heavily on surveys to quantify gaps in skills expectations (Radermacher and Walia, 2013; Bartunek and Rynes, 2014; Ramesh, 2017). While these surveys provide valuable insights into the nature of the skills mismatch, they often fail to probe the underlying factors affecting the way these expectations are constructed and understood by different stakeholders. In particular,

the lack of a shared framework or common understanding of skills between academia and industry suggests that efforts to bridge the gap may need to go beyond simple feedback mechanisms and focus on creating a more integrated, ongoing dialogue between the two actors. Without such a framework, the risk is that any attempts to align curricula with industry needs may be at best superficial, and at worst, misguided.

2.1.3 Curriculum and content – also in the Logistics Domain

The disconnect between industry and academia has been widely acknowledged, prompting research into curriculum design as a key factor in bridging this gap. While the logistics discipline has attracted growing attention in the recent decades, the literature remains fragmented in its treatment of curriculum challenges, varying significantly in context, methodology, and conclusions. Some studies focus on structural issues within HE, while others emphasise content alignment or skill development. However, the dominant trend in logistics HE research has been to diagnose gaps rather than critically analyse their underlying causes or propose systemic solutions.

A central theme in the literature concerns the responsiveness of HE curricula to industry needs. Garraway (2006) identified policy driven pressures for curricula to be more workplace-oriented yet argued that curriculum theory itself remains underdeveloped in addressing these demands. Much of the literature advocates for co-designed curricula at the postgraduate level (Kulkarni *et al.*, 2020; Arun Kumar, 2022), yet there is little consensus on how this should be achieved. Studies have sought to map industry expectations onto academic content, often through surveys or gap analyses (Wu, 2007; Gravier and Farris, 2008; Lutz and Birou, 2013; Al Mahrooqi, 2020). Wu (2007), for example, highlighted inconsistencies in logistics curricula, calling for greater standardisation, while Lutz and Birou (2013) explored the role of professional organisations (POs) in informing curricular design. However the lack of an established methodology for integrating industry knowledge into curriculum development remains a major limitation (Dubey and Singh, 2008).

Beyond curriculum content, research suggests that structural and institutional challenges impede alignment between academia and industry. The rapid expansion of logistics degree programmes has often outpaced the availability of qualified faculty with domain-specific expertise (Wu, 2007; Ozment and Keller, 2011). Additionally,

curriculum design in many institutions has been delegated to individual faculty members rather than developed through structured collaboration with industry stakeholders (Ozment and Keller, 2011; Onar *et al.*, 2013). This has resulted in curricula shaped by individual academic strengths, disciplinary biases, and institutional heritage, rather than systematic alignment with industry needs (Larson and Halldorsson, 2004; Wu, 2007; Gravier and Farris, 2008; Jordan and Bak, 2016).

Some researchers have critically argued that the curriculum gap extends beyond content misalignment to fundamental deficiencies in pedagogical approaches. Zeidan and Bishnoi (2020) assert that logistics programmes fail to equip students with the practical skills needed for industry, a concern echoed in broader discussions on balancing theoretical rigour with applied relevance (Shariff, 2013; Crespin-Mazet and Ingemansson-Havenvid, 2021). While some studies propose mechanisms for integrating practice-based learning, such as industry partnerships and experiential learning tools (Maisiri, Darwish and van Dyk, 2019; Meyer and Norman, 2020), research in this area remains largely prescriptive, with limited empirical validation. Furthermore, the quality of evidence in existing literature varies: while some studies rely on robust empirical data, others are anecdotal or based on personal accounts (Radermacher and Walia, 2013).

A key limitation of existing research is its tendency to address gaps in isolation, either from a curriculum content perspective or from a skills development angle, without considering the systemic factors that perpetuate misalignment. The prevailing approach of modifying existing curricula, rather than reconceptualising the industry-academia relationships, risks reinforcing fragmentation rather than fostering coherence. This research contends that a more systematic and collaborative approach is needed to bridge the disconnect between logistics HE and industry.

My thesis will address these gaps by systematically examining the disconnect between logistics HE and industry needs and investigate how collaborative practices can enhance communication and alignment. The study, therefore, aims to provide empirical insights that focus on identifying the challenges and advancing the discourse on effective industry-university collaboration. Through a qualitative research approach, employing a Change Laboratory and one-to-one interviews, I seek to contribute to not only the theoretical understanding of the gap between industry and academia, but also

offer practical recommendations for effective ways in developing skills and knowledge promoting curricula that meet the needs of industry, of graduates, since they are more employable, and finally, the society/ economy, as the actors focus on impact and ultimately enriching logistics HE.

The above discussion, the identification of misunderstanding and misalignment between industry and academia, brings this research to the following juncture: exploring co-production in HE as a mechanism for addressing the gap and the issues concerning collaboration effectiveness and alignment between the two actors.

2.1.4 Efforts on strengthening partnerships in Technical and Vocational Education and Training (TVET)

The literature on strengthening partnerships between education and industry extends beyond HE to Technical and Vocational Education and Training (TVET). Similarities with HE can be found in that TVET education is often positioned as a mechanism for promoting economic development, and addressing labour market needs (Lee, 2009). However, despite its potential, critiques of TVET frequently highlight practical challenges, such as inadequate alignment between educational institutions and industry needs, resulting in limited employability outcomes for graduates (Atchoarena and Delluc, 2002). Some scholars argue that strong institutional-industry partnerships can help mitigate these issues (Taylor, 2006), yet the literature lacks consensus on the conditions required for such partnerships to be effective and sustainable.

A recurring theme in the literature is the precarious nature of these collaborations. While Amey and Eddy (2023) emphasise the benefits of partnerships, they also note that such initiatives are frequently treated as peripheral, perceived as politically complex, and subject to institutional resistance. This raises important questions about the extent to which partnerships are genuinely integrated into educational strategies or remain “fringe activities” – ad hoc responses to external pressures. Furthermore, the assumption that partnership alignment is inherently beneficial is contested. Studies suggest that not all collaborations lead to transformative outcomes, and in some cases, they can reinforce existing power imbalances rather than address systemic gaps (Lee, 2009; Amey and Eddy, 2014; Njengele, Engel-Hills and Winberg, 2024).

This critique is particularly relevant to discussions on the transferability of the dual-education model, which alternates between periods of theory-based classroom study and block periods of supervised work experience (Wiemann and Fuchs, 2018). Proponents argue that this approach strengthens industry engagement, institutional readiness, and policy support (Keevy *et al.*, 2021). Additionally, the role of educational staff in bridging academic knowledge with workplace realities remains underexplored (Watt-Malcolm and Barabasch, 2010), raising concerns about whether these partnerships truly equip students with industry-relevant competencies or merely provide short-term placements without long-term career pathways.

Beyond structural limitations, literature on education-industry partnerships frequently identifies economic fluctuations as a key determinant of industry involvement. Employers tend to advocate for stronger apprenticeship systems during economic booms but withdraw engagement during downturns (Watt-Malcolm and Barabasch, 2010; Amey and Eddy, 2014; Njengele, Engel-Hills and Winberg, 2024). This cyclical pattern suggests that industry participation is often driven by immediate economic incentives rather than long-term workforce development strategies. Additionally, tensions between stakeholders arise from competing institutional logic, with differences in priorities, norms, and expectations creating persistent friction (Seddon and Billett, 2004; Njengele, Engel-Hills and Winberg, 2024). While research has documented these challenges, few studies have systematically examined how these tensions manifest in decision-making processes or how they shape the evolution partnerships over time.

Although the literature has provided valuable insights into best practices, drawing from surveys, interviews and case studies, there has been less focus on analysing and understanding the underlying dynamics that shape these partnerships and influence partnership success or failure. This gap limits the broader applicability of findings and hampers efforts to address systemic issues.

In conclusion, while existing literature offers practical recommendations and highlights the potential of education-industry partnerships, it falls short in exploring the deeper structural and contextual factors influencing these collaborations. My thesis is expected to delve into the dynamic between stakeholders, examining how power relations, amongst other factors doom partnership outcomes. This approach could

provide a more nuanced understanding of how to foster sustainable, mutually beneficial collaborations that adapt to changing contexts.

2.2. Co-production between Industry and HE (Knowledge Transfer)

Co-production is a recurring theme in industry-university collaboration literature (Rossi, Ainurul and Yip, 2017; Sannö *et al.*, 2019), appearing as a remedy in knowledge production that can benefit both parties (Crespin-Mazet and Ingemansson-Havenvid, 2021). As the main title suggests, University-Industry Collaboration refers to working together for research, innovation, patenting, and prototyping (Rossi, Ainurul and Yip, 2017), outcomes of the co-production concept resulting from the partnership between industry and academia.

This theme is intertwined in literature with impact, learning, and change (Sannö *et al.*, 2019) drawing from the concept of the Triple Helix of innovation, where actors work together to create value within a setting (Sannö *et al.*, 2019). Scholars here are concerned with the involvement of stakeholders in the co-production mix, with numerous research on student experiences, placing a central focus on feedback from students (McCulloch, 2009; Dollinger, Lodge and Coates, 2018; O'Connor *et al.*, 2021), while other research takes into consideration industry and academia, discussing an overall problematic partnership (Cherney, 2015) owing to a difference in culture between the two actors (Gilliland *et al.*, 2022; Ursić *et al.*, 2022) and causing difficulties in the communication between them (Bosley, 1995; Sutliff, 2000; Zeidan and Bishnoi, 2020; Mondal, 2024). This is not very different from the research that was previously discussed concerning university-industry collaboration and the gap research, as collaboration is a requisite of co-production, and lack thereof, is what creates the discernible gap. This is because all scholars “hit a wall” when researching the best approach in a generally negative environment. And this is the main reason, in this field of study, that mostly studies concern the viewpoint of the scholar (Kaymaz and Eryiğit, 2011; Sannö *et al.*, 2019).

Although many researchers recognise the need for collaboration, not all incorporate co-production as a result of that collaboration, nor do they consider its impact on its implications for teaching and learning in HE (Jackson, 2018). Moreover, a common

misconception exists that co-production involves unidirectional knowledge transfer from academics to external stakeholders (Rossi, Ainurul and Yip, 2017). This perspective overlooks the essential role of reciprocal relationships and shared motivations that drive successful partnerships (Sannö *et al.*, 2019). Additionally, literature reveals a hesitation among scholars regarding their ability to translate research findings into actionable insights for practitioners, which further hinders the potential for co-production (Chen, Wu and Wu, 2013; Young and Freytag, 2021).

Although the former suggests that academics should play the role of the interpreter to enable collaboration, the latter recognises the apprehension gap between academics and practitioners and assigns the problem to the inability or unwillingness of academic researchers to translate their insights to practitioners. Stentoft and Freytag (2018) have been critical in their discussion about the practical relevance of research and suggested that research must change towards more real problems. Their research highlights areas of debate and calls for a thorough understanding and challenge the current system. Cherney (2015) also suggests that translation of findings is often neglected by academics, as their rewards system requires publications ranked in refereed journals, and any translation efforts and activities (workshops, toolkit production, briefs or summaries) are seen as counterproductive as it slows down their publication rate.

Various strategies have been proposed in the context of co-production and in the process of bringing scholars and practitioners together, including appointing doctoral students in cross-organisational activities (Kunttu, Huttu and Neuvo, 2018), exploring the factors that hinder co-production and suggesting strategies for bridging these (Sannö *et al.*, 2019; Cooke *et al.*, 2021), hiring diverse people (Lotz-Sisitka *et al.*, 2015) to safeguard the best of both worlds (Gilliland *et al.*, 2022), several reviews on best practices and success factors (Vick and Robertson, 2018; O'Connor *et al.*, 2021), and seeking scholarly insights to identify where the challenges are found (Crespin-Mazet and Ingemansson-Havenvid, 2021).

According to Derrett (2013), in the process of co-production some universities invest financially in projects with industry partners through collaboration, while others are reluctant to provide money, time and space to assist in the required integration, and view such engagement as a cost rather than investment (Williams *et al.*, 2020). The author suggests that many academics are not encouraged internally in such systems

- such integrative efforts are not rewarded nor incentivised - making it difficult for these academics to deal with potential external partners and reap the benefits of the porous boundaries between industry and academia (Derrett, 2013) through meaningful applied research (Powell and Dayson, 2013).

Scholars have expressed or discussed their lack of trust in co-production (Flinders, Wood and Cunningham, 2016). They identify co-production as being a risky method of social enquiry, and underline that the "politics" involved suggest complex power relationships and often competing or conflicting incentives, expectations and priorities that may frustrate the research process. Other scholars have highlighted ethical concerns in co-production practices (Bannister and Hardill, 2016; Williams *et al.*, 2020) in that industry and academic partners do not always find alignment between them (Cherney, 2015), leading to collaborations that are problematic and outcomes difficult to achieve.

This thesis aims to advance the understanding of co-production by addressing these gaps through a comprehensive analysis of the dynamics between industry and academia. Specifically, it seeks to explore the mechanisms of co-production, by investigating how co-production can be effectively facilitated through dialogue and collaborative practices.

Owing to the diverse discourse in co-production, the following sections further discuss topics arising from collaboration, co-production and knowledge transfer, namely organisational learning across boundaries.

2.2.1 Organisational Learning across Boundaries

Organisational Learning (OL) is fundamentally linked to processes of change and transformation (Garraway, 2010; Johansson and Felten, 2014; Elliott, 2020). Existing literature predominantly addresses learning that takes place internally, within the organisation (Basten and Haamann, 2018), yet there is a pressing need to explore how external factors and actors influence this learning process. In the context of HE, Dee and Leišytė (2016) highlight a significant gap in empirical research, pointing to a lack of studies that bridge theory and practice, particularly regarding the implementation of OL, through effective knowledge management (Taylor, Templeton and Baker, 2010; Al-Sulami *et al.*, 2023). While previous research has emphasised the benefits of OL primarily in administrative contexts to increase institutional effectiveness

(Viera Trevisan, Leal Filho and Ávila Pedrozo, 2024), there is insufficient exploration of how these principles can be applied to foster sustainable practices within HE (Cebrián, Grace and Humphris, 2013; Godemann *et al.*, 2014).

Moreover, the scholarly discourse reveals a confusion in understanding OL as it relates to the potential role for academics in fostering a learning organisation (Lawler and Sillitoe, 2013). Despite the recognition that universities are organisations that provide learning, they do not inherently make them learning organisations. Earlier studies have conceptualised OL not solely as individual learning but as a collective process that goes beyond self-motivated curiosity, ultimately contributing to the academic responsibility of creating enriching learning opportunities (Hodgkinson, Franklin and Stewart, 1998; Lawler and Sillitoe, 2013). Finally, the call for capturing tacit knowledge through collaborative applied research, further emphasises the need for engaging with external communities (Lawler and Sillitoe, 2013).

While there has been some focus on communities of practice as platforms for collective learning (Mavri, Ioannou and Loizides, 2021), a prevailing challenge remains. The traditional model of HE tends to compartmentalise learning as an individual endeavour, often neglecting community engagement (Hodgkinson-Williams, Slay and Siebörger, 2008).

This thesis is expected to contribute to the understanding of the gap between industry and academia, by focusing on how OL can facilitate collaboration between universities and external stakeholders. The study will provide empirical evidence to support the theoretical constructs of learning across boundaries and will specifically explore OL as a process that does not merely enhance internal processes but also engage external communities in transformative ways, thereby addressing the challenges identified in previous literature.

This brings the review to its following point of interest, boundary crossing and spanning.

2.2.2 Organisational Learning and Knowledge Transfer – Boundary Crossing

Despite recognition of the differing learning environments in academia and industry, research on knowledge transfer between these two spheres remains sparse

(Garraway *et al.*, 2011). Researchers agree that universities and workplaces are different sites of learning and that transfer between the two should involve the movement of knowledge from one to another in quite different contexts. Transformational change within HE is often framed within the context of industry-academia collaboration as outlined by the Triple Helix concept of innovation previously discussed (Levy, 1986; Vefago, Trierweiller and de Paula, 2020). However, the lack of cohesive understanding of what this transformation entails across different stakeholders further complicates the discourse (Johansson and Felten, 2014).
Boundary-crossing has emerged as a pivotal concept within OL research, defined as interactions amongst individuals from diverse communities of practice (Engeström, Engeström and Kärkkäinen, 1995). This research area has identified boundary-crossing as a means to resolve dichotomies such as education vs the workplace, and individual vs collective learning (Akkerman and Bakker, 2011). Despite its transformative potential, current studies often fall short of fully exploring the practical implications of boundary-crossing on OL, particularly with learning organisations (Lukic, 2022).

This study is expected to fill these gaps by investigating how boundary-crossing can facilitate knowledge transfer and learning within and beyond HEIs. By focusing on the interactions and collaborations between HEIs and industry, this research will examine the conditions necessary for effective boundary crossing and identify the factors that promote or hinder this process.

With this concluding comment, the review moves to the next and last section. The discussion of connecting boundaries between industry and academia.

2.2.3 Organisational Boundaries and the Role of Boundary Spanning

The concepts of boundary spanning and boundary crossing are closely related yet this closeness has not been extensively examined in the literature. Both are terms widely used extensively in organisational research (Hawkins and Rezazade M., 2012), and although, they both are fundamental aspects of the operational structure they can also restrict the free flow of ideas and inhibit collaborative potential (leadershiptribe, 2024). Schein (2017) suggests that while boundaries serve an essential purpose in

competitive environments, overly rigid boundaries can isolate organisations from their external environments, compromising their relevance and effectiveness.

Research indicates that brokering these boundaries is essential for uncovering opportunities for knowledge creation. Scholars such as Tsui and Law (2007), Garraway (2010), and Peach *et al.* (2011) amongst others, suggest that effective boundary-spanning can facilitate the flow of information and enhance organisational learning. Despite the conceptual relevance of boundary spanning to gaps in knowledge and collaboration, there remains a paucity of empirical studies that systematically address these concepts in relation to knowledge transfer and integration.

While the literature on boundary-spanning has traditionally focused on its role in connecting internal organisational networks with external information sources, it has often overlooked the learning that occurs within communities of practice, defined as groups of individuals who share a common interest and engage in collaborative learning (Tushman, 1977). Both subjects have received minimal attention from gap researchers, despite their conceptual alignment with gaps, boundaries, and knowledge barriers (Keegan and Lisewski, 2009). Christ *et al.* (2018) were amongst the first to focus on exploring boundary spanning organisational theory in addressing the gap between industry and academia in the context of applied disciplines. As Christ *et al.* (2018) also suggest at the time of the research, the potential of boundary spanning roles in reducing the gap between industry and academia had gone underappreciated. Subsequent research by Cooke *et al.* (2021) has attempted to address the Theory-Practice Gap (TPG) by offering generic recommendations on the deployment of boundary spanners, yet there remains limited exploration of how these roles can be effectively integrated into knowledge transfer strategies.

In HE, boundary spanning has been framed as a key element in the development of academic leadership (Prysor and Henley, 2018) and knowledge exchange within faculty (Purcell, Pearl and Van Schyndel, 2021). Additionally, it has been applied to understanding value creation in collaborative interactions between academia and industry (Julia Vauterin, Linnanen and Marttila, 2012). The literature further suggests the significance of boundary-spanning organisations as intermediaries in facilitating industry-academia collaborations, with Christ *et al.* (2018) highlighting the role of such

entities as third-party interventions. Villani (2013) furthermore, underscores the importance of Technology Transfer Offices (TTOs) in nurturing these crucial relationships.

The study will contribute to the literature on boundary-spanning by shedding light on its role in bridging the gap between industry and academia, by examining the mechanisms through which boundary-spanning can facilitate effective communication and cooperation across organisational boundaries. Furthermore, it will explore the practical implications of boundary-spanning roles and how they can be strategically leveraged to enhance organisational learning. This contribution aims to not simply advance theoretical understanding but also provide actionable insights for fostering collaboration between HEIs and other stakeholders.

2.3. Statement of Research and Gap identification

This thesis investigates the dynamics of collaboration and co-production between HEIs and external stakeholders, particularly industry. While the literature emphasises the significance of bridging the gap between academia and industry, substantial gaps remain in our understanding of how these collaborations can be effectively facilitated and sustained.

While existing research has made valuable contributions in identifying industry-university gaps, there is a notable dearth in understanding the dynamic processes that contribute to the formation and perpetuation of the gap between academia and industry (Wu, 2007; Gravier and Farris, 2008). Few studies delve into the nuanced aspects of how HEIs and industry interact, and the institutional, cultural, and systemic factors that underpin this interaction. In addition, the temporal aspect of recent research is a crucial consideration. The reliance on literature from the previous decade to the previous century may not fully capture the rapidly changing landscape of both academia and industry (Beech *et al.*, 2019). Incorporating recent trends and advancements in education and industry practices is essential to provide a current and relevant understanding of the gaps.

The current literature predominantly addresses HE processes from an internal perspective, emphasising knowledge management and institutional effectiveness (Basten and Haamann, 2018; Al-Sulami *et al.*, 2023). However, there is a noticeable

lack of empirical research examining the influence of external factors on learning processes within HEIs, especially concerning their engagement with sustainability and transformative practices (Dee and Leišytė, 2016). Despite theoretical discussions highlighting the potential benefits of collaboration, there is insufficient focus on its practical implementation, particularly regarding boundary spanning and crossing (Taylor, Templeton and Baker, 2010).

Additionally, the concepts of boundary crossing and spanning have not been adequately explored in the context of fostering collaboration between industry and academia. Although boundary spanning is recognised for its role in facilitating knowledge transfer and innovation, empirical investigations into these processes within the HE context are limited (Christ *et al.*, 2018; Cooke *et al.*, 2021). The function of boundary-spanning organisations, such as Technology Transfer Offices (TTOs), as vital intermediaries in nurturing relationships between academia and industry also demands further examination, as highlighted by Villani (2013)

The research aims to address these gaps by exploring the mechanisms and strategies through which HEIs can enhance collaboration and co-production with external stakeholders. By integrating perspectives on learning, boundary spanning, and the collaborative dynamics between industry and academia, this study will contribute to a more holistic and insightful understanding of the persistent gaps between industry and academia and of the effective practices for knowledge exchange and transformative outcomes in HE.

Chapter 3 Theoretical Framework

3.0 Introduction

This chapter introduces the theoretical framework utilised to guide my research and broadly inform the position of the project. It aims to present the underlying theory, concepts, and assumptions that inform the empirical investigation. These are presented in a sequential manner, primarily described and followed by a summary. All elements of the existing literature are considered and gaps identified.

Activity Theory (AT) is a theoretical framework that provides my research with a lens through which the problem can be examined, particularly the evident gap between industry and academia prevalent in logistics higher education (LHE). AT provides a dialectic framework focusing on practice (Nardi, 1996), whereby participants in a collaborative setting (Vakkayil, 2010) and a historical and cultural context transform their activity through the mediation of tools in social relations and practice, thus bridging theory and the empirical world (Lautenbach, 2010).

My project is rooted in the belief that a shared understanding and a common approach to the solutions between the immediate stakeholders is required to advance the development of LHE, and hence, the path to a formative intervention is chosen. The stakeholders for my project are considered to include the industry, academia, and professional bodies. While their specific objectives may differ, they recognise the implications the gap between industry and academia has on the future of the business landscape.

3.1 Positioning the Project

Before expanding on activity theory, my project's ontological and epistemological assumptions are discussed primarily to establish a personal understanding of the world and how we come to produce knowledge within and about it. The world is perceived as a dynamic and ever-changing system in which human activities play an indispensable role; it is vital to recognise the interconnectedness of individuals, their environment, and the tools and artefacts they use and interact with. Understanding

these connections yields insight into the social and cultural factors that shape and influence human behaviour.

3.1.1 Ontological and Epistemological Assumptions

Ontological Position: Despite my experience mostly in applied, quantitative research, the shift to qualitative research was smooth. This transition was gradual, as my first attempts at this research were mainly quantitative in nature and design. However, to build assumptions relying solely on participants' responses seemed insufficient to yield the depth of insight needed into individuals' understanding of reality. For that, my project adopts an ontological standpoint positing that reality is created/constructed by individuals within groups, and the interplay among participants can cause significant "friction" between them to create learning and generate transformative solutions (Suh *et al.*, 2003).

The choice of AT as a framework is reinforced by the personal belief that reflects dialectical materialism, emphasising the necessity of interactive negotiation among individuals to identify and address real issues. This approach involves stakeholders in a cultural-historical mediated activity that encourages them to challenge existing norms and contribute to reconceptualising the subject matter. Embracing diverse perspectives, as articulated by Rosa Luxemburg's quote, is central to understanding the evolving nature of reality, ("*… those who do not move do not notice their chains. If we sit quietly and contemplate the world, many things will pass us by. To truly understand and grasp the changing world, we must actively engage with it*"). Furthermore, as Bligh and Flood (2017) assert, knowledge is shaped through the dynamic interplay of perceptions within social and cultural processes.

Epistemological Position: Epistemology refers to assumptions about what constitutes acceptable, valid and legitimate knowledge and how we can communicate knowledge to others (Saunders, Lewis and Thornhill, 2019). The epistemological position of my project aligns with that of social constructivism. In my project it is aligned with a participatory and collaborative approach that values the knowledge and expertise of the involved stakeholders and seeks to incorporate their perspectives, or paradigm as suggested by Näslund (2002), in the research process. I accept that knowledge is not solely obtained through the observation and subsequent

interpretation of an individual's discourse and actions. It emerges through active engagement of the different stakeholders, through dialogue and shared learning.

3.1.2 The Reasons for Choosing Activity Theory

The combined ontological and epistemological approach and the beneficial application of AT in educational research are sufficient reasons for me to employ the theory. Moreover, the interplay of these positions underlines the reasons researchers select the appropriate methods for data collection and analysis procedures (Saunders, Lewis and Thornhill, 2019). According to the authors, even though those research techniques are found in the centre of the "research onion" (see Figure 3.1); they are driven by a whole system of beliefs and axioms that can be found on the outside layers of the model and are crucial in the method selection process.

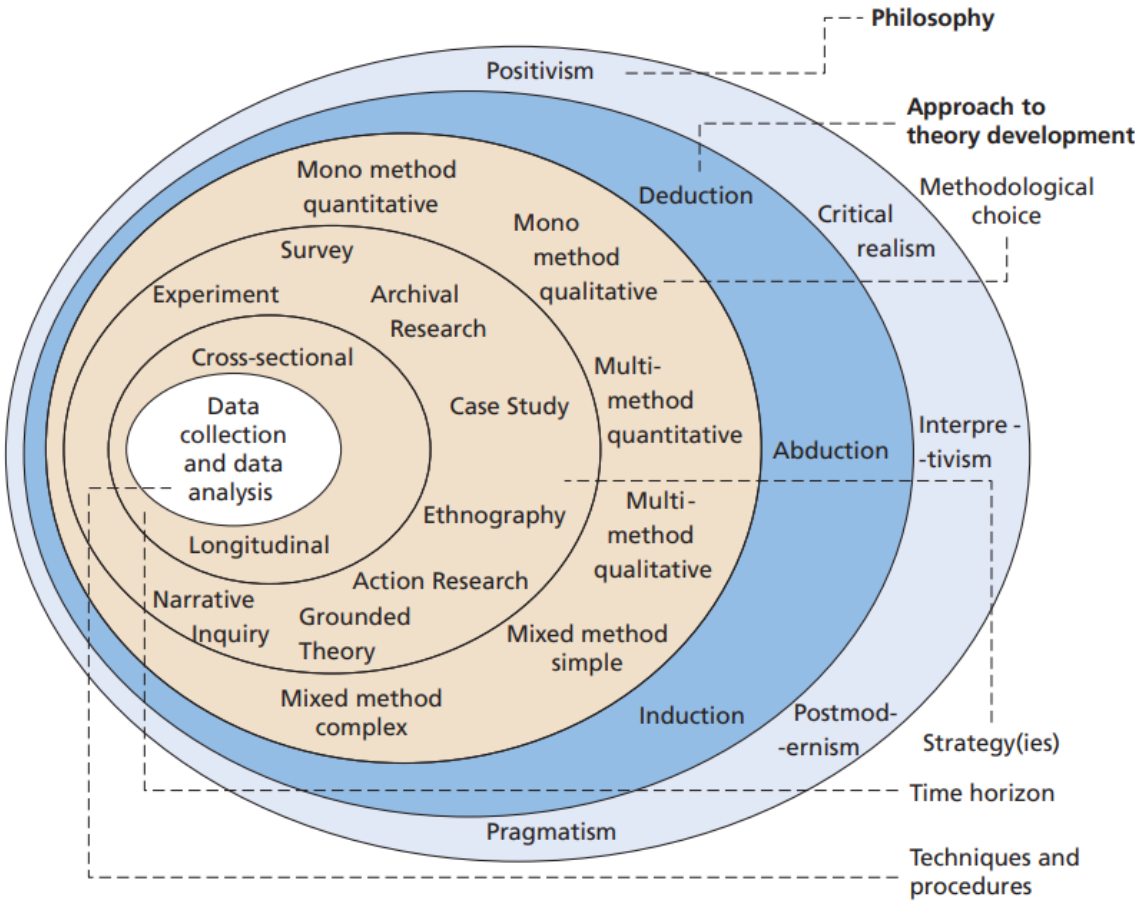


Figure 3.1: The Research Onion Model (envisioned by Saunders, Lewis and Thornhill (2019)).

My research adopts a ***social constructivist*** framework, emphasising that knowledge in the logistics realm is collaboratively constructed through active participation and negotiation among stakeholders.

This perspective guides my rationale for employing Activity Theory (AT) which provides a robust, dialectical framework to understand human activity within the logistical ecosystem, bridging industry and academia to foster sustainable, innovative, and transformative logistics HE. As outlined by Bligh and Flood (2017) the reasons considered for using AT in an empirical context are:

- **Alignment with Social Constructivism:** AT aligns perfectly with the social constructivism's conviction that a collaborative approach involving different stakeholders in creating new realities is possible, helping to understand the complex interplay between the various stakeholders, their surroundings and tools (Langemeyer and Roth, 2006; Foot, 2014) and provide an opportunity to socially interact to solve underlying complex and dynamic problems, which demand an innovative approach (Bleakley, 2021).
- **Methodological Support:** Furthermore, AT shapes the methodological approaches to evidence gathering and interpretation. It offers a holistic and contextual method of discovery that can be used to support qualitative and interpretative research (Hashim and Jones, 2014). According to Hashim and Jones (2007) research undertaken on the effectiveness of AT in empirical research, the findings have been positive in that the AT framework proved to be an appropriate approach able to reconcile the complexity of collective activities and, therefore, add richness and insight into the environment under study.
- **Flexibility and Inclusivity:** The theory is flexible and adaptable, allowing it to be implemented in various ways. It fosters an open-minded creative thinking by involving various concepts and relationships, helping to uncover new insights in specific situations, making it suitable for my developmental, growth-focused approach (Bligh and Flood, 2017).

- **Focus on Contradictions and Conflicts:** AT allows for a nuanced analysis of contradictions within activity systems (Karanasios, Riisla and Simeonova, 2017), crucial for understanding diverse opinions, cultures, and goals in the logistics realm. According to Foot (2014), AT is a practical framework that can successfully underpin the complex and dynamic problems of human research and practice.

AT serves various theoretical roles, as Bligh and Flood (2017) outlined, in helping to understand theory within research. While its core remains to clarify human activities within social and cultural contexts, the way it is applied can shape the analysis outcome. AT supports various functions, contextualising, explaining or framing paradigms, and will take on a combination of these roles in my project as it guides both theory development and empirical findings. The following sections detail AT and its components.

3.2 Activity Theory

Rooted in dialectical and materialist principles, Cultural Historical Activity Theory (CHAT), or simply Activity Theory (AT) is based on the work of Vygotsky and his student Leont'ev, who conceptualised human learning and development as processes mediated through social interactions and contradictions (Langemeyer and Roth, 2006; Hashim and Jones, 2014). As Kaptelinin and Nardi (2009) note, a common understanding shared among Russian psychologists was that the human mind is intrinsically connected to the whole context of interaction between human beings and the world. Interaction is the means through which human beings develop, shaping their understanding of the world.

This dialectical framework is particularly suited for analysing complex collaborative environments that are set in motion to overcome the unsatisfactory social situation and underlying conflict and lead to social improvement (Martin, 2009). Logistics related industry and academia collaborations represent such complex environments, where different stakeholders bring diverse goals, tools, and cultural perspectives.

3.2.1 A Collective and Object-Oriented Activity (First Principle)

The foundational principle provides the theory with the requisite unit of analysis within a collective, artefact-mediated and object-oriented activity system (Engeström, 2001). An activity system is shaped by a shared "object" that guides participants' actions and motives, within a social context. In my research, the object is the advancement of logistics HE practices to better respond to industry needs. The "subjects" involved in the object-oriented activity engage in goal-oriented actions as Kaptelinin and Nardi (2009) suggested, and include logistics professionals, educators and representatives of Professional Organisations or Bodies (POs). By focusing on the shared object, CHAT helps highlight how each stakeholder's tools, goals, and expectations (motives) interact to shape collaborative outcomes.

For example, industry practitioners may prioritise practical skills that meet industry requirements, while educators focus on fostering critical thinking. These different expectations reveal inherent tensions that must be addressed to enable educational practices that better align with industry requirements. Participant motives are expressed through goal-directed components of the activity known as actions, and as suggested by Kaptelinin and Nardi (2009), they are directed towards producing specific goals. An activity can be conceptualised in a hierarchical system within three interconnected levels, as seen in Figure 3.2 below.

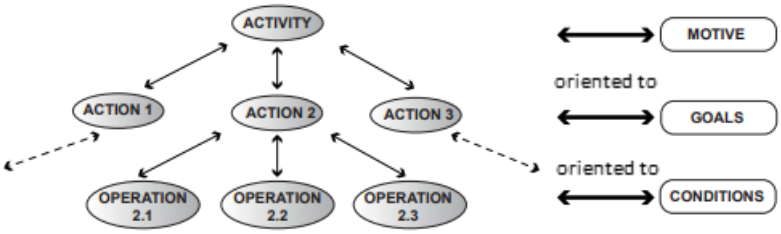


Figure 3.2: Hierarchical structure of activities (Kaptelinin and Nardi, 2009).

CHAT's dialectical and materialist perspective further strengthens this project's approach by treating human development as arising from social practice, where contradictory viewpoints between stakeholders (e.g. practical vs theoretical focus) lead to synthesis and new understanding (Hasan and Kazlauskas, 2014). This framework supports my idea that HE can evolve through a productive tension between

these perspectives aligning educational practices more closely with industry requirements.

Adopting an activity-theoretical perspective has several implications and consequences for this project.

- **Creating an object-oriented activity:** Applying AT in my project enables a deeper and direct exploration of the interactions and relationships amongst industry professionals, academics, and representatives of professional organisations in the logistics field. Each stakeholder brings unique artefacts and tools that are aligned with their specific goals, creating a system where the different expectations of the stakeholders can introduce tensions. This approach is particularly valuable when examining cultural differences between academia and industry, as highlighted in the existing literature. My research can illuminate the complex dynamics at play by engaging relevant participants in an activity through which insights can be gained and the implications of these differences understood; differences that may not be understood in isolation (Jonassen and Rohrer-Murphy, 1999; Dimitrakopoulos, Uden and Varlamis, 2020a).
- **Identifying and Addressing Contradictions through Mediation:** In the context of AT, contradictions within object-oriented practices, mediated by tools, like books, computers, networks, concepts, models, language, smartphones, pens, machinery (Gedera, 2014), and other instruments that support or enhance participation and tensions, are essential for change and development (Engeström and Sannino, 2021). In my project, mediation is facilitated through digital means, like MS Teams, allowing participants to engage and address conflicting objects (Barab *et al.*, 2002). Such contradictions emerge when deviations from standard scripts arise, offering opportunities and indicate transformative change potential, allowing for internal contradictions to keep the activity system in constant instability (Engeström, 2000). This instability within the activity system is supported by stimuli provided through PowerPoint presentations or communicated verbally and drives transformation by exposing the existing tensions that need to be addressed.

3.2.2 Multi-Voicedness and Historicity (Second and Third Principles)

Concepts that contribute to understanding the dynamics of human activity and are fundamental principles of AT are multi-voicedness and historicity. In the section below, a brief introduction to both is provided:

- **Multi-voicedness** emphasises the social nature of human activity, where diverse perspectives and interests create a dialogue that fosters understanding of cultural diversity within activity systems (Kagawa and Moro, 2009; Murphy and Rodriguez-Manzanares, 2013). This diversity often generates tensions or "trouble" (Kerosuo, Kajamaa and Engeström, 2010), which can stimulate innovation and resilience in collaborative settings. It is a conceptual tool that recognises individual involvement in collective experiences, where no individual, participant, or subject shares the same view, perspective or interests with the others (Lemos, Pereira-Querol and de Almeida, 2013). In my project, multi-voicedness allows for an examination and integration of different viewpoints from industry and academia, revealing underlying contradictions and driving constructive discourse.
- **Historicity** emphasises that activity systems evolve over time, shaped by their unique histories, including tools and concepts they employ. Recognising the historical context is crucial, as it provides the foundation for understanding both the current dynamics and the developmental trajectory of activities (Engeström, 2001). If one intends to understand activity outside its historical context, it can easily be dismissed as irrational and counterproductive (Sannino and Engeström, 2018). Engeström (2001) underlines that understanding an activity requires examining its history, as well as the ideas and tools that have influenced it, to fully grasp the local organisational context. History continuously shapes human activity, providing both resources and constraints that persist through practices, artefacts and rules (Sannino and Engeström, 2018) while the authors also note that moving from abstract to concrete understanding can reveal additional contradictions. Finally, Gherardi, Nicolini and Yanow (2003) highlight that knowing is inseparable from doing within a historical context.

By considering the historical evolution of academic-industry collaboration in logistics, my research can better address recurring challenges and identify sustainable improvements based on past and present practices.

3.3 The Activity System

In my research, Activity Theory's focus on "doing" as transformative practice within context-driven activity systems (Jonassen and Rohrer-Murphy, 1999; Morf and Weber, 2000; Barab *et al.*, 2002) directly informs my approach to analysing collaboration in logistics HE. AT provides a structured way to examine how various actors, such as logistics professionals, educators, and representatives of professional organisations, interact within an activity system aimed at enhancing logistics HE practices. By using the activity system as the unit of analysis as suggested by Bligh and Flood (2017), my study investigates how stakeholders' different objectives, tools and expectations converge or clash to shape educational outcomes (Morf and Weber, 2000; Barab *et al.*, 2002).

The six key components, according to Bligh and Flood (2017) like tools, rules, and division of labour, are used to map out stakeholder roles, examine shared goals, and identify systemic tensions. This analysis allows me to highlight where collaborative adjustments can be made to better meet both academic and industry needs, with each element playing a role in shaping actions and outcomes, whether through tool use, adherence to rules, or collaborative task distribution. The selection of specific actors or groups of actors as the point of analysis provides me with insights into their perspectives, actions, and interactions within the broader activity system.

The system's structure is represented by a triangular model that includes six interconnected components: the subject, mediating artefacts or tools, agreed rules, community, division of labour, and objects and/or outcomes (see Figure 3.3), which guide productive action and facilitate collective problem solving.

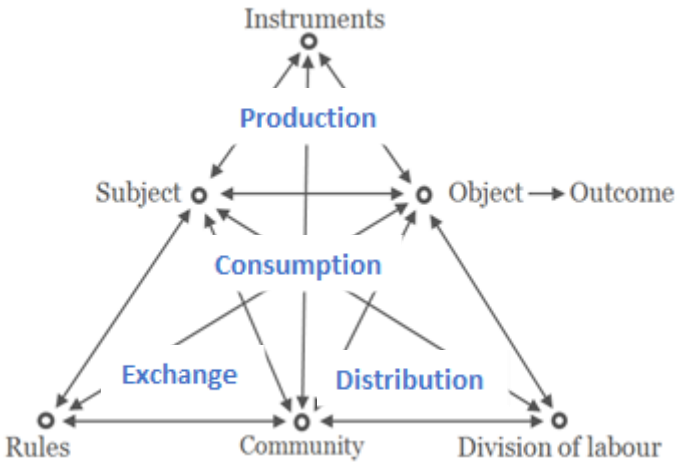


Figure 3.3: Triangle depicting an activity system in describing the human activity (Engeström, 1987).

The AT concepts of production, distribution, consumption, and exchange (see Figure 3.3) which reflect the social and economic dynamic relations between the actors (Kuutti, 2009; Sannino, 2011) are applied to understand how logistics HE stakeholders, interact with the AS. These concepts help map out how each participant's contributions, needs and expectations influence collaborative outcomes. According to Barab *et al.* (2002), these relations between participant and object are not direct but mediated by various factors, including tools, community, rules and division of labour (refer to Table 3.1). The section below provides an overview of each concept (Bligh and Flood, 2017):

- In this context, production refers to the collective efforts towards improving logistics HE. It represents the "doing" **(production)** that logistics HE stakeholders engage in, as they work towards aligning educational goals and industry needs. It is in fact, the object of the activity (see Figure 3.3).
- Division of people, objects and artefacts provides the **distribution** of actions and operations, resources, knowledge and responsibilities among the *community* of workers (logistics HE stakeholders) and is organised according to social regulations [the mediated triangle community-division of labour-object represents this (see Figure 3.3)]. Indeed, academics contribute through their understanding of their educational role, while industry professionals and representatives of professional organisations offer an external perspective.

- At the same time, the rules are conditions that help to determine how and why individuals are likely to act **(exchange)**, and it involves the sharing or exchange of objects, resources, artefacts, communication and interaction among individuals or groups based on their individual needs (the mediated triangle subject-rules-community represents this (see Figure 3.3). Understanding these exchanges reveals insights into how rules and norms either support or limit knowledge flow and alignment across industry and academia.
- Finally, products/ outputs result from social conditioning **(consumption)** and are utilised to satisfy a human need. Consumption refers to the utilisation of those outputs in the activity system and is represented by the mediated triangle community-subject-object (see Figure 3.3) and contributes towards the fulfilment of specific needs, goals and functions within the activity system and how these can be utilised by the logistics industry.

In brief, the concepts represent the cyclical model of formative interventions, where a team of experts/ participants (subject) interacts with the object (the purpose of the activity) to invoke the transformation of inputs, such as resources, knowledge, and skills, into outputs that fulfil the objectives or goals of the activity (Barab *et al.*, 2002). By focusing on these concepts, I examine the dynamic relationships and interdependencies that shape logistics HE practices. This analysis helps me identify gaps where educational practices may not fully meet industry demands and suggests pathways for aligning stakeholders' objectives more effectively. Lastly, it is important to connect the activity system to the activity-action-operation hierarchy (refer to Figure 3.3), noting that these are materialised within the different triangle-actions from which the whole activity emerges with meaningful outcomes (Engeström, 1987; Hasan and Banna, 2012).

Moreover, the table below briefly discusses the meaning and role of each within the activity system.

Components	Role within the activity
Subject:	The individual or group of individuals involved in the activity. They are active agents who carry out the actions and shape the activity system.
Object:	The reason for that activity to be performed. They provide the motivation for engaging in the activity.
Tool:	The means of interaction between individual/ subject and the reason of the activity/ object. These may be physical (e.g. pictures, technology) or psychological (e.g. language, symbols) that mediate the participants' actions and interactions within the activity.
Rule:	The regulations of actions and interactions in an activity. They may also be norms or guidelines that govern the activity. They can be implicit or explicit and shape the behaviour and interactions of the participants.
Community:	One or more people share the objective with the subject; Community refers to the social context in which the activity occurs. It includes the relationships, roles, and shaped practices among the participants.
Division of labour:	The way by which tasks, power and status, roles and responsibilities are divided among cooperating members of the community/ activity system. It determines how work is organised and coordinated with the system.
Outcome:	The outcome of the activity, which might be an idea, a situational status, or a specific response. It represents the results or achievement of the activity.

Table 3.1: Components of Activity Theory and Rules , adapted from Engeström (1987), Barab et al. (2002), Yamagata-Lynch (2010) and Bligh and Flood (2015).

The aim of employing an Activity System (AS), as a unit of analysis is guiding the research to create the ecosystem requisite to be able to discuss concerns and potential contributions and synergies identified by all different members of the logistics community and benefit from a Triple Helix like model; a framework for University-Industry-Government relations theorised by Etzkowitz and Leydesdorff (1995). Based on the concept of the Triple Helix, three parties are considered in this project: *industry*, *academia*, and *professional bodies* (Figure 3.4). In this research, this model is pivotal to structuring collaboration and ensuring each stakeholder's contributions are systematically analysed to promote knowledge-driven responsive logistics education.

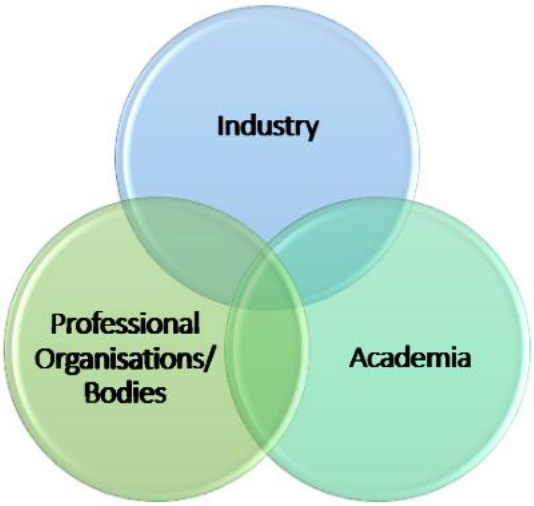


Figure 3.4: The helix of logistics (community) for this project.

3.3.1 Contradictions (Fourth Principle)

Activity System (AS) analysis provides a structured approach to identify and address contradictions within formative interventions (Yamagata-Lynch, 2010). For the purposes of my study, AS serves as a lens to examine the collaborative landscape of logistics higher education, focusing on how educators, industry professionals, and representatives of professional bodies interact to overcome challenges and align their differing goals. According to Engeström (2001) and Bligh and Flood (2017), contradictions within ASs are essential drivers of change, surfacing as conflicting elements that both support and challenge each other.

The unit of analysis in AS is not a list of elements but rather the interconnected, dynamic interactions among participants (Bligh and Flood, 2015). These interactions reveal tensions or contradictions that shape the transformation of the object (Lautenbach, 2010), in this case, logistics HE practices, towards more industry-aligned outcomes. Through this lens, contradictions, that arise between and among activity systems (Russell, 2003; Virkkunen and Newnham, 2013), become opportunities to examine how diverse stakeholder goals impact educational practices, with each party's actions and understanding, contributing to a dialectical evolution of the system.

The latter may occur when participants from different activity systems have divergent objects and motives.

According to Engeström, four different sources of contradictions exist in or between activity systems (Bonneau, 2013; Hasan and Kazlauskas, 2014; Bligh and Flood, 2015), illustrated in Figure 3.5 and can be the starting point for research employing formative interventions:

- In the context of my research, ***primary contradictions*** are evident within the elements of the activity, such as values and objectives; between industry and academia; primary contradictions concern the misalignment between learning for employment and learning for life, the theoretical nature of university teaching or research, and the practical demands of the logistics industry.
- ***Secondary Contradictions*** emerge between elements of the activity system, such as usability issues between the user (subject) and the tool, that emerge after the participants' initial change attempts as newly introduced elements contradict other elements in the system. A secondary contradiction could emerge from the conflicting goals, interests, and cultural differences between industry professionals and academia.
- ***Tertiary Contradictions*** arise when a new approach or model is introduced, challenging well established practices. In logistics HE, these might appear in attempts to adopt collaborative teaching methods or integrate more practical training modules. Such initiatives can be met with resistance due to the challenge they pose to established pedagogical norms or barriers in “language” and communication between the stakeholders which may be overcome through different mechanisms to facilitate effective communication and understanding between these stakeholders.
- ***Quaternary Contradictions*** arise between the central activity and different or neighbouring activities. They occur between logistics HE and neighbouring activities, including government policies, accreditation bodies, and professional organisations. These external forces influence the AS under study and play a significant role in shaping the contradictions and dynamics within the primary AS by imposing regulations or standards that may not fully align with the educational or industry perspectives, further complicating efforts towards industry-academia alignment.

As shown in Figure 3.5, adapted by Bligh and Flood (2015), systemic contradictions are an inherent aspect of activity systems, continuously emerging and evolving. Engeström (1987) argues that these contradictions not only drive change but are also essential to the system's development. In logistics HE, contradictions become apparent as stakeholders experience disturbances, such as differing priorities or double-binds, compelling them to adapt their approaches. My study leverages AS analysis to uncover and address these contradictions, aiming to foster "expansive learning" in which the logistics HE system evolves (Bligh and Flood, 2015) to meet mutual needs of academia and industry.

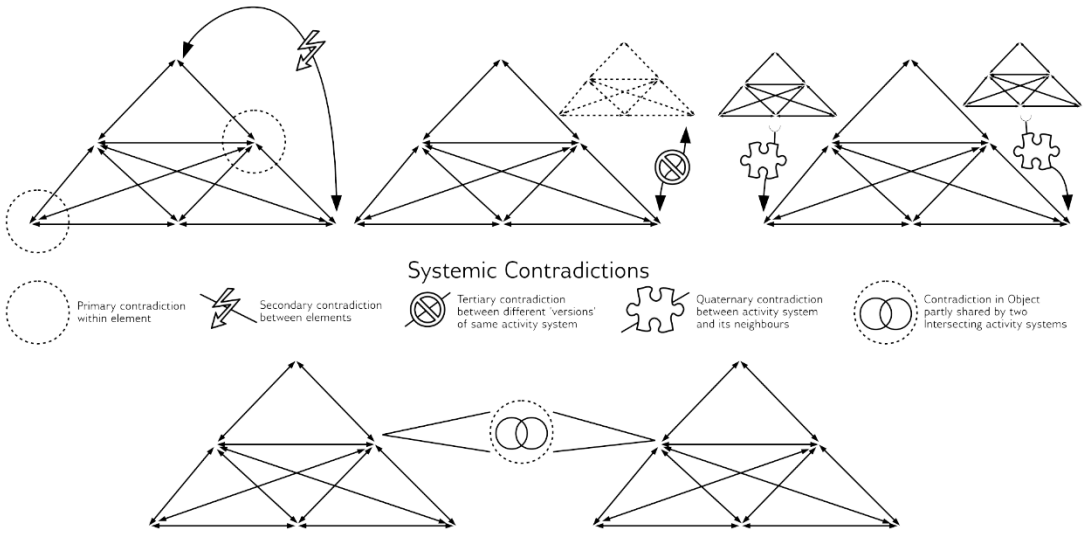


Figure 3.5: A graphical representation of systemic contradictions adapted from Bligh and Flood (2015).

3.3.2 Expansive Learning and the Expansive Learning Cycle (Fifth Principle)

A critical element in AT is the principle of Expansive Learning (EL) and the Expansive Learning Cycle (ELC). EL is particularly suited to contexts characterised by uncertainty, where learning outcomes emerge through collective effort rather than being predetermined (Kerosuo, Kajamaa and Engeström, 2010; Haapasaari, Engeström and Kerosuo, 2016). This makes it ideal for addressing complex, real-world challenges. The expansive learning cycle (refer to Figure 3.6) supports the creation of knowledge that bridges academic learning and industry needs by encouraging

participant involvement in problem-solving activities, where participants collectively reimagine logistics education practices, identifying gaps and areas for improvement. Lotz-Sisitka *et al.* (2017) describe the ELC as a series of seven learning actions that systematically address these contradictions and inform my project's methodology.

The developmental trajectory enabled through the Expansive Cycle can be understood as a **Zone of Proximal Development (ZPD).** In this context, the ZPD represents the collective space between the current, problematic form of the activity and a more advanced, future oriented form that emerges through the resolution of systemic contradictions (Garraway, 2021). Rather than being an individual cognitive construct, the ZPD here is socially and collectively constructed, as participants engage in questioning, analysing, and modelling new possibilities. The learning actions within the ELC can therefore be seen as steps through which the developmental space is explored and expanded, enabling participants to move from understanding existing tensions to collaboratively reimagining the activity and its goals (Bligh and Flood, 2015) by creating and stabilising new forms of practice (Francisco and Da Costa Zanela Klein, 2020).

The actions will be defined briefly since their scope will guide this project and its implementation (Bligh and Flood, 2015; Lotz-Sisitka *et al.*, 2017):

- **Learning Action 1: Questioning and Criticising** – participants critically examine logistics education practices by questioning existing methods and identifying contradictions. This step generates "mirror data" that reflects current challenges, creating a basis for exploring tensions in the logistics realm.
- **Learning Action 2: Analysis** – the "mirror data" enables a deeper reflection on the structural and historical aspects of logistics HE. Historical analysis examines how the activity has evolved over time, tracing the development of current practices and their underlying contradictions. Actual-empirical analysis focuses on the present structural features and concrete manifestations of tensions within the system. Together these analytical approaches allow participants to understand how underlying tensions impact the effectiveness of academia-industry alignment.
- **Learning Action 3: Modelling** – based on the analysis of the tensions these reveal, participants propose alternative models that address these alignment issues and bring industry and academia closer, by closing the gap. This modelling phase encourages stakeholders to envision solutions that

incorporate both academic rigour and industry relevance. In this phase, the emergence of a ***germ cell*** can be identified as an initial, simplified conceptual solution that captures the core contradiction within the activity system and serves as a foundational abstraction for further development (Engeström and Sannino, 2010; Sannino and Engeström, 2017). However, in this study, elements resembling a germ cell appeared at earlier stages of the process, particularly during the analysis phase, rather than emerging fully within the modelling phase as suggested in the literature. While these early formulations indicated potential directions for transformation, they did not develop into a stable or generative conceptual model through subsequent stages of the cycle. This aligns with existing literature suggesting that the identification and consolidation of a germ cell is complex, non-linear, and may only become visible retrospectively, if at all (Engeström, 2014; Sannino and Engeström, 2017; Garraway, 2021). As a result, the notion of the germ cell was not sustained analytically and was ultimately set aside, with greater emphasis placed on the iterative development of models through the expansive learning process.

- **Learning Action 4: Examining the model** – proposed models undergo preliminary testing, either through simulations, discussion, or pilot implementations, to assess their feasibility within the logistics ecosystem. This step allows stakeholders to debate how well the model aligns with real-world industry needs.
- **Learning Action 5: Implementing** – after selecting the most viable model, logistics academics and industry partners implement it, either through revised curriculum elements or collaborative initiatives. This phase enriches the model by applying it in a practical form, promoting further alignment.
- **Learning Action 6: Reflecting** – stakeholders evaluate the implementation, critiquing the outcomes and identifying further adjustments. The reflection phase provides insights into how well the new approach addresses the gap and encourages ongoing improvements.
- **Learning Action 7: Assessing and Consolidating** - finally, participants strive to incorporate these tested models or solutions into stable forms of practice.

The cycle can repeat as new tensions emerge, allowing continuous iteration and improvement (Lotz-Sisitka *et al.*, 2015). Some phases may loop back as new data and insights are added, often leading to further cycles or sub-cycles as contradictions are revised (Bligh and Flood, 2015). This iterative process supports the continuous evolution of logistics HE, fostering "double-stimulation" as recurring data-driven tensions expand existing knowledge and practices (Lotz-Sisitka *et al.*, 2017).

In my study, the ELC informs the design of Change Laboratory interventions, which are particularly effective for facilitating expansive learning. These interventions allow stakeholders in the logistics realm to collaboratively identify, analyse, and resolve contradictions, promoting transformative practices that enhance alignment between academic learning and industry needs.

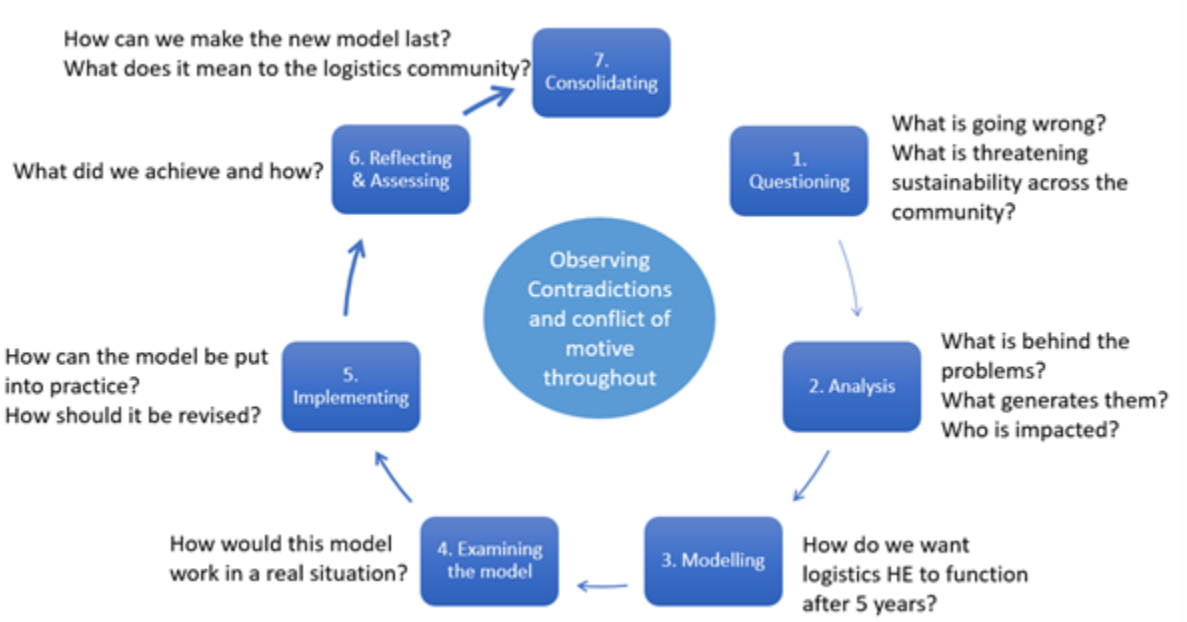


Figure 3.6: The expansive cycle as adopted by Lindley and Lotz-Sisitka (2019).

3.4 The Change Laboratory

The Change Laboratory (CL) methodology offers a structured, formative approach that facilitates both significant and incremental transformations by analysing disturbances and constructing new models for the work practice within a collaborative setting. This method, developed by the Centre for Activity Theory and Developmental Work at the University of Helsinki, aligns with AT principles and has been applied effectively in both academic and industry contexts to address complex challenges (Engeström *et al.*, 1996; Bligh and Flood, 2015). According to Sannino (2011), the CL is one of three primary interventionist methods designed to implement AT principles, particularly the concepts of double stimulation and ascending from the abstract to the concrete. Within the context of my study, the CL allows stakeholders to collectively explore and transform existing practices.

Bligh and Flood (2015) describe the CL as “an intervention-research methodology where people come together in a structured and cyclical way to envisage new activities or to transform an activity [in their organisation]" or a field of interest. As the researcher, I guide participants to work together towards creating novel models and practices that produce meaningful outcomes for the logistics realm. This methodology is valuable for addressing the challenges of bridging academic and industry relations, by providing a space for joint problem-solving and innovation.

Virkkunen and Newnham (2013) emphasise that CLs support mastery over learning and innovation challenges relevant to both academia and industry. Through the CL’s structured interactions, dialogue and reflection are facilitated, leading participants to develop new understandings of logistics challenges, shared goals, and practical solutions. The methodology leverages tools and instruments that enable transformative learning and promote a shared agency among participants, empowering them to co-create strategies that align with educational and industry standards.

In the CL, participants use Engeström's (1987) triangular activity model to examine the ELC, bridging theoretical insights with empirical practice. This cyclical process, inspired by Marx’s idea of “ascending from the abstract to the concrete”, enables stakeholders to iteratively refine their understanding of logistics HE challenges through conceptual and practical engagement. The application of CL in my study provides a

way of aligning the logistics realm, allowing stakeholders to test and adapt theoretical concepts in real-world scenarios (Bligh and Flood, 2015).

I chose the CL methodology because it was appropriate for my research, viewing logistics education and industry collaboration as dynamic systems that benefit from both top-down and bottom-up approaches to overcoming systemic contradictions. The CL methodology encourages participants to explore logistics HE's challenges as "problems in local practice taken as indicative of wider systemic incongruity" (Bligh and Flood, 2015). This dual focus enables a deeper examination of the issues in the logistics realm, fostering further alignment.

3.4.1 Transformative Agency through (the Principle) of Double Stimulation (TADS)

Achieving meaningful change often requires individuals to move beyond established practices, a process that relies on fostering expansive agency. Expansive agency can be accomplished by employing meaningful external cultural artefacts, which become effective mediating tools, enabling participants to regulate and redirect their behaviour towards new goals (Kagawa and Moro, 2009). This mechanism, known as double stimulation, is central to facilitating shifts in thinking and practice. Within the Change Laboratory framework, double stimulation allows participants to challenge and extend beyond current frames of reference, aiding in the creation and application of new models (Sannino, 2011; Morselli, 2019).

Tasks within the CL are designed in accordance with Vygotsky's double stimulation method, where participants engage with both the initial problem and the tools needed to resolve it. According to Engeström (1987) this process is vital for developing agency, as participants use stimuli to gain control over their behaviour, fostering a new understanding of the problem.

Double stimulation plays a crucial role in formative interventions by creating the conditions for emerging contradictions within the activity. The structured cycles of a CL intervention utilise tools to enable participants to navigate complex issues, encouraging the development of innovative solutions. Key elements that shape the dialectic of double stimulation include (Sannino, 2011; Morselli, Costa and Margiotta, 2014; Bligh and Flood, 2015; Lotz-Sisitka *et al.*, 2017; Engeström, Nuttall and Hopwood, 2022):

- ***Mirror Data:*** Data that the researcher presents to participants, highlighting practical challenges and contradictions within their current practices. Mirror data fosters both emotional engagement and critical reflection, prompting participants to discuss and approach problems from different perspectives.
- ***First Stimulus:*** the initial problematic situation presented to participants. This stage evokes confusion or tension, requiring participants to confront existing conflicts in their current practices.
- ***Second Stimulus:*** the tools or artefacts that participants use to redefine the conflict-creating situation introduced by the first stimulus, allowing them to take action by creating new models or solutions (Postholm, 2015).
- ***Social organisation:*** the structure and flow of the participants' interactions, such as working as a group, in smaller groups in break-out rooms, or individually, to explore solutions.
- ***Documentation:*** the way individuals or groups record their thoughts, ideas, discussion and reflections, supporting continuous improvement.
- ***Discussion and Recording:*** the way people come together and engage in discussing the different tasks but also negotiate alternative solutions and document these exchanges for future reference.

Morselli (2020) describes double stimulation as a dialectical process that promotes expansive learning by encouraging alternative approaches to conventional thinking. Moving from abstract ideas to concrete applications, this principle is critical for shaping participants' drive to transform their activity system (Virkkunen, 2006). In the context of the logistics realm, double stimulation enables stakeholders from academia and industry to collaboratively reimagine and adapt current educational practices to better align with industry needs.

Vygotsky's concept of double stimulation, originally devised to investigate children's development in the zone of proximal development (ZPD), is similarly applied here. Through guided interactions, participants discover patterns that foster their potential, supporting them as they work together to address contradictions within the activity system (Kucirkova, Sheehy and Messer, 2015).

As participants progress through the process of double stimulation, they build collaborative transformative agency and motivation, driven by the new understanding of the activity and its potential for future development (Virkkunen and Newnham,

2013). This potential for future development could be considered as a **Zone of Proximal Development (ZPD),** representing the collective developmental space between the current problematic activity and a more advanced future form, emerging through the resolution of systemic contradictions (Garraway, 2021). In this process, the ZPD is not an individual capacity but a shared space for envisaging and enacting change. By working to overcome these tensions through expansive learning, participants collectively reimagine the activity and its goals (Bligh and Flood, 2015), generating and refining new forms of practice through iterative cycles and thus strengthening logistics education's impact on both academic and professional realms. Transformative agency is crucial to my work, as it involves participants from diverse backgrounds, with different perspectives and understanding. CL interventions support participants in finding common ground, advancing towards shared objectives to improve logistics HE. Organised double stimulation tasks enhance expansive learning by encouraging participants to co-create solutions, bridging gaps between academic theory and industry needs.

Types of Transformative Agency: According to Haapasaari, Engeström and Kerosuo (2016), achieving transformative change involves various expressions of agency. The following five (5) types are commonly observed in different interventions:

- ***Resisting*** the interventionist/ researcher or the management. This might be in the form of criticism, questioning, opposition or rejection.
- ***Criticising*** (recognising limitations in) current practice and seeing new possibilities or potential.
- ***Envisaging*** new patterns or models of the activity. Such engagement might result in preliminary suggestions for the activity or the re-imagining of comprehensive models for the future.
- ***Committing*** to concrete actions aimed at changing the activity.
- ***Taking consequential actions*** to change the activity. These may be performed within, between and after the CL workshops.

These types evolve over time, shaped by the activity, and shifting from earlier expressions of resistance to envisioning, committing and taking consequential change actions.

Turning Points: Turning points mark qualitative changes in participants' discussions and expressions of agency, often representing shifts in perspective. A turning point,

as an "event in and during which the participants begin to outline the object of their activity in a new way", can either narrow or expand their outlook on the problem prompting further development in their collaborative efforts.

3.5 Critique of the Theoretical Framework

Activity Theory (AT) presents several limitations that impact its application. Limitations can be found in different levels of implementation. The following points emerge from the literature:

Complexity: Selecting a single activity to capture the diversity and complexity of human interactions is challenging. Activities vary widely in scope, structure, and significance, making it difficult to define one overarching activity that applies universally (Martin and Peim, 2009). Furthermore, not all phenomena fit coherently within AT's framework, and the ambiguity in differentiating between levels of activity (activity, actions, operations) can complicate analysis, potentially leading to misinterpretation (Dimitrakopoulos, Uden and Varlamis, 2020). Additionally, AT does not fully address the dynamics of power relations within groups, which limits its effectiveness in understanding certain human interactions (Bligh and Flood, 2017).

These challenges may lead to an incomplete or skewed understanding of the system being studied, particularly in logistics, where multiple perspectives must be considered.

Generalisability: Applying findings from AT across different cultural or temporal settings can be difficult, especially in diverse stakeholder groups with varying perspectives. This limitation complicates communication and mutual understanding, as each group interprets activities based on their own experiences. One of the significant challenges is translating insights from "insider" circles involved in the activity to a broader audience, and applying findings to fundamentally different and future settings (Langemeyer and Roth, 2006).

I carefully consider cultural divides and provide an interpretation of the findings in a way that resonates with all stakeholders, requiring additional emphasis on inclusivity and adaptability.

Cultural and Historical Context: Finally, AT has limitations in addressing cultural nuances and historical context at the smallest levels of analysis, leading to "infinite regress" of cultural distinctions (Murphy, 2022). Additionally, AT lacks tools for

analysing power dynamics, often reducing social, cultural, and historical elements to apolitical abstractions, thus missing key dimensions in understanding group behaviour (Fanghanel, 2009; Bligh and Flood, 2017).

By not fully accounting for cultural and political factors, AT may overlook crucial dynamics within the logistics realm, particularly the influence of power structures and historical factors on collaborative activities.

I have carefully considered the above points to ensure that issues such as participation and inclusion are enhanced and facilitated, while several other methods were utilised to ensure that the activity benefits from these power dynamics. Finally, the importance of historicity and its role in the specific context have been given additional consideration.

3.6 Summary and Implications

Guided by the philosophical principles that shape the research's systematic approach to knowledge and reality, I selected a formal interventionist approach as a suitable methodology for examining human activity within their social, cultural, and historical contexts and aligned with my research objectives and the specific research questions. My decision is grounded in the requirement for a comprehensive framework to adequately capture the complexity and interplay of various factors that influence human behaviour.

Building on the findings of the literature review, the intervention is designed as a structured and collaborative learning space intended to surface, examine, and work through systemic contradictions within logistics higher education. It provides a framework for engaging multiple stakeholder groups in a shared process of analysis and modelling, with the purpose of strengthening collective agency and enabling the re-imagination of current activity systems. In this sense, the intervention is not only analytical but also developmental, seeking to generate conditions for expansive learning.

The persistent and well-documented gap between industry and academia provides the central problem context for this study. Rather than treating this gap as a static misalignment, the research conceptualises it as a historically produced and structurally embedded contradiction between interacting activity systems. The intervention therefore brings stakeholders together to surface these contradictions, explore their

historical and systemic roots, and collaboratively consider possibilities for transformation, with particular attention to curriculum relevance, professional alignment, and workforce development needs.

Finally, the following chapter operationalises these principles through the specific methodological tools of the intervention, including workshops, interviews, and digital collaborative spaces. These tools are designed to support the iterative progression of the Expansive Learning Cycle by enabling the generation, mediation, and reintroduction of mirror data, thereby sustaining multi-voiced engagement and supporting the emergence of developmental insights across the intervention process.

Chapter 4 Research Design

4.0 Introduction

This chapter presents the empirical approach to employing a formative intervention design, where the participants, the stakeholders of the logistics realm, academics, industry professionals and professional organisation representatives, engage in expansive learning, through a Change Laboratory methodology, to address the gap between industry and Higher Education (HE). It situates the methodology within the research's epistemological framework, building on the theoretical principles outlined in Chapter 3, which define the research's belief system and inform the choice of CL as a suitable approach.

The chapter provides insights into the formative intervention research design. It also explores the strengths of the chosen approach and discusses alternative methodological options considered during the research design phase. The chapter then proceeds to describe the implementation of the research approach, to introduce the research participants, and to explain my role and actions as a researcher. The chapter then outlines the methods and tools used for data collection and analysis and concludes with a critical review of ethical considerations and a reflection of the limitations of the chosen research design, providing a foundation for the next chapter on participant insights and outcomes.

4.1 The Change Laboratory Methodology

4.1.1 Overview

The reasons for selecting the CL methodology and the associated underlying theoretical framework, are discussed in detail in Chapter 3. According to Virkkunen and Newnham (2013), the principles of the CL as a methodology are aimed at building up collaborative transformative agency and motivation, which is exactly the intention of this formative intervention.

The intention was to work with all relevant stakeholders to achieve transformational change based on a new understanding arising from the activity that provides a new

perspective for the future, as opposed to solely producing a rational solution. This involved a research design that encouraged each stakeholder to openly discuss and analyse historical and future approaches to working together to obtain impactful and meaningful industry-academia collaboration. It also involved a combination of approaches and an innovative design in this research's efforts to encourage and realise expansive learning. Even though the CL methodology may be prescriptive in that it provides the framework in steps for addressing a problem, it is equally flexible in that the specific methodological steps provide a forum in which participants interact together to create a new understanding and knowledge about complex issues. Finally, it encourages deep transformations and continuous improvement (Engeström *et al.*, 1996).

The research design intended to analyse the expectations and understanding of the situation of the different stakeholders in the logistics realm, including opinions of academics, industry practitioners, and professional organisations. In a previous discussion, we established that this argument has been ongoing for more than half a century with research focusing on best practice or alternative actions, without, however, focusing on the socio-cultural and historical factors involved, and the dynamics of each sector.

4.1.2 Selecting the Change Laboratory Methodology

The CL encompasses a collaborative and participatory approach, where multiple stakeholders engage in a systematic dialogue motivated and guided by agency. The intention is to create the conditions within an intervention, where stakeholder engagement, through targeted contradictions and stimuli, can be observed, guiding the transformative journey. Literature, whether in journals or the press, has focused on either identifying the missing skills, or on a blame game that involves the tripartite of Industry-Academia-Government, depending on the perspective of the author. Occasionally, professional bodies are added into the equation. Other studies focus on bringing academia closer to industry in identifying ways of engagement. The CL, as a formative intervention, advances the potential to explore the deeper reasons for the gap, to enhance a common understanding between the parties, increase agency and bolster new perspectives and means for closing the gap.

4.1.3 Methodological Advantages and Alternatives

While CL interventions are less common in HE compared to other disciplines, they offer distinct advantages over other interventionist methodologies, which often focus on descriptive analysis rather than transformative change. Bligh & Flood (2015) argue that CL's participatory nature emphasises systemic development over individual performance, fostering greater creativity and balanced agency through its structured approach. Another advantage is CL's use of mirror data, which includes data gathered from interviews, observations, and video recordings of CL sessions to provoke reflection and stimulate dialogue (Virkkunen and Newnham, 2013). Finally, asking participants to explain the history and use of common tools or forms within their work environment also helps bridge different functions within the activity, promoting relationship-building and collaboration (Virkkunen and Newnham, 2013).

Alternative methodologies were considered; however, CL was selected to meet the study's need for a holistic, stakeholder-driven approach to understanding activity within a social and historical context. Given that the industry-academia gap extends beyond any single organisation, CL's emphasis on collective, transformative intervention provides a suitable framework for examining and addressing this complex issue.

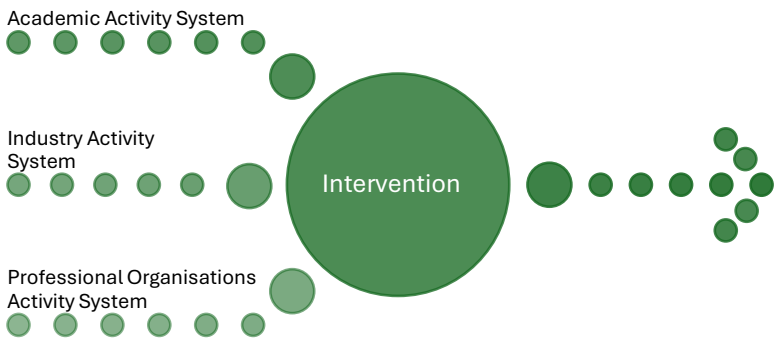


Figure 4.1: Diagram of the intervention and the stakeholders/ activity systems involved.

4.2 Research Design

My research design diverges from traditional implementation in several aspects. The design was planned to include workshops as the main tool of the intervention, with surveys and interviews planned alongside additional participants, the former providing mirror data for the workshops, the latter intended to validate the generated data. Plans had to change on several occasions owing to the logistical issues that arose from dealing with people located in six different countries and multiple time zones, with differences up to 4 hours between some participants.

The workshops were designed according to the guidelines suggested by Virkkunen and Newnham (2013). The workshops were designed to comprise 12 participants, instead of the recommended 15 to 20 suggested by Virkkunen and Newnham (2013). These were the participants that showed commitment to expand upon the activity, while several others could not commit over a long period of time, which a Change Laboratory intervention requires. The initial design planned for, as agreed, four (4) workshops of about 1.5 hours each, with the potential to expand the sessions to six (6) if deemed necessary. Although formal guidelines are not strictly defined, a sufficient number of workshops, as noted by Virkkunen and Newnham (2013), would be between five (5) and ten (10) workshops, as outlined in Table 4.1, and therefore, the initial arrangements seemed to fit the purpose of the methodology. However, the realisation of the workshops was hindered by several factors, including the participants' working hours, the time difference between the researcher and the participants, a promotion, an injury, and other interruptions.

To make up for the delayed workshops, I developed a comprehensive interview protocol that would allow for continued engagement with the ELC principles. These interviews, detailed in section 4.3.2, were designed to incorporate mirror data and stimuli in ways that could generate contradictions even in one-on-one settings.

4.2.1 Participant Selection

The participants were purposefully selected, for this CL intervention, to represent first the range of stakeholders in the logistics realm, as identified in the literature, and then a range of nationalities and their respective logistics related activity systems, ensuring diverse perspectives on the industry-academia interface. The diversity

serves two primary purposes: first, it brings together a wide range of viewpoints from stakeholders involved in different levels, ensuring the multi-voicedness discussed in Chapter 3, and second, it reflects the shared objective of advancing understanding and collaboration despite differences in roles, tasks, and statuses (Virkkunen and Newnham, 2013).

The selection criteria for participants in this CL intervention are based on the research requirements and align with research objectives. As suggested by Virkkunen and Newnham (2013) and Bligh and Flood (2017), I used two primary criteria for participant selection. First, group composition should encourage open discussion of practical challenges, fostering the potential for change. Second, participants should be directly involved with the same activity and work together towards a shared goal, regardless of differences in occupation or position.

Since the research focuses on addressing the gap between industry and academia, it was essential to include a balanced representation of academics, industry professionals, and professional organisations/bodies within the logistics sector. While specific roles are not explicitly detailed, careful consideration was given to ensuring that each participant met the study's criteria. The selected group consists of individuals who, in various capacities, have collaborated with the researcher in exploring and enhancing industry-academia interactions.

Despite efforts to balance participant representation, recruiting suitable participants proved challenging. The need for additional stakeholders was discussed with existing group members, who recommended other potential candidates. This outreach resulted in four additional participants, primarily from industry, willing to actively engage in the workshops. Ultimately, 34 potential participants were contacted, with 12 committing to participate in the project. However, scheduling constraints, especially for industry participants, presented challenges in maintaining consistent attendance.

The following criteria guided the selection of participants:

1. Involvement in the logistics field (either from industry, academia, or professional organisations).
2. Knowledge, experience, or strong opinions related to the gap (between industry and academia - and current practice).

3. Familiarity with educational accreditation and certification to highlight current trends and expectations.
4. Experience as an advisory board member or in curriculum design.

Table 4.1 below exhibits the profiles of the participants and the dates on which the workshops took place.

No.	Workshop Date	February 21, 2022						
	Workshop no.	**1**	**2**	**3**	**Survey**	**Semi-structured Interviews**		**Follow-Up**
	Venue	**MST**	**MST**	**MST**	**Questionnaire/ Qualtrics**	**MST**		**MST**
	Participant Discipline					Participants selected for interview: (24 interviews)		
1	ACP 1		✓		42 respondents	P1: PBR1 (UK)	P18: ACP7 (NL)	✓
2	ACP 2	✓	✓	✓		P2: PBR2 (UK)	P19: ACP8 (DE)	✓
3	ACT 1	✓				P3: PBR3 (UK)	P20: ACNT1 (NL)	✓
4	ACP 6	✓				P4: PBR4 (UK)	P21: ACNT2 (HK)	
5	ACNT 1	✓		✓		P5: POR1 (UK)	P22: ACT1 (NL)	
						P6: PBRP1 (IT)	P23: ACT2 (EE)	✓
6	PBR 1					P7: INP1 (NL)	P24: ACT3 (OM)	✓
7	PBR 2					P8: INP2 (DE)		
8	PBR 3	✓				P9: INP3 (UK)		✓
						P10: INP4 (UK)		
9	INP 1							✓
10	INP 2	✓	✓					✓
11	INP 3	✓						
12	INP 4	✓	✓					

						P11: INPT1 (UK) P12: ACP1 (NL) P13: ACP2 (UK) P14: ACP3 (UK) P15: ACP4 (NL) P16: ACP5 (UK) P17: ACP6 (AUS)		
	Researcher	✓	✓	✓				✓
	Total (incl Res.)	9	5	3				8

Table 4.1: Participant profiles and attendance.

Table 4.1 Notes:

✓ : attended an online workshop

MST: MS Teams/ online workshops

SSI: participated in post-intervention semi-structured interviews/ surveys

PB/PO: Professional Body/ Organisation **AC**: Academic

IN: Industry

Furthermore, and under the initial themes the following additions were made to clarify the background of the interviewee:

Under **AC**: Academic

P: Practitioner **NT:** Non-Traditional

T: Traditional

Under **IN**: Industry

P: Practitioner **PT:** Practitioner/ Training

Under **PB/PO**:

R: Representative **RP:** Representative/ Practitioner

Additional Notes: In the text, anonymity is ensured by using pseudonyms for all participants. Direct statements from the participants are attributed to the assigned pseudonym, followed by the corresponding synchronous or asynchronous activity in which the statement was expressed. For instance, a quote made by an industry participant during workshop one (1) would be denoted as follows: **P10: INP3**. The table above also indicates the deployment country representing the interviewees' diversity. However, the country reference will be limited to comments pertaining to specific locations, country-specific programmes or policies.

4.2.2 The Scope of the Intervention and the Shared Object

As established at the beginning of this chapter, the intention of this research is to bring together three activity systems (see Figure 4.1). As noted by Edwards and Kinti (2009), inter-professional collaboration exhibits distinct challenges, highlighting the difficulty in accessing meaning-making and how other professional groups interpret different processes. This challenge arises owing to the need for engagement outside established organisational practices, negotiating the nature of the task, and coordinating responses (Edwards and Kinti, 2010). Another challenge, or pre-requisite, as set by Virkkunen and Newnham (2013), is the importance they assign to the continuity and intensity of a CL intervention as determinants of its success. These challenges directed the research design for this project accordingly, which sought to balance sustained cross-sector engagement with the practical constraints of participant's institutional contexts.

Given the pervasive nature of the gap between logistics industry and higher education, coupled with the challenges identified above, the design of the intervention is structured to adopt a practical format that promotes the realisation of a shared object. Following the approach outlined by Lund & Juujärvi (2013), the challenge of this research lies in adapting the intervention to address the diverse needs of the different stakeholders while establishing a shared understanding. The aim is to foster alignment among disparate actors within the logistics domain, who may currently lack shared goals, as opposed to a single organisation with officially defined objectives.

Therefore, the interaction design was envisioned with adaptability in mind, acknowledging the need for ongoing adjustments and realignments due to the dynamic availability of participants during the early stages of the research. Additionally, the research involved the review of supplementary documents and frameworks that captured instances of implementation across diverse domains of interest. These resources included industrial standards rooted in a competency-based approach, prominent in the vocational and technical training and education. Specifically, the following 3 frameworks were used:

1. CILT(UK) Competency Framework

2. ELA Qualifications Standards for Logistics Professionals
3. APICS Operations Management Body of Knowledge Framework

Furthermore, the research incorporated frameworks of best practice, encompassing various practices that addressed the breadth of the identified gap. Finally, the intervention design aimed to integrate effectively diverse elements of the CL methodology. One such element was the careful assortment and utilisation of stimuli through mirror data, which was presented in different formats, such as excerpts or addressed through interview questions. This deliberate use of mirror data was intended to enhance the participants' agency, even in the absence of other participants, and to stimulate the generation of pertinent contradictions to support and foster transformation.

4.2.3 Workshop Challenges Guiding the Design

The implementation of the CL aimed to achieve synchronous and asynchronous engagement in the intervention across participants through the facilitation of interactive workshops. The intervention design intended to guide the participants through the ELC (refer to Section 3.4 for details). The first workshop was highly successful, with the attendance of eight (8) participants, four (4) from academia, three (3) from industry and one (1) representing a professional organisation/body (as outlined in Table 4.1). However, subsequent workshops witnessed a decline in participation as only 33% of participants were present in the second workshop, and a mere 16% attended the third. Additionally, two of the participants opted out by this stage for personal reasons. The frequency of the workshops demonstrated significant limitations in promoting the kind of vibrant interpersonal engagement requisite to the CL methodology. Participants asserted their unavailability for the workshops due to pressing work obligations that hindered their active participation. The participants were duly informed, verbally and in writing, regarding their right to withdraw from the programme at any time they deemed appropriate.

Owing to the group's diversity concerning location and background, organising logistics and coordinating necessary steps was a rather daunting task. Therefore, agreeing on a common site for us to meet was practically unattainable. Initially, invitations were extended to academics and industry representatives from the United States; however,

logistical challenges arose in scheduling the workshops due to the significant time difference of up to 9 hours. To maintain feasible workshop scheduling, I focused on participants within a 4-hour time zone range (UTC+0 to UTC+4), which allowed for reasonable meeting times across the group. To address this issue, while considering platform availability, data security, and ethical concerns, the decision to conduct both workshops and interviews online using the MS Teams platform was made. The online approach offered several advantages, including overcoming geographical barriers and enabling the recording and simultaneous transcription of the intervention. While workshops required synchronous participation within manageable time zones, the semi-structured interviews allowed me to accommodate participants across wider geographical locations and more significant time differences, including those in Asia and other regions.

Despite an initial strong interest, the workshops encountered considerable schedule challenges, leading to a significant deviation from the established timeline. Due to the perceived difficulties in committing to the scheduled workshop sessions, the participants proactively suggested providing additional contacts for me to conduct interviews with, thereby expanding the scope of data collection. Therefore, the implementation of the workshops had to be altered to meet the needs of the participants and of the research. The specific modifications made to the implementation are discussed in the subsequent sections (refer to Table 4.1 above and Table 4.2 below).

The observed decline in workshop attendance, culminating in only two participants attending Workshop 3, indicated that supplementary approaches resembling the intervention and its constituent elements had to be explored and employed. To ensure that participants who could not attend Workshop 3 could still engage with the modelling stage and the examination of competency-based frameworks, the use of Notion facilitated the establishment of asynchronous communication channels. Notion is a productivity software platform offering organisational tools, including task management, project tracking, to-do lists, and bookmarking. Notably, Notion is a platform that allows for asynchronous discussion and permits participants to share opinions, ideas and topical issues, specifically in this case, to review and respond to the frameworks introduced in Workshop 3, thereby challenging other participants' perspectives (see Figure 4.2).

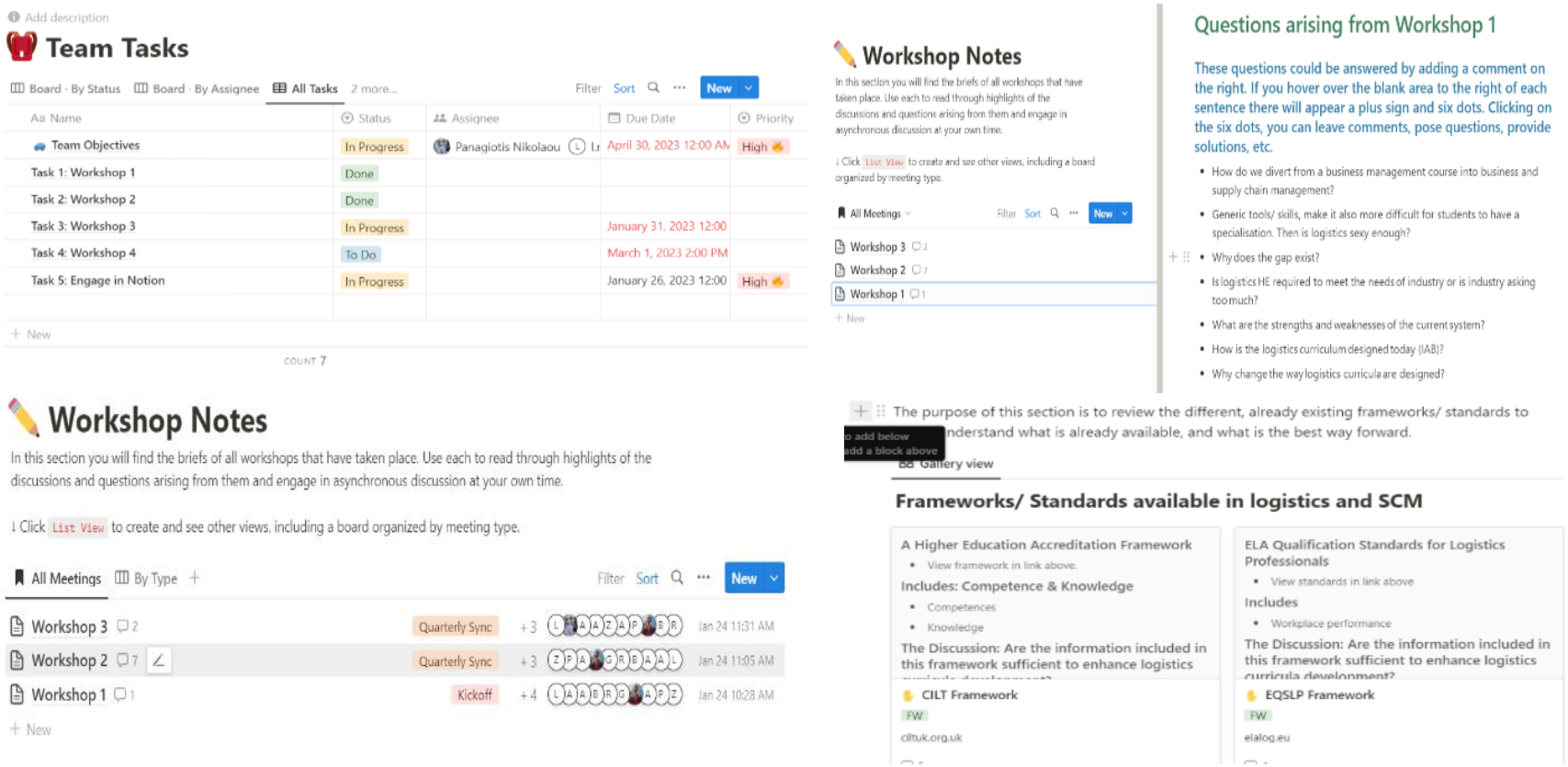


Figure 4.2: Notion, the platform used for asynchronous communication (examples from the different sections).

It offered a dedicated virtual "venue", a space for reviewing materials and conducting discussions within the different sections. Various questions posed within the platform stimulated participants to generate ideas and identify potential areas requiring further investigation, thereby fostering subsequent deliberation.

In terms of its practical operation, the Notion workspace was structured and seeded by the researcher in ways designed to sustain the developmental logic of the intervention. The environment was organised into dedicated sections corresponding to each of the three competency-based frameworks under examination, the CILT(UK) Competency Framework, the ELA Qualifications Standards, and the APICS Operations Management Body of Knowledge Framework. Within each section, the relevant framework documentation was accompanied by a series of targeted prompting questions designed to surface contradictions, for instance, whether the standards adequately reflected the operational realities of logistics practice, or whether it would be meaningful for academia to organise curricula around them as a basis for developing a more standardised and responsive to industry needs model of logistics HE.

Crucially, anonymised excerpts and contrasting perspectives drawn from Workshops 1 and 2 were introduced as mirror data (see Figure 4.2), deliberately comparing divergent stakeholder views to provoke critical reflection in the absence of live interaction. Participants were then invited to engage with the frameworks at their own pace, respond to the prompting questions, and critically interrogate one another’s contributions. Rather than seeking consensus, the space was designed to make disagreements productive. The principal aim was to sustain and extend the dialogic logic of the workshops, ensuring that critical reflection and contradiction-surfacing work initiated in the live sessions could continue between them. Notably, the discussions within the Notion workspace centred on a potential germ cell, the core contradictory unit around which the broader intervention logic was developed. In this respect, the Notion workspace functioned as an inter-workshop instrument, a means of generating mirror data and surfacing contradictions during the periods between sessions, so that this material could be fed back into and enrich the subsequent workshop discussions.

It is also significant that the workspace was ultimately discontinued as the intervention progressed, a decision that reflects the broader structural and conceptual shift within the CL and the ELC away from workshops as the primary site of engagement and towards semi-structured interviews, rendering a tool designed to support inter-workshop dialogue methodologically redundant at this stage.

Finally, Notion also provided essential reflective data (mirror data), creating an impetus for more comprehensive and in-depth discussions (see Figure 4.2).

The various sections provided a repository for storing pertinent documents, enabling convenient and continuous access to the associated links and materials (see Figure 4.2). Moreover, Notion provided the tools required to ensure that participants were reminded of the different tasks and could navigate through the relevant activities directly from the reminders received.

The adaptive design, moving from synchronous workshops to asynchronous Notion engagement and semi-structured interviews, reflects the practical realities of international, cross-sector collaboration. While this departure from the traditional CL implementation presented challenges, it maintained the core principles: mirror data, contradiction generation, and transformative agency stimulation.

4.2.4 Insiderness of the Researcher

The present project exemplifies insider research, defined as "research that is conducted within a social group, organisation or culture of which the researcher is also a member" (Greene, 2014). Scholarly discussions surrounding insider research have highlighted its potential benefits for the researcher, while acknowledging the inherent challenges and limitations. Trowler (2011) argues that insider research has a better chance of having an impact, especially concerning policy and practice, as is the case in this project. Furthermore, Greene (2014) underscores additional advantages such as enhanced interaction, the ability to pose meaningful questions, and the capacity to interpret non-verbal cues, all of which have contributed significantly to the research process.

Although being an insider researcher did not guarantee smooth and timely implementation; it did provide the necessary access to contacts. The researcher's own

beliefs also present potential challenges, as they may inadvertently influence the approach to the research (Greene, 2014). While the researcher acknowledges the presence of a certain degree of bias, utmost care was taken to ensure the validity and integrity of the project, respecting the opinions of the individuals involved and attending to the project's overarching objectives, which draw support from existing literature.

Finally, the selection of the participants aimed to achieve a balance in the diversity of backgrounds of the participants, including those more inclined to support the researcher's views and those more likely to express opposing perspectives. The deliberate approach sought to foster a nuanced exploration of the subject matter.

4.2.5 Workshop Design Principles

The workshops were carefully designed to support the progress through the ELC (see Chapter 3). The first workshop served as an introduction to the ELC process and aimed to "raise" issues in logistics academic curricula, thereby examining the presence or absence of a gap between industry and academia. Subsequent workshops that ensued were structured to engage participants in a gradual development of their understanding of the identified gap. Elements of engagement, including double stimulation, were incorporated into the workshops to address the specific requirements of each stage and contribute to the overarching objective of the research.

Table 4.2 below provides an overview of each workshop, including the main tasks (first stimulus), the second stimulus, and details of any mirror data used. Stimuli were prepared in advance for the first couple of workshops, while the outcomes of previous workshops formed the subsequent workshops' stimuli. As Lautenbach (2010) indicates, the activity system evolves and develops as the "tensions" enter the system, and they become driving forces by providing disturbances and innovations to the participants, that are then "forced" to engage further in dialogue.

Mirror data focused on concrete practice problems and routine actions (Virkkunen and Newnham, 2013) related to current and future requirements, encompassing the industrial perspective with the academic and social dimensions. According to Bligh & Flood (2015), mirror data comprises artefacts including policy documents, logistics

curricula, expectations regarding Sustainable Development Goals (SDGs), reports and articles, statistics or transcripts. Additionally, materials from previous sessions and primary data collected through self-administered surveys, interviews, and focus groups serve as mirror materials, facilitating the exploration of the four phases of contradiction.

A total of three workshops were conducted, though attendance declined progressively. To address this challenge and maintain engagement with participants unable to attend synchronously, Notion was introduced as an asynchronous continuation of workshop 3. Additionally, 24 semi-structured interviews were conducted following CL methodology, designed to address multiple phases of the ELC. These interviews utilised mirror data from other participants' responses to generate contradictions and stimulate transformative agency. Throughout the interventions mirror data evolved strategically: beginning with external literature quotes in the early workshops, then incorporating participants' quotes from previous workshops, and finally using anonymised excerpts from other interviews to sustain dialogue and critical reflection across the research process.

Table 4.2 illustrates the intervention's evolution: Interventions 1-3 represent three workshops progressing through early ELC phases; Intervention 4 captures the asynchronous Notion workspace bridging to the examining stage; Intervention 5 encompasses 24 semi-structured interviews addressing multiple ELC phases. Together, these maintained the Change Laboratory's theoretical integrity while accommodating practical constraints of international collaboration.

#	Intervention Details	ELC Stage	First Stimulus	Second Stimulus	Mirror Data
1	**21/02/2022**	Questioning & Criticising	**Task:** Establish the gap between industry and academia. **Video Task:** 8 predictions and trends in Supply Chain & Logistics (https://www.youtube.com/watch?v=WFZLpAEtdWw) . **Primary Q.:** Does logistics HE meet the needs of industry?	**Tools provided:** • PPT slides summarising key predictions/ trends; • discussion questions (listed as additional questions) relating the video content to logistics HE's ability to address these industry trends.	• Selected quotes from literature.
Type of session:			Workshop	**Timing:**	60 mins
2	**07/07/2022**	Analysis	**Task:** Enhancing sustainability in logistics HE. **Video Task:** What is Sustainable Development? (https://www.youtube.com/watch?v=7V8oFI4GYMY). **Primary Q.:** Is the current model of alignment between industry and higher education sustainable?	**Tools provided:** • PowerPoint presentation summarising key sustainability concepts from video• • Discussion questions examining sustainability of current	• Selected quotes from literature illustrating the "blame game" between industry and academia• • Quotes from Workshop 1 participants (e.g., contrasting

				industry-HE alignment	views on whether misalignment exists)
Type of session:			Workshop	**Timing:**	60 mins
Additional input:			Semi-structured Interviews (see Table 4.1)	**Timing:**	30 -60 mins
3	**25/01/2023**	Modelling	**Task:** The use of frameworks and industry standards in aligning industry needs to HE. **Excel Task:** Examining 3 existing competency-based frameworks: • CILT(UK) Competency Framework • ELA Qualifications Standards for Logistics Professionals • APICS Operations Management Body of Knowledge Framework **Primary Question:** Can a framework bridge logistics curricula to industry requirements?	**Tools provided:** • Excel spreadsheet containing the 3 frameworks • PowerPoint presentation explaining each framework • Discussion questions exploring framework applicability to bridging curricula-industry gaps	• Materials and quotes from Workshops 1 & 2 • Participants' contrasting perspectives on whether a framework can enhance logistics HE (e.g., supporter vs. sceptic viewpoints)
Type of session:			Workshop **Note:** Only 2 participants attended	**Timing:**	60 mins
Additional input:			Asynchronous data collection via Notion workspace (Created to involve participants who couldn't attend Workshop 3)	**Period:**	Feb – May 2023
4	**2023**	Examining	**Notion workspace** where participants could: • Review the 3 frameworks • Share comments, opinions, and reflections• Respond to prompting questions • Engage with others' perspectives asynchronously	**Tools provided:** • Workshop 3 materials • Ongoing participant comments	

				and responses within Notion	
Additional input:			Semi-structured Interviews (Platform: MS Teams)	**Timing:**	30-60 mins each
5	**2023**	Addressing multiple ELC phases: • Questioning & Criticising • Analysis• Modelling • Examining • Implementing • Reflecting	Interview protocol designed following Change Laboratory methodology, with topics derived from: • Literature review • Previous workshops • Three thematic areas: - Industry-university collaboration & knowledge transfer - Role of professional organizations - Pedagogical approaches for industry needs	**Tools provided during interviews:** • PowerPoint presentation shared online • Interactive slide allowing participants to prioritize topics • Space for participants to add their own topics • Predefined topics from literature and workshops	• Anonymized excerpts and quotes from other participants' interviews and workshops • Contrasting perspectives presented to stimulate reflection and agency • Mirror data from surveys • Materials from workshops 1-3

Table 4.2: Design layout and stimuli used in each workshop.

4.3 Data Collection Methods

Staging the CL as the primary data collection method allowed mixed methodologies to be utilised on the side—the time between the workshops allowed for further information to be collected. The reason for using other research methods is to triangulate and validate the information from the workshops and provide mirror data in the activity, allowing appropriate stimuli to be created. Additional methods included surveys, interviews, policy document reviews, performance and outcome-based standards and frameworks, and country standards of logistics HE. The interviews, as in Table 4.1 above, included professionals, academics and professional body representatives from a total of 8 countries, namely, in alphabetical order, Australia, Italy, Estonia, Germany, Hong Kong (special administrative region of China), the Netherlands, Oman, and the UK.

4.3.1 The Workshops

A total of 3 sessions were conducted over the span of a year, followed by asynchronous engagement via Notion and semi-structured interviews. The three sessions corresponded to the first three phases of the ELC: questioning and criticising, analysis, and modelling. As mentioned previously, these sessions were conducted online using the MS Teams platform and were instantaneously recorded and transcribed for reference (refer to Figure 4.3). The remaining phases (examining, implementing, reflecting, and consolidating) were partially addressed through the Notion platform and semi-structured interviews.

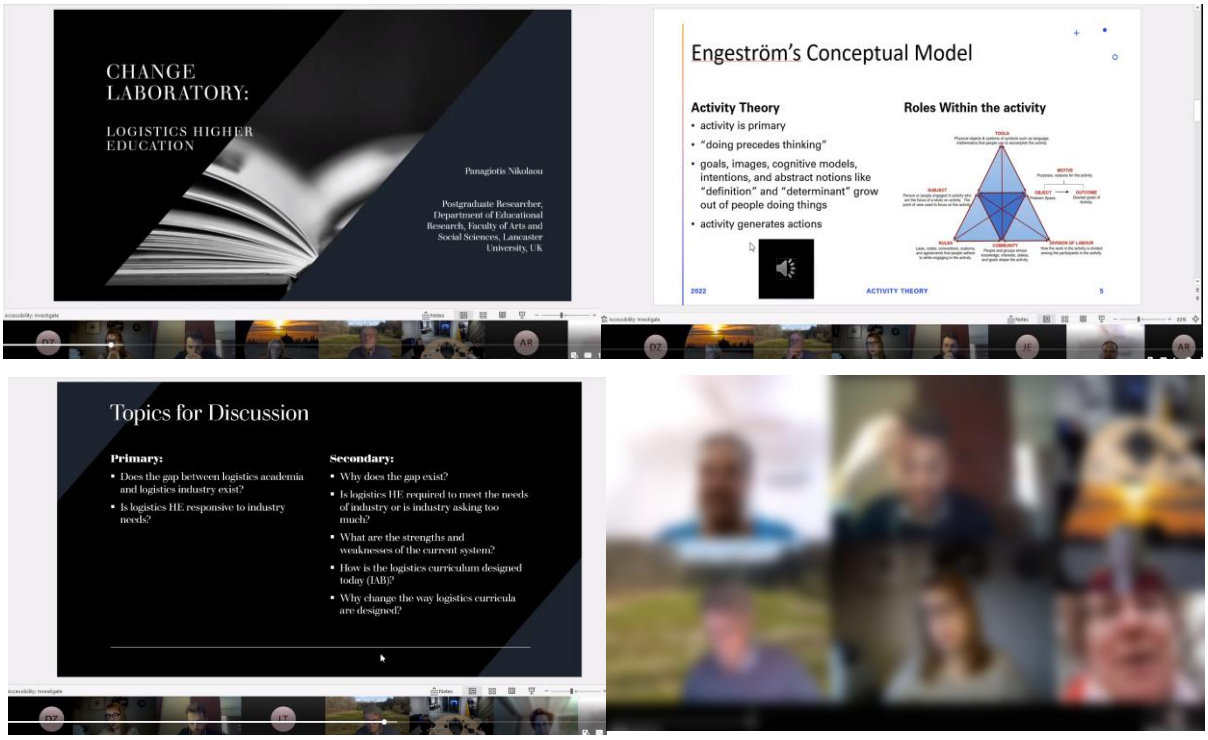


Figure 4.3: Inaugural workshop involving introduction, the use of theory and establishing the issues concerning the gap.

The inaugural session of the ELC served as an introduction and provided a platform for questioning, criticising or challenging and rejecting certain aspects of accepted practices and existing wisdom, associated with the need state (see discussion in Chapter 3, Section 3.3.5). This session involved a concise presentation of the theory to be employed and actively engaged participants in its application. The recording of this session and the subsequent two sessions proved satisfactory, with minimal interruptions and consistent audio quality, facilitating the easy verification and correction of the transcribed text with ease.

Both the second and third workshops were also recorded and designed to facilitate collaboration among participants (see Figure 4.4). Break-out rooms and the MS Teams Whiteboard feature were employed to encourage collective engagement and enable the identification of common ground. The use of the Whiteboard would have aided in capturing and visualising the discussions, with the objective of unveiling instances of agency and turning points in relation to the transformation of the object under study. However, owing to a substantial decrease in participant numbers, the need to utilise these tools was limited, allowing ample space for in-depth debates and negotiations concerning the object. Presentations during these workshops incorporated mirror data and additional stimuli to bolster contradictions and foster critical reflection amongst the group.

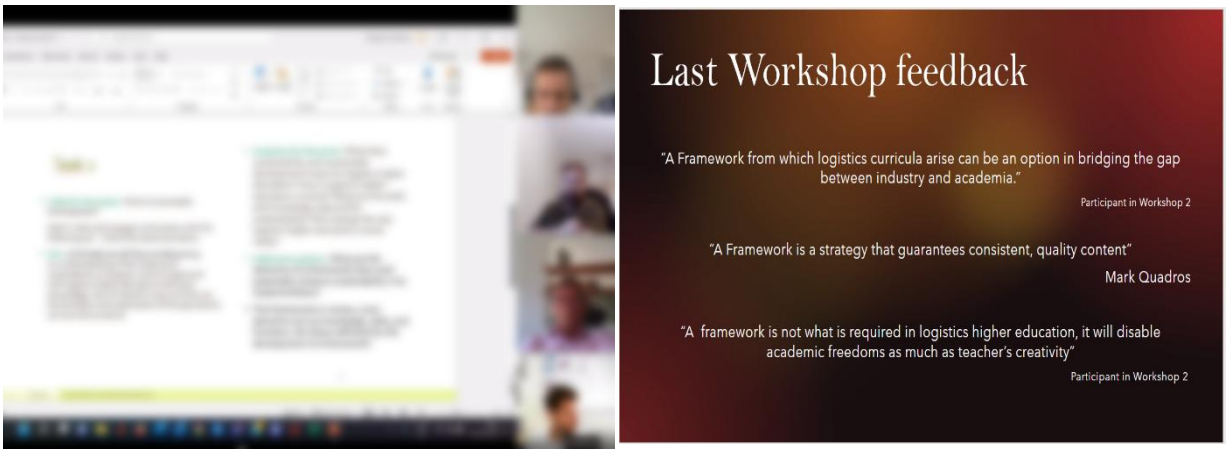
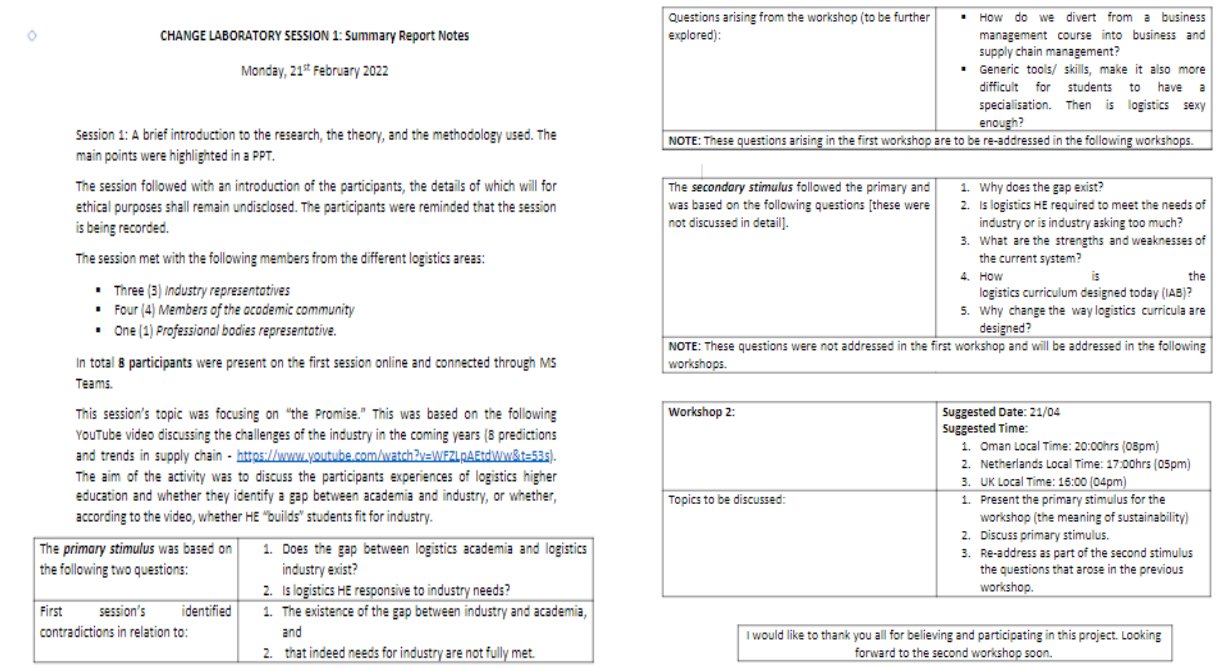


Figure 4.4: Workshop presentations using mirror data and second stimulus to enhance contradictions.

Consequently, concise reports summarising the workshop outcomes were generated from the transcribed audio and shared among the participants. These reports (see an example in Figure 4.5) served a dual purpose of providing participants with information and serving as a reminder of the topics discussed. Participants were encouraged to utilise these reports as a stimulus for subsequent workshop discussions.



CHANGE LABORATORY SESSION 1: Summary Report Notes

Monday, 21st February 2022

Session 1: A brief introduction to the research, the theory, and the methodology used. The main points were highlighted in a PPT.

The session followed with an introduction of the participants, the details of which will for ethical purposes shall remain undisclosed. The participants were reminded that the session is being recorded.

The session met with the following members from the different logistics areas:

- Three (3) *Industry representatives*
- Four (4) *Members of the academic community*
- One (1) *Professional bodies representative.*

In total **8 participants** were present on the first session online and connected through MS Teams.

This session's topic was focusing on "the Promise." This was based on the following YouTube video discussing the challenges of the industry in the coming years (8 predictions and trends in supply chain - https://www.youtube.com/watch?v=WFZLpAEtdWw&t=53s). The aim of the activity was to discuss the participants experiences of logistics higher education and whether they identify a gap between academia and industry, or whether, according to the video, whether HE "builds" students fit for industry.

The ***primary stimulus*** was based on the following two questions:	1. Does the gap between logistics academia and logistics industry exist? 2. Is logistics HE responsive to industry needs?
First session's identified contradictions in relation to:	1. The existence of the gap between industry and academia, and 2. that indeed needs for industry are not fully met.
Questions arising from the workshop (to be further explored):	▪ How do we divert from a business management course into business and supply chain management? ▪ Generic tools/ skills, make it also more difficult for students to have a specialisation. Then is logistics sexy enough?
NOTE: These questions arising in the first workshop are to be re-addressed in the following workshops.	
The ***secondary stimulus*** followed the primary and was based on the following questions [these were not discussed in detail].	1. Why does the gap exist? 2. Is logistics HE required to meet the needs of industry or is industry asking too much? 3. What are the strengths and weaknesses of the current system? 4. How is the logistics curriculum designed today (IAB)? 5. Why change the way logistics curricula are designed?
NOTE: These questions were not addressed in the first workshop and will be addressed in the following workshops.	
Workshop 2:	**Suggested Date:** 21/04 **Suggested Time:** 1. Oman Local Time: 20:00hrs (08pm) 2. Netherlands Local Time: 17:00hrs (05pm) 3. UK Local Time: 16:00 (04pm)
Topics to be discussed:	1. Present the primary stimulus for the workshop (the meaning of sustainability) 2. Discuss primary stimulus. 3. Re-address as part of the second stimulus the questions that arose in the previous workshop.

I would like to thank you all for believing and participating in this project. Looking forward to the second workshop soon.

Figure 4.5: First Workshop Summary Report.

While the three workshops established the foundation for collaborative inquiry, declining attendance necessitated additional methods to fully realize the Expansive Learning Cycle. This led to the comprehensive interview protocol described below, allowing individual participants to engage deeply with emerging contradictions.

4.3.2 The Interviews

As previously noted, the research faced a limitation in fully utilising workshops to generate contradictions within the ELC. Consequently, an alternative approach was required to leverage the benefits of the CL intervention. To address this, the research employed semi-structured interviews. According to Scribbr (Tegan, 2022), semi-structured interviews allow for data collection within a predefined thematic framework while providing flexibility in question order and phrasing. These interviews are

predominantly qualitative in nature and enable the incorporation of excerpts from other interviews, creating contradictions in the absence of other workshop participants.

The development of the interview protocol followed a three-stage trajectory reflecting the adaptive and iterative character of the broader intervention. An initial set of exploratory interviews, not aligned with the Change Laboratory (CL) methodology or the Expansive Learning Cycle (ELC), proved insufficient in generating the contradiction-driven engagement required. Rather than abandoning the CL framework, the protocol was redesigned to align fully with the sequential logic of the ELC, repositioning the interviews as a methodological surrogate for the workshop environment. The resulting 24 structured interviews, conducted over two to three months, replicated the stages of the ELC—from questioning and criticising through analysis and modelling, and partially into examining—within a one-to-one setting. Mirror data, drawn iteratively from workshops and earlier interviews, was introduced to simulate multi-voicedness, creating productive tension and enabling participants to engage with contrasting stakeholder perspectives.

As the sequence progressed, the interview protocol evolved cumulatively, with later interviews enriched by increasingly complex and contradictory data. This iterative design supported the emergence of transformative agency, particularly in the modelling stage, although the implementing phase remained at the level of proposals. Follow-up interviews were initiated to extend engagement into the later ELC stages; however, due to repetitive responses and limited progression, these were discontinued on methodological grounds. While the ELC was not fully closed, this limitation is acknowledged and discussed in Section 4.6. Importantly, the collective dimension of the CL was preserved through a distributed logic: individual contributions were anonymised and reintroduced as mirror data across the sequence, creating a temporally dispersed form of multivoicedness. In this way, the interviews functioned as a cumulatively generative mechanism, integrating individual perspectives into a coherent and evolving understanding of the activity system.

Therefore, the interviews were not intended solely to supplement the analysis of the CL process; rather, the protocol was designed, where possible, to act as a substitute for the intervention itself. A presentation was utilised during the interviews, which was shared with participants online. The presentation served three primary purposes: firstly, to ensure continuity in the discussion; secondly, to enable participants to decide

which topics deserved attention and prompted them to move the selected topics from the lower to the upper section of the presentation; and thirdly, to provide participants with predefined topics that derived from the literature and previous workshops. Furthermore, empty spaces were provided to allow interviewees the freedom to add topics of their own accord. The interviews centred around three primary thematic areas: industry-university collaboration concerning knowledge transfer, the role of professional organisations in enhancing industry-university collaboration, and pedagogical approaches that cater to industry needs.

The semi-structured interviews were conducted online using MS Teams unless otherwise requested by the interviewee for alternative platforms that would grant them greater control over the recording. On a few occasions, Zoom was employed at the participant's request, while one participant declined permission to record the interview altogether. The process of recording and transcription mirrored that employed for the workshops. Instead of providing the participants with a concise summary, a complete version of the interview was produced and shared with them for their review and confirmation.

4.4 Data Analysis

The data analysis for this research was guided by Activity Theory (AT) as the overarching theoretical framework, serving distinct purposes at various stages of the research process. In each intervention, the analysis of interview or workshop recordings was essential in understanding the sociocultural contexts that had contributed to the practice-based challenges that industry and academia faced in their collaboration so far (questioning). This process also included a historical analysis to identify the underlying structure and evolution of the current logistics higher education system and how its collaboration with industry has shaped it so far. These steps provided a foundation for creating a representation of the existing activity system (actual-empirical analysis) and were crucial for capturing contradictions and tensions within current practices and between actors.

A standout element of the research was designed to model the emerging activity system by examining how participants envisioned improving industry-university collaboration. This involved understanding participants' perspectives on knowledge transfer, the role of professional bodies, and pedagogical strategies, while also

exploring the dynamics, potentials, and limitations of the proposed solutions (examination). These stages were separated into pre- and during-intervention data analysis to serve the purposes of the collaborative activity and to promote expansive learning.

Although the outcomes of the pre- and during the intervention stages, did not lead to the re-conceptualisation of a novel activity system, they drove an innovative approach of the Change Laboratory (CL) methodology. This included the use of online tools for asynchronous data collection, supported by Notion and a macro enabled excel sheet examining different models, as well as synchronous engagement, supported by interviews designed to imitate the environment of collaborative practice, with the use of mirror data, and stimuli that offered significant insights to for evaluating different approaches, and whether they could be realised or not. Analysing participant feedback, transcripts, and recorded workshop discussions helped assess the stability and scalability of new collaborative practices.

Data from both workshops and semi-structured interviews were analysed using NVivo software, which enabled the organization of data in a relatively unmediated form, observations, and ideas from across all interventions. Through its analytical features, NVivo supported establishing relevant connections among these components (Richards, 1999) and facilitated qualitative data presentation and analysis through a six-step thematic process (Ningi, 2022): 1. Familiarization with data, 2. Generating initial codes, 3. Searching for themes, 4. Revising themes, 5. Defining themes, and 6. Producing the report. This systematic approach ensured consistent analysis across the diverse data sources—workshop transcripts, interview recordings, Notion contributions, and survey responses—allowing for comprehensive identification of contradictions and patterns of transformative agency. The coding and thematic analysis facilitated by NVivo ensured that participants' views informed the understanding of the activity systems under study and that their contributions were adequately represented in the research findings. Through iterative analysis, the research captured both the limitations of existing practices and the transformative potential of collaborative solutions in the logistics realm, including information on drivers and enablers that could support the mechanisms among the actors in the logistics realm.

4.5 Ethical Considerations

Ethical approval was sought through the official channel, using the FASS Guidelines for ethical approval of research, from Lancaster University, and final approval was received on the 22 November 2021. The research was therefore designed and conducted in accordance with the University's Research Ethics and Research Governance Code of Practice. To ensure that standards are maintained throughout the study, the participants were informed of the purpose of the study and its design through the Participant Information Sheet (PIS) – and a brief online meeting where I discussed the content of the PIS individually. Finally, their rights as research participants were communicated and participants signed Consent Forms, where it was indicated that they could voluntarily leave the study and that any information provided would be anonymised.

Workshops and interview video and audio recordings, survey data, along with meeting minutes and briefs, were all stored carefully on an encrypted device. Screenshots used for the purposes of this study and annotations, to illustrate tools utilised and preliminary findings, were handled carefully, with faces blurred and names hidden, to ensure participants anonymity.

Two ethical dilemmas arose during the research:

1. ensuring that mirror data accurately reflected participants' rather than my personal opinion, and
2. managing the interview process to avoid personal evaluations or criticisms of participants/ stakeholders focusing instead on a constructive and honest assessment of relationships and participation.

To address this, I carefully screened the data to ensure neutrality and minimise bias. Additionally, I assured participants that their recordings and transcripts would not be shared with colleagues and requested permission to use anonymised excerpts from the interviews to be used as mirror data, since the full potential of the Change Laboratory and the Expansive Learning Cycle could not be realised within the limited workshops. The second, related to workshops and interviews, where I emphasised avoiding personal evaluations or criticisms of other involved stakeholders,

encouraging participants to provide honest reflections on the relationships and dynamics between actors.

4.6 Limitations

A key limitation of this research design was the reliance on interviews to engage participants in questioning and analysing their historical activity systems and drive transformative change. I recognised that interviews alone might not fully facilitate the modelling and examination processes central to expansive learning and that participants might not have been able to model or examine new activity systems immediately after analysing their current practices. As a result, the Expansive Learning Cycle and its developmental potential were constrained. While additional time, or follow-up interviews might have helped participants progress further, their agency within the study was ultimately limited by the research design and timeline.

Finally, in response to critiques of Activity Theory and its interventionist methodologies, such as their emphasis on subjectivity and conceptual models (Sannino, 2011), I wish to emphasise their value. While these frameworks may focus on subjective interpretations and abstract representation that can limit the ability to capture the complexity of real-world practices, they do nevertheless, provide powerful tools for understanding and transforming activity systems. As previously discussed, the literature has paid little attention to the dynamics of the relationships between different actors leaving a significant gap. Engaging these actors in a collaborative effort could better address real-world problems and generate practical solutions.

4.7 Conclusion

In this chapter, I have outlined the formative intervention research design, providing an explanation of its overall logic and structure. I have described the context of the research, introduced the participants and setting, and reflected on my dual role as both researcher and insider. The research tools, data collection methods, and procedures, were discussed, along with my approach to data analysis. Ethical considerations were addressed throughout the design, ensuring that the research remained transparent, and participant centred. Finally, I have acknowledged the limitations inherent in the research design.

In the next chapter, I report on each intervention in detail to highlight both the commonalities and differences across the interventions (concerning both workshops and interviews), offering a nuanced understanding of the dynamics at play.

Chapter 5 Structure of Intervention

5.0 Introduction

This chapter documents how the Change Laboratory intervention was implemented in practice. Its purpose is not to present data for independent reader evaluation, but to account for the methodological decisions made as the research unfolded: what was planned, where constraints emerged, and how the CL logic was preserved through adaptive means. The chapter shows that while the planned workshop sequence was not fully realised, the core principles of the CL, double stimulation, mirror data, and the progressive unfolding of Expansive Learning Actions, were sustained through a combination of synchronous workshops, semi-structured interviews, and asynchronous engagement. Together, these contributed to the development of transformative agency among participants, even if that agency remained limited in its transformative potential.

5.1 Setting the Context

The intervention was designed around four workshops, each aligned with successive phases of the ELC. Participants, had agreed from the outset that the process would remain flexible, allowing for additional workshops if the intended outcomes were not achieved within the initial design. The workshops were carefully structured to promote transformative agency, as previously elaborated in Section 3.4.1, and to encourage the transformation of participants' working practices, with the goal of fostering collaboration between industry and academia. Participants were drawn from three stakeholder groups, HE, industry, and professional organisations, across several countries.

However, the CL did not unfold in practice as originally envisaged. While the design assumed a primarily workshop-based progression through the ELC, practical constraints, including participant availability, uneven attendance, and scheduling challenges, limited the continuity and depth required for the full enactment of all ELC phases through workshops alone. These limitations, discussed in Section 4.6,

necessitated a methodological adaptation rather than a departure from the underlying theoretical framework.

In response, the intervention evolved to incorporate a combination of synchronous and asynchronous data collection methods, including semi-structured interviews and engagement through digital platforms (e.g., Notion), which extended and complemented the workshop process. Rather than treating these as separate methods, they were deliberately aligned with the principles of the Change Laboratory and Activity Theory, enabling the continuation of expansive learning actions beyond the workshop setting. In this way, the structure of the CL was transferred into alternative formats, allowing participants to continue engaging with contradictions reflecting on practice, and proposing potential transformations.

Acknowledging the limited success of the workshops in achieving all phases of the ELC, as suggested by Bligh and Flood (2015), a mapping exercise is presented in Table 5.1 to trace the progression of expansive learning throughout the research. For clarity, the term “sessions” is used to capture this expanded methodological approach, encompassing workshops, interviews, and asynchronous engagement, all of which contributed to understanding the activity system and identifying opportunities for transformation. This reconceptualisation reflects a shift from a workshop-bound intervention to a distributed CL process. The mapping provides a detailed account of how the actions unfolded across the different formats and their implications for addressing the misalignment between logistics HE and industry needs.

However, following the third workshop, declining participation disrupted the continuity of the collective activity system and constrained progression through the ELC. In response, semi-structured interviews were introduced as a methodological adaptation, deliberately designed to retain core CL principles by incorporating mirror data, iterative questioning, and dialogical engagement. In this way, the object of the activity, addressing the misalignment between logistics HE and industry, continued to be interrogated, and contradictions within and between stakeholder activity systems were further surfaced and analysed. Although the interviews enabled continued engagement with modelling and examination phases, participants demonstrated limited transformative agency when moving towards the implementation of alternative system configurations, often expressing reluctance to openly propose or commit to

change. Following the interviews, and under the assumption that sufficient momentum had been generated, a fourth workshop was scheduled to collectively consolidate and advance the process; however, this did not materialise.

Subsequent follow-up interviews were then used in an attempt to extend the process into the final phases of the ELC (implementation, reflection, and consolidation), but after a small number of additional interviews, data saturation became evident, with recurring themes and limited new contributions. While some participants did articulate elements of a potential new model, these were often accompanied by requests for anonymity, reflecting the sensitivity of proposing systemic transformation within their respective contexts.

Overall, although a fully realised new activity system did not emerge, the study demonstrates how the CL can be reconfigured across multiple modes of engagement (including workshops, interviews, and asynchronous tools such as Notion), maintaining its epistemological and ontological grounding while revealing the structural and cultural constraints that limit expansive transformation in practice. Moreover, this approach enabled the continuation of expansive learning actions, despite disruptions to the original design, demonstrating both the constraints encountered and the adaptability of the Change Laboratory methodology in practice.

The table (table 5.1) maps each phase of the Expansive Learning Cycle (ELC) to the corresponding sessions, showing how the intervention progressed across workshops and interviews. Early phases (questioning and analysis) were primarily achieved through Workshops 1 and 2, while later phases relied increasingly on interviews and asynchronous tools due to workshop limitations. Modelling and examination were partially constrained but supported through additional data collection methods. Overall, the table illustrates a non-linear progression of the ELC, highlighting both the contributions of different sessions and the constraints affecting full cycle completion.

Mapping the ELCs Phases to sessions			
Stage & Description	**Workshops # (dates)**	**Interviews (period)**	**Comments**
Phase 1: Questioning	Workshop 1 – 21/02/202	Start Date: 02/2023 End Date: 06/2023	Initial stage leveraged participant familiarity to explore systemic contradictions and challenges.
Phase 2: Analysis	Workshop 2 – 07/07/2022		Outcomes from the previous workshop facilitated needs analysis. Interviews provided additional feedback.
Phase 3: Modelling	Workshop 3 – 25/09/2022		Workshop setbacks limited depth, but subsequent interviews offered significant insights for developing draft models for exploration. Asynchronous tools like Notion supported the drafting of potential models. NVivo coding and thematic analysis enhanced the process.
Phase 4: Examination	-		Draft models examined through contradictions identified in earlier phases. Asynchronous tools like Notion and NVivo were instrumental in refining insights.
Phase 5: Implementation	-	Start Date: 01/09/2023 End Date: 30/09/2023	Discussion focused on potential model implementation and limitations. Asynchronous tools like Notion supported these processes.
Phase 6: Reflection	Workshop 4 – 10/09/2023		Partial fulfilment through reflective interviews. Suggested directions, but not finalized activity system produced.
Phase 7: Assessing & Consolidating	Workshop 4 – 10/09/2023		Final interviews contributed to assessing and consolidating ideas. Suggestions for combining approaches were provided, but no definitive solutions emerged.

Table 5.1: Mapping of the Expansive Learning Cycle to the sessions.

In the following sections, a comprehensive account of the implementation process, along with the corresponding findings from each session, will be presented. This detailed overview is expected to highlight the intricacies of the intervention's design and its resulting outcomes.

5.2 The Change Laboratory Process

The process commenced with an introductory presentation comprising voice-over narration, which was shared with the participants prior to the inaugural workshop. The presentation provided a concise overview of the underlying theory, elucidated the intervention process, and established the participants' role and significance within the project. Additionally, it directed the participants towards the design framework, outlined the areas of discussion, and highlighted the specific stage of the ELC that would be addressed during the initial workshop.

The following section aims to outline the design, content and progression of the intervention within the ELC framework in a comprehensive, chronological, and structured manner. The section presents detailed descriptions of the mediating tasks that facilitated expansive learning, the use of mirror data as stimuli, and the action undertaken by the participants. The information is presented both in tables and in narrative. Finally, the section captures the development across the hierarchical phases of the ELC, including any setbacks or turning points, enabling readers to witness the developmental nature of the intervention and the artefacts by which this was achieved.

5.3 Structure of Intervention

This section outlines the structure of the intervention and how the CL methodology was operationalised across the study. The intervention was originally designed as a sequence of four workshops aligned with successive phases of the ELC, with flexibility to extend the process if required. However, due to practical constraints, the CL did not unfold as a purely workshop-based intervention.

In response, the study adopted a distributed approach integrating synchronous (workshops and semi-structured interviews) and asynchronous (Notion engagement) modes of interaction. These were not treated as separate methods but as complementary mechanisms through which expansive learning actions were sustained.

Rather than presenting findings, this section focuses on how the intervention was constructed and enacted, demonstrating how CL principles, such as double stimulation, mirror data, and collective reflection, were maintained across different

formats. The following sections outline the design and intended contribution of each mode of engagement in supporting the progression of the ELC.

5.4 Synchronous Sessions

The workshops were designed as the primary mechanisms for facilitating collective engagement within the CL, each aligned with specific phases of the ELC. They aimed to create a shared space for participants from HE, industry, and professional organisations to collaboratively question existing practices, analyse systemic contradictions, and explore potential transformations.

However, while the initial design assumed a consequential progression through the ELC via workshops, practical constraints, including participant availability and declining attendance, limited their continuity. As a result the workshops represent only one component of a broader, distributed CL process.

5.4.1 Workshop 1 – Design

Workshop 1 was designed to initiate the CL process by engaging participants in the first phase of the ELC – ***questioning and criticising*** the existing practice. The purpose of this session was not to generate solutions but to structure a process through which participants could collectively surface and interrogate systemic contradictions within logistics HE and its relationship with industry.

This section focuses exclusively on the design and structure of the session, illustrating how CL principles were conceptually implemented to enable expansive learning actions. No empirical findings are presented at this stage. The workshop design was grounded in key CL principles, particularly double stimulation, multi-voicedness, and collective object-oriented activity. Double stimulation was operationalised through the deliberate use of stimuli. External artefacts were introduced as first stimuli to represent problematic situations or tensions within the system, while guided prompts functioned as second stimuli, enabling participants to interpret, question, and respond to these tensions. At the same time, the workshop incorporated a multi-voiced activity system perspective by bringing together participants from HE, industry, and professional organisations, thereby reflecting the systemic and relational nature of the problem under investigation.

The workshop was organised into two interconnected tasks (see Table 5.2), both aligned with the expansive learning action of questioning and criticising. The mediating artefacts used, were intended to support participants' engagement with the object of the activity.

Task 1 was structured to stimulate initial questioning of HE practices in addressing industry needs.

- A video-based stimulus highlighting future logistics trends (video titled "*8 Predictions and Trends in Supply Chain and Logistics for 2021*" - refer to Figure 5.2). This acted as a mirror to current HE practices, enabling participants to contrast existing approaches with emerging industry trends.
- This was followed by structured prompts (via PowerPoint), which acted as the second stimulus, guiding participants to articulate tensions between current HE practices and emerging industry expectations.

Task 2 extended the questioning phase by shifting focus from HE alone to the broader activity system, including industry and professional organisations.

- Participants engaged with visual representations of the activity system and selected literature extracts, which functioned as mirror materials.
- A second set of guided prompts supported participants in examining roles, responsibilities, and interdependencies across stakeholders.

This task explicitly introduced the systemic nature of contradictions, encouraging participants to move from individual perspectives to relational and structural considerations.

Both tasks (Figure 5.2) were conducted using an open-space discussion format, without the use of break-out groups. This approach was intentionally adopted to support collective sense-making and to ensure the visibility of multiple perspectives within a shared dialogical space. Maintaining a single discussion environment also allowed for the emergence of relational dynamics, including the interplay of perspectives across stakeholder groups, which is consistent with the principles of multi-voicedness within CL interventions.

The session was recorded and subsequently synthesised into materials that were carried forward as mirror data for subsequent sessions. Workshop 1 was designed not

as a standalone event but as a part of a cumulative expansive process, where outputs from one session informed and shaped the progression of the intervention.

Figure 5.1: First stimulus, mirror materials and second stimulus used in Workshop 1.

	Workshop 1 (refer to Figure 5.1)			
Expansive Learning Action:		Questioning		
	First Stimulus	**Second Stimulus**	**Mirror Material**	**Social Organisation**
Task 1 Explore the responsibilities of HE in addressing the gap.	**Questions presented on PPT:** • Does logistics HE meet the needs of industry? • What are HE's responsibilities in addressing industry needs? • How well does current HE practice align with industry trends?	**Discussion prompts and PPT slides highlighting:** • The current activity system • Key predictions from the video • Areas where HE could respond to emerging trends	Video: "8 predictions and trends in Supply Chain and Logistics for 2021" (*Provides context on industry developments and challenges*)	Open-space online discussion format to encourage collective dialogue and dynamic power-sharing
Task 2 Evaluate the role of the different parties (either involved or potentially involved) and	**Questions presented on PPT:** • Who are the stakeholders in logistics education? • What role should each party play? • Where does responsibility lie for closing the gap?	**Visual representation of the activity system showing:** • Relationships between stakeholders • Current collaboration patterns • Potential areas for intervention	**Selected quotes from literature**: • Industry criticisms of HE • Academic perspectives on industry engagement • Evidence of the "blame game" • Compiled from articles reflecting concerns of different stakeholders	Continuation of open-space discussion, allowing participants to build on Task 1 insights

Table 5.2: Workshop 1 design summary.

5.4.2 Workshop 1 – Report

The first workshop was conducted online with eight of the twelve enrolled participants. All essential stakeholder groups, HE, industry, and professional organisations were represented, facilitating a seamless and holistic implementation process. Participants had no prior experience with the CL methodology.

The session followed the planned structure, with participants engaging in a shared discussion format. Interaction was characterised by a continuous exchange of perspectives, with contributions often building on or responding to others. Rather than progressing strictly through the predefined tasks, participants moved fluidly across topics, resulting in overlaps between discussion points. This pattern of interaction reflected both the open-space design of the session and the complexity of the issues under consideration. While the structure provided an initial framework, the discussion evolved dynamically, with participants collectively engaging with the themes introduced through the stimuli.

Overall, the workshop was implemented as designed, generating a continuous and multi-directional dialogue across stakeholder groups. The outputs of this session were captured and carried forward as mirror data materials from subsequent stages of the intervention.

5.4.3 Workshop 1 - Outcomes

The outputs of Workshop 1 aligned with the questioning and criticising phase of the ELC, contributing to the initial identification and articulation of tensions within the system. The tasks generated a range of perspectives across stakeholder groups, capturing how the perceived misalignment between logistics HE and industry is experienced and understood.

These outputs reflected multiple perspectives within and between the activity systems of the involved actors, highlighting issues related to the alignment, roles, and shared responsibilities. As illustrated in Figure 5.2, these interactions can be understood as emerging from the relationships between interconnected activity systems oriented towards a shared, yet contested, object.

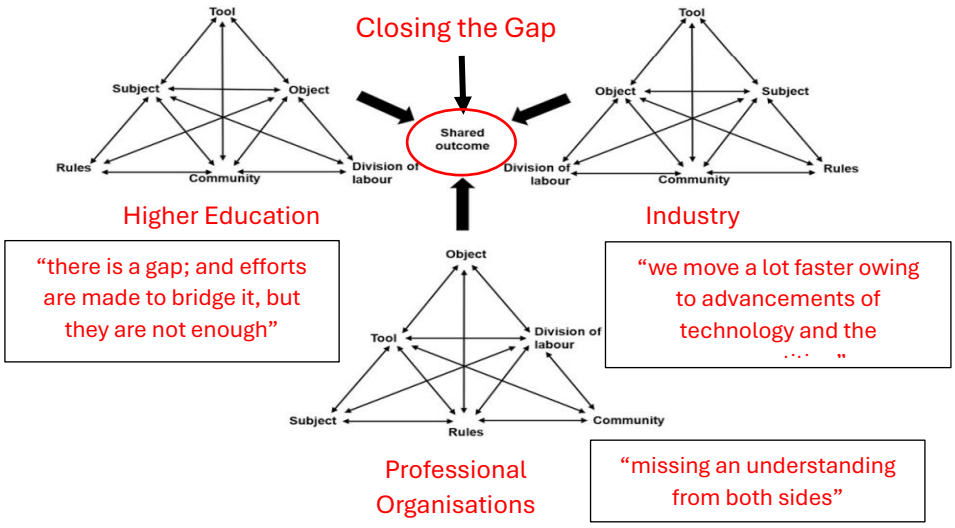


Figure 5.2: Representation of the interaction of different activity systems with a shared outcome. Analysis constructed after the workshop by the author. Adapted from Engeström (2001).

The workshop also facilitated the questioning of established practices and assumptions across stakeholders, making an initial step in surfacing underlying contradictions within the system. In this sense, the session established a foundation for subsequent phases of the ELC by opening up the problem space and enabling further analytical exploration in later stages of the intervention.

5.4.4 Workshop 2 – Design

Workshop 2 was designed to build on the outcomes of the questioning and criticising phase and move the intervention into the analysis phase of the ELC. This stage focuses on deepening the understanding of the identified problem by examining its underlying structure and origins. In line with AT, the analysis phase incorporates both a historical-genetic perspective, which considers how current practices have evolved over time, and an actual-empirical perspective, which examines the inner contradictions within the current system (Engeström *et al.*, 1996; Engeström and Sannino, 2010).

Building on the disturbances surfaced in Workshop 1, the session introduced new mediating artefacts to support participants in moving from initial questioning towards a more structured analysis of the system. External artefacts were used as first stimuli to represent both current and future-oriented challenges within logistics HE, while

structured prompts acted as second stimuli, guiding participants to examine the strengths, limitations, and contradictions embedded within existing practices.

The workshop was organised into two interconnected tasks (Table 5.3), aligned with the expansive learning actions of questioning and analysis. The mediating artefacts were deliberately selected to support participants' engagement with the object of the activity, namely the misalignment between HE and industry.

Task 1 was structured to prompt participants to analyse whether current HE practices adequately prepare graduates to meet industry needs.

- A video stimulus on Industrial Revolution 4.0, alongside selected statements carried forward from Workshop 1, was introduced as mirror material to situate the discussion within both contemporary developments and previously identified tensions.
- This was followed by prompts delivered through presentation slides, guiding participants to examine the strengths and weaknesses of existing systems of practice, including pedagogical approaches and forms of collaboration with industry.

Task 2 extended the analytical focus by shifting attention towards the future orientation of the system. Participants were invited to consider how well current HE practices are positioned to respond to emerging demands and whether alternative configurations may be required.

- Mirror materials for this task included a video on sustainable development and the CILT(UK) Competency framework, which introduced an external reference point for considering structured approaches to capability development.
- A corresponding set of structured prompts supported participants in reflecting on potential directions for system development, while maintaining a focus on identifying underlying tensions rather than resolving them.

Both tasks were conducted using an open-space discussion format, consistent with the design of Workshop 1. This approach was intentionally maintained to support continuity in the CL process, enabling collective sense-making and preserving the visibility of multiple stakeholder perspectives within a shared dialogical space.

The session was designed as part of a cumulative expansive process, where materials from previous interactions were reintroduced as mirror data and further developed through new stimuli. In this way, workshop 2 extended the trajectory of the intervention by moving from the articulation of problems towards a more structured examination of their causes and systemic interrelations, laying the groundwork for subsequent modelling activities.

Workshop 2		
Expansive Learning Action:	Questioning and Criticising and Analysis	
First Stimulus	**Second Stimulus**	**Mirror Data**
Task 2.1 Consider whether we are preparing graduates that meet the needs of the logistics industry according to current practices.	*A set of questions presented on PPT focusing on discussing the strengths and weaknesses of the current systems of Practice (HE, collaboration with industry, pedagogical approaches, etc.)*	1. *Video: Industrial Revolution 4.0* 2. *Statement from previous workshop*
Task 2.2 Consider how geared the system of HE is towards meeting industry's future needs.	*A set of questions presented on PPT focusing on how the system can be improved.*	1. *Video: What is Sustainable Development* 2. *CILT(UK) Competency Framework*
Social Organisation:	*2 industry representatives and 2 academics joined the workshop.*	

Table 5.3: Workshop 2 design summary.

5.4.5 Workshop 2 – Report

The session followed the planned structure, with tasks introduced sequentially and supported by pre-selected stimuli, including videos, prior workshop outputs, and competency framework materials. These artefacts were used to prompt engagement with the systemic issues identified earlier and to guide participants towards deeper examination of the activity system.

Interaction during the workshop remained dialogical, with participants engaging in a shared discussion format. As in the first session, contributions were not confined strictly to individual tasks; instead, participants moved fluidly between themes, often revisiting earlier points while extending the discussion. This pattern reflected both the open discussion format and the interconnected nature of the issues under examination.

Despite the reduced number of participants, the workshop maintained continuity with the overall intervention design, enabling the progression from questioning towards analysis. The outputs generated during the session were documented and

subsequently incorporated as mirror data to inform the next stages of the intervention, including asynchronous engagement and interviews.

5.4.6 Workshop 2 – Outcomes

The outputs of Workshop 2 aligned with the analysis phase of the ELC, extending the initial questioning by further examining the structure and dynamics of the activity system. Building on the issues that surfaced in Workshop 1, this session contributed to a more structured exploration of how the misalignment between logistics HE and industry is produced and maintained across stakeholder interactions.

These outputs reflected continued engagement with the object of the activity, with contributions focusing on systemic relationships, roles, and areas of tension within and between stakeholder groups. However, the absence of professional organisation representatives limited the multi-voicedness of the activity system and constrained the breadth of perspectives anticipated in the workshop design, particularly to discussion around competency frameworks.

As illustrated in Figure 5.3, the outputs can be understood as further articulating the interaction between key activity systems, particularly HE and industry, oriented towards a shared outcome. The figure represents how these systems engage with one another through their respective practices and priorities, highlighting the relational nature of the identified tensions.

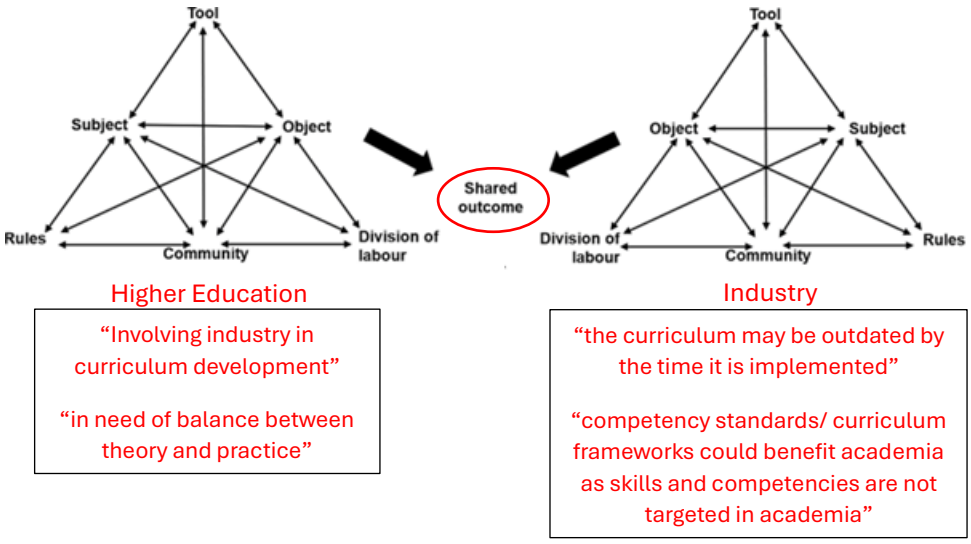


Figure 5.3: Represents the interaction between activity systems (HE and industry) with a shared outcome. Analysis constructed after the workshop by the author. Adapted from Engeström (2001).

While the workshop did not fully realise the intended depth of analysis across all stakeholder groups, it contributed to advancing the expansive process by consolidating key areas of focus and supporting the transition towards subsequent phases of the ELC. In this sense, the session functioned as an intermediary step, refining the problem space and informing the continued development of the intervention.

5.4.7 Workshop 3 – Design

Workshop 3 was designed to support the transition from the analysis phase to the modelling phase of the ELC. At this stage, the intention was to move beyond examination of contradictions towards the development of a shared representation of a potential new model (Rantavuori, Engeström and Lipponen, 2016). Within the CL framework, this phase focuses on constructing a simplified and communicable formulation of a new form of activity that addresses the identified tensions.

The workshop design continued to draw on the principles of double stimulation and cumulative progression. Materials generated in earlier sessions were reintroduced as mirror data, functioning as the first stimulus to anchor the discussion in previously identified tensions. These were complemented with structured prompts, which acted as second stimuli, guiding participants toward the exploration of potential solutions.

The session was organised into two interconnected tasks (Table 5.4).

- The first task revisited themes from the previous workshops, encouraging participants to engage with the question of how existing systems could be improved in response to identified contradictions.
- The second task introduced the use of frameworks and competency-based standards (a discussion that set the scene in Workshop 1 and briefly discussed in Workshop 2) as potential mediating artefacts, prompting participants to consider how such structures might contribute to the development of a new model for collaboration between stakeholders.

The design maintained an open discussion format to support collective sense-making and the co-construction of ideas. As in earlier sessions, the outputs were intended to inform subsequent stages of the intervention, contributing to the cumulative development of the expansive learning process.

Workshop 3		
Expansive Learning Action:	Analysis and Modelling	
First Stimulus	**Second Stimulus**	**Mirror Data**
Task 2.2.2 Consider how geared the system of HE is towards meeting industry's future needs.	A set of questions presented on PPT focusing on how the system can be improved.	1. CILT(UK) Competency Framework (other frameworks) 2. Feedback from the previous workshop.
Task 3.1 What can be improved in the overall system through the use of standards or frameworks?	Do they support or hinder HE effort?	N/A
Social Organisation:	2 academics joined the workshop.	

Table 5.4: Workshop 3 design summary.

5.4.8 Workshop 3 – Report

Workshop 3 was conducted online following two postponements and was attended by a limited number of participants. The reduced attendance significantly constrained the intended multi-voicedness of the session, as representation across stakeholder groups was not achieved.

The workshop followed the planned structure, with tasks introduced sequentially and supported by previously generated materials and additional stimuli. However, the limited number of participants affected the dynamics of the discussion and restricted the extent to which ideas could be collectively developed and negotiated.

Interaction during this session remained aligned with the open discussion format; however, the depth and breadth of engagement were constrained compared to earlier workshops. As a result, the session did not fully realise its intended function as a space for collaborative modelling.

In parallel, asynchronous engagement and interviews were further developed to support the continuation of the intervention. The outputs of this session, together with

the insights generated through these complementary modes, were carried forward as part of the ongoing process.

5.4.9 Workshop 3 – Outcomes

The outputs of Workshop 3 reflect a partial progression towards the modelling phase of the Expansive Learning Cycle. While the session was designed to support the development of a shared model, the limited participation constrained the extent to which this could be achieved within the workshop setting.

Nevertheless, the session contributed to sustaining the expansive learning process by maintaining focus on the object of the activity and by further engaging with potential directions for transformation. The introduction of frameworks and standards as mediating artefacts supported the exploration of possible configurations of a future activity system, although these were not developed into a collectively agreed model.

In this sense, Workshop 3 functioned as a transitional point within the intervention, where the movement from analysis to modelling was initiated but not fully realised. This partial progression informed the subsequent adaptation of the research design, including the increased reliance on interviews and asynchronous engagement to continue the expansive learning process.

5.4.10 Semi-Structured Interviews – Design

Semi-structured interviews were initially introduced as a complementary data collection method to support the progress of the intervention beyond the workshop setting. The original design followed a conventional format, consisting of a set of approximately ten questions tailored to participants' backgrounds, allowing for both consistency and flexibility in exploring the identified gap between logistics HE and industry.

However, early implementation indicated that this approach, when applied in isolation, did not sufficiently sustain the depth of engagement required to advance the expansive learning process. In response, the design of the interviews was adapted to more explicitly incorporate the principles of the CL and the ELC. Rather than functioning as a question-and-answer format, the interviews were restructured as dialogical sessions guided by expansive learning actions.

This adaptation was operationalised through the systematic use of mirror data, drawn from prior workshops and earlier interviews, which was reintroduced during the interviews to provoke reflection and surface contradictions. In this way, participants were not only responding to questions but were also engaging with tensions emerging across the activity system. The use of iterative questioning further supported this process, enabling participants to move beyond descriptive accounts towards more analytical and reflective engagement.

The interview structure was therefore aligned with the progression of the ELC, beginning with prompts that elicited experiences of the identified gap and gradually extending towards the examination of contradictions, potential models and evaluative reflections. This design ensured continuity with the overall CL Framework, effectively transferring its core principles into an alternative, yet conceptually consistent, mode of engagement.

It should be noted that the protocol was designed to engage participants across all phases of the ELC within each interview rather than to allocate discrete phases to separate sections. For this reason, a tabular mapping of interviews to interviews to individual ELC stages has not been included: such a presentation would misrepresent the integrative nature of the protocol and risk implying that different participants addressed different phases, when in practice all twenty-four interviews were designed to traverse the complete cycle. Variation in the depth or emphasis with which individual participants engaged with stages reflects the dialogic character of the interviews rather than a structural difference in what was offered to each participant.

5.4.11 Semi-Structured Interviews – Report

A total of twenty-four interviews were conducted over a three-month period, involving participants from industry, HE, and professional organisations. The duration of each interview varied, ranging from 30 minutes to 1 hour and 30 minutes, depending on the depth of engagement and the extent of discussion.

Following the initial interviews, the adapted structure was implemented consistently, integrating mirror data and iterative prompts into the interview process. This resulted in a more dialogical form of interaction, where participants engaged not only with the interviewer’s questions but also with perspectives and tensions introduced through

prior data. As a result, the interviews functioned as an extension of the CL, maintaining continuity with the intervention's theoretical and methodological grounding.

All interviews were transcribed and processed using NVivo, a qualitative data analysis software, enabling systematic and individual management, analysis, and visualisation of qualitative data (Dhakal, 2022). The resulting themes arising from the coding process are structured to reflect the different stakeholder groups, supporting the subsequent analysis while maintaining alignment with the activity system perspective adopted in the study (refer to Table 5.5 for further details).

Overall, the interviews were implemented as a flexible yet structured component of the intervention enabling continued engagement with the object of the activity despite the limitations encountered in the workshop sequence. The outputs generated through this process were incorporated into the broader dataset and informed subsequent stages of the intervention.

5.4.12 Semi-Structured Interviews - Outcomes

The outputs of the semi-structured interviews contributed to the continuation of the ELC, supporting progression across the phases of questioning, analysis, and elements of modelling and reflection. Through the adapted interview design, participants engaged with the object of the activity in a manner consistent with the principles of the CL, allowing for further articulation of tensions and relationships within and between stakeholder activity systems.

Throughout the interview process, the emergence of the ELC remained evident, with discussions moving beyond initial problem identification towards more reflective and evaluative considerations. In response, an attempt was made to extend the process towards the final phases of the ELC, including consolidation, through additional interviews and planned follow-up engagement. However, progression beyond reflection remained limited, and a fully realised consolidation stage was not achieved.

Overall, the interviews functioned as a mechanism for sustaining the expansive learning process beyond the workshop setting, maintaining alignment with the theoretical framework while further refining the problem space and informing subsequent analysis.

5.5 Asynchronous Sessions

A key challenge in implementing the CL methodology was the coordination of synchronous sessions across multiple time zones and among professionals with demanding schedules. Despite interest in ongoing collaboration, participants often could not attend face-to-face or online meetings due to work commitments. This disruption can be understood as a practical contradiction within the activity system, affecting the progression of the intervention.

In response, asynchronous engagement was introduced as a complementary mechanism to sustain the expansive learning process beyond the constraints of scheduled workshops. The use of a digital platform (Notion) enabled participants to engage with the intervention at their own pace, extending participation across time and space while maintaining connection to the shared object of activity.

5.5.1 Engagement on Notion – Design

The asynchronous component was designed to extend the Change Laboratory process by providing a shared digital space where participants could engage with materials, reflect on emerging issues, and respond to each other's contributions outside of scheduled sessions.

The platform functioned as a repository for mirror data, including summaries of workshops, selected excerpts from prior discussions, and problem scenarios. These materials acted as first stimuli, representing tensions and contradictions identified within the activity system. Structured prompts and guiding questions were introduced alongside these materials, functioning as second stimuli to support reflection, interpretation, and further engagement.

Participants were invited to review and comment on selected artefacts, including examples of competency-based frameworks, which were introduced as potential mediating tools within the system. The intention was not to evaluate specific solutions, but to provide a structured basis for exploring how such artefacts might inform the development of new forms of activity.

In this way, the asynchronous environment was designed to maintain continuity with the principles of the Change Laboratory, enabling ongoing interaction with the object

of the activity while accommodating the practical constraints identified in earlier stages of the intervention.

5.5.2 Engagement on Notion – Report

The asynchronous platform was active over a three-month period and was introduced following the early workshops to support continued engagement. Participants were periodically prompted to contribute, with reminders issued to encourage interaction and sustain momentum.

Initial engagement was evident, with a number of participants contributing reflections and responses to the materials provided. Interaction during this phase demonstrated the potential of the platform to support distributed dialogue and to extend the reach of the intervention beyond synchronous sessions.

However, despite continued prompts, participation gradually declined over time, and sustained interaction was not achieved. As a result, the platform did not function as a fully active collaborative space but remained a supplementary component of the intervention.

The material generated through this process was retained and subsequently integrated into other components of the study, particularly the semi-structured interviews, where it was utilised as mirror data to support further discussion and reflection.

5.5.3 Engagement on Notion - Outcomes

The outputs of the asynchronous sessions contributed to the overall intervention by supporting the continuation of expansive learning actions in a distributed format. While the level of sustained interaction was limited, the contributions generated during the initial phase provided additional material that informed subsequent stages of the process.

Rather than functioning as a standalone site of collective development, the asynchronous component played a supporting role within the broader Change Laboratory framework. The data produced through participant engagement was primarily used as mirror material in later interviews, enabling the reintroduction of tensions and perspectives within a more structured and dialogical setting.

In this sense, the asynchronous sessions contributed indirectly to the progression of the Expansive Learning Cycle, not through continuous interaction on the platform itself, but through their integration into other modes of engagement within the intervention.

5.6 Summary of Data Presentation

This chapter presents the structure and design of the Change Laboratory intervention, including workshops, semi-structured interviews, and asynchronous engagement. Each component is described in terms of its role within the Expansive Learning Cycle and its alignment with Change Laboratory principles such as double stimulation, mirror data, and multi-voiced participation.

The emphasis throughout is on the design logic and progression of the intervention across ELC phases rather than empirical findings. Workshops and interviews are presented as interconnected elements of a continuous expansive process, with outputs feeding forward into subsequent stages of the intervention.

The chapter therefore maps how the CL methodology was operationalised structurally across multiple settings, forming the basis for the analytical discussion in the following chapter.

Chapter 6 Data Analysis

6.0 Introduction

The findings presented in this chapter are the products of an integrated and tailored CL approach documented in Chapter 5. Rather than drawing on workshops alone, the analysis that follows brings together data generated across all modes of engagement employed in the intervention: the synchronous workshops, the semi-structured interviews redesigned to carry CL principles forward, and the asynchronous engagement on the Notion platform. These were not separate data sources but complementary mechanisms within a single, adaptive CL process, each contributing to the progressive unfolding of expansive learning actions. The integrated nature of this approach is reflected throughout the analysis, where insights from one mode of engagement consistently informed and shaped the next.

Following the presentation of the data collection process in the previous chapter, this chapter focuses on the expansive learning actions that unfolded during the Change Laboratory (CL) process. The purpose of presenting these actions is to demonstrate how participants' engagement evolved from identifying problems to critically analysing, modelling, and envisioning potential transformations within logistics HE. In doing so, the chapter builds a bridge between the methodological account and the analytical discussion that follows, showing how expansive learning served both as a lens and a mechanism for addressing the research questions.

The exploration is crucial because it reveals why and how collaborative engagement can generate new forms of understanding and agency, moving beyond the "blame game" often found in earlier literature that isolates the industry or academic perspective. By situating these learning actions within real-world contexts, the chapter highlights the structural, relational, and cultural factors shaping collaboration between education, industry, and other stakeholders in the current activity system.

The following section outlines the chapter structure, guiding the reader through the narrative, design elements, and transformative agency as they progress from abstract conceptualisation toward a concrete understanding of how the gap between industry and academia can be bridged.

6.1 Chapter Overview

This section provides a detailed account of the chapter's structure. The journey commences with the examination of the ELC learning actions, progressing sequentially from "questioning" to "examining", encompassing both historical and empirical "analysis", followed by the "modelling" of a novel activity and ultimately "examining" the effective operational implementation of the transformed activity model. Each of the above sections is systematically organised into subsections encompassing three pivotal elements:

- the **narrative overview,** which involves discussing and highlighting significant problematic areas or challenges emerging from the data;
- the **design elements at the concerned stage,** focusing on the discernible design components at each stage of the analysis; and,
- the **manifestations of transformative agency,** entailing exploration and description of how transformative agency becomes evident throughout the study.

To better visualise the structure of the chapter, Table 6.1 categorises sections according to the progression of the ELC actions. This table serves a dual purpose by offering an outline of the chapter's structure and section arrangements.

Chapter Section	ELC Action	Focus of Activity Development	Empirical Context (What happened)	Session Timeline
6.3 – Questioning: Exploring the Gap	*Questioning and Criticising*	*Exploring the causes of the industry-academia gap*	*Participants voiced dissatisfaction with the status quo, challenging academic leadership, rigid KPI structures, and lack of engagement with industry. Early signs of transformative agency emerged through collective critique.*	*Workshop 1 and individual interviews.*
6.4 – Analysis: Explicating the Gap in a Historical context	*Analysis*	*Tracing historical sources leading up to the current situation*	*Participant analysed historical patterns of separation between academia and practice, identifying how policy, governance, and institutional traditions reproduced the gap. Mirror data helped reveal contradictions between long-term education aims and industry short-term priorities.*	*Workshop 2-3 and individual interviews.*
6.5 – Modelling: Interpreting the elements of the gap	*Modelling*	*Evaluating current practices and envisioning new possibilities*	*Through reflective dialogue, participants began constructing models of improved collaboration, proposing the role of pracademics, professional bodies, and shared platforms for knowledge exchange. They contrasted existing practices with desired forms of co-production.*	*Individual Interviews*
6.6 – Examining: Envisioning a New Activity System	*Examining*	*Shifting from conceptual models to actionable commitments*	*Participants examined the feasibility of proposed models, benchmarking against international examples. They committed to advocating for lecturer training, industry integrated curricula, and policy incentives to sustain collaboration.*	*Individual Interviews*

Table 6.1: Structure of Chapter and ELC Action progression.

At the top, in Table 6.1, ELC actions are identified, and their corresponding characteristics are delineated below in the section title and the activity development. Consequently, the table functions as a comprehensive guide, presenting a structured chapter synopsis and a layout of expansive learning actions that have been predominantly identified within specific timeframes and sessions. However, it is essential to note that these representations do not precisely mirror expressions of expansive actions in alignment with the cyclical and ascending nature inherent in the concept – from the abstract to the concrete, meaning that learning actions are dispersed at different timeframes.

As described in Table 6.1, the following sections offer an in-depth analysis of the expansive learning actions, elucidating primarily the dynamic relationship between the various stakeholders in the logistics domain and the main reasons for the existence of the gap.

6.2 Questioning & Criticising

In the sphere of the ELC, the learning actions of questioning and criticising play a pivotal role in shaping the developmental trajectory of an activity system (Engeström and Sannino, 2010). They go beyond mere inquiry to critically examine existing practices, norms, and tools within an activity system (refer to Chapter 3, Section 3.3.5).

The actions of Questioning and Criticising (Q&C) manifested consistently across all sessions, encompassing both workshops and semi-structured interviews. While the anticipation was that instances of Q&C would align with the methodological design, the structured progression of the research, and the expansive cycle, numerous instances of questioning emerged at later phases, prompted by the introduction of new topics and the utilisation of various stimuli.

6.2.1 Narrative Overview – Setting the Scene

The initial phase of the conceptual development of the ELC primarily coincided with the workshops and the early questions of the semi-structured interviews. As expounded upon in the preceding Section and discussed in detail in Chapters 4 and 5, it is crucial to note that ELAs did not unfold along a linear trajectory, although the research methodology was designed with such an intention. Despite occasional deviations from this design, instances of questioning and criticism were purposefully

grouped together to establish a structured outline and strengthen the research with coherent data.

During this workshop, participants were invited to explore their current activities and challenges, discuss their professional practices, and reflect on personal motivations and perceptions of the industry-academia gap. The tasks presented in Table 6.2 were designed to stimulate this reflection and surface latent tensions. Participants delved into the ongoing activities, associated challenges, participants' existing practices, personal motivations related to the subject matter and their sentiments concerning the gap. As the discussion unfolded a *conflict of motives* became evident, particularly concerning the "business scope" issue. Although no explicit recommendations for further discussions on aligning the business scope were made at this juncture, an understanding that progress in this relationship is essential, given its mutual benefits, was shared among participants. The outcome of the participants' efforts was the externalisation of processes that characterise the failure of the current system. These have been captured in identifiable ELAs: 1. Problematic Scope of Business, 2. Addressing the Evaluative System in HE, and 3. The Lack of Practical Experience and Training. The examination of the following instances in detail aims to elucidate the dynamic role of questioning and criticising in shaping the discourse and evolution of the expansive learning experience and support the needs of this project for an in-depth understanding of the gap.

ELC – Learning Action 1	Outcomes
First Stimulus	Brief task to help each stakeholder group reflect upon their role and responsibilities (video – in workshops; questions – in workshops and interviews).
Second-Stimulus	Questions are presented on PowerPoint or verbally.
Discussing the reasons for the existing/ perceived gap between industry and HE.	Challenging participants into questioning: 1. Exploring the gap from the viewpoint of the various stakeholders. Criticising existing practice: 2. Identifying problematic practices amongst the various institutions. Questioning the proposed development: 3. Recognising the need for change. 4. Creating common basis for collaboration.

Table 6.2: Learning Action 1 (Questioning & Criticising) stimuli and outcomes.

6.2.1.1 A Problematic Scope of Business in the Sector (Q&C1)

This section explores the gap from different perspectives of the various stakeholders. The section delves into a notable instance of the Q&C learning action, whereby participants engaged in discussions about the existence of a problematic "**scope of business**" between industry and academia within organisations operating in the sector and other stakeholders, namely, POs. This overarching aspect of the gap is driven by various factors rooted in the organisational and personal motives of the various actors involved. These motives, in turn, fuel secondary and quaternary contradictions, prompting members of the community and participants from different activity systems to challenge the prevailing state of affairs. The manifestation of this disconnect regarding the scope of each participating actor's business is illustrated in Figure 6.3. This figure highlights the divergence of these actors from a common goal, a common objective, instead portraying each actor working independently within **isolated silos**.

The notion of each actor working independently or having disconnected objectives from other stakeholders has emerged repeatedly in the discussions. For instance, one participant encapsulated this sentiment by stating,

“…*yes. In the logistics sector, it's not there at all. You go back to the obvious ones like construction, automotive, and even engineering, which are well-established—lots of employer engagement. Industry understands what the college is and what the universities can offer. When we get to logistics, it's not established at all...”* **Interview/ PBR2.**

Another participant observed,

"*Companies are always ahead as they need to remain competitive and abreast with developments, technical and other... [therefore] there is little time left for collaboration with universities*" **Workshop/ INP2**.

Echoing a similar sentiment, a third industry representative asserted,

"*We have not got time and that is not what we are judged on. We are not driven by that. That is not our job.* " **Interview/ INPT1.**

Within this context of questioning their capacity to initiate and sustain collaborative efforts, the industry argued that their environment's competitive and fast-paced nature allows them limited capacity to establish enduring ties with academia. Conversely, academics contended that the demands of their role are substantial, with distinct expectations placed upon them within the academic realm.

For instance, one academic representative expressed frustration regarding expectations in working with industry and highlighted,

“W*e got the request [for a collaborative project from industry]. I was, at that time, master thesis coordinator, but in the end [the project did not materialise],* ***you do not get time allocated doing that****…. Simply because we [do get involved in such projects], it is not the first thing that we get to talk about when we have this yearly job sort of talks*” **Interview/ ACT2.**

Participants eventually questioned the role of POs. Their predominant apprehension revolved around the perception that this involvement might be solely financial, with concerns raised about the absence of assured added value since their business scope also varies from academic needs as they are meant to serve the needs of the industry. Representatives from the sector also voiced their concerns about POs. Many participants, from academia and industry alike, claimed that POs are not the right

people to speak or represent HE since they are more lobbying organisations that are either not connected to or not interested in linking to HE. Drawing an analogy to sports, one participant likened the situation in the following example to FIFA representatives,

"*It is just like in sports. FIFA representatives are certainly not the right ones to speak for soccer players. I think that is because they're* ***full-time lobbyists****. That's their job!"* **Interview/ ACTP1**.

Participants see the contribution of POs as "*woken up to the opportunity*" rather than as "*part of any sort of written down strategy*". Hence, there exists scepticism regarding POs' commitment to establishing links with academia or fostering an ecosystem conducive to bridging the gap. Another participant supported that:

"…*professional organizations come [to train] for [specific] skill sets that are specifically paid by a government…the professional organizations are there just printing money and getting money from the government."* **Interview/ ACP6**.

6.2.1.2 Addressing the Evaluative System in HE (Q&C2)

At this juncture, participants were invited to identify problematic practices amongst the various institutions. A notable instance of Q&C, arising from the discussion of value and quality, was the address of the current evaluative system in HE. Participants identified problematic practices in 1. academic KPIs, 2. The subjective nature of evaluation, owing to assessors' personal beliefs and values, and 3. influencing the results, either because of assessors' personal beliefs, personal contacts, or buying in on inaccurate information.

A critical aspect under scrutiny that emerged during this phase is the efficacy of **Key Performance Indicators (KPIs)** in guiding desirable behaviour. Additionally, there has been a growing concern about the impact of leadership on the current HE landscape. Participants expressed their reservations about the existing system and its alignment with quality representation. A participant from academia voiced concerns about the influence of KPIs, stating,

"*So, academics become* ***obsessed*** *with how many papers are* ***published****, how many people have cited their work... I think* ***KPIs*** *have driven the wrong behaviour. I think that's a massive risk"* **Interview/ ACP8**.

Among others, voices from the academic domain argued that KPIs primarily focus on the quantity of research articles rather than the quality of teaching or effective communication and collaboration between industry and academia. Ranking organisations and their prevailing quality assessment practices received a significant portion of the discussion between participants. Universities strive for the highest ranking possible to enhance their marketing strategy and attract international students.

These organisations, a representative sample of which is exemplified in Table 6.3, assess universities on a global scale using distinct methodologies, assigning weight to various ranking criteria, ultimately yielding an overall score. This score positions the university relative to others on a list and is promoted as an indicator to aid students in selecting a suitable institution based on its performance. However, as observed by participants, this practice tends to place a disproportionate emphasis on the role of research.

Organisation	Ranking Objectives/ University Activity				
Shanghai Ranking	Research[1]	Nobel Prizes and Field Medals	Per Capita Performance		
Top Universities[2]	Academic Reputation	Employer Reputation	Faculty Student Ratio	Citations per Faculty	International Faculty/ Student Ratio
Times Higher Education	Research	Teaching	Impact		
US News	Research[3]				

Table 6.3: International university ranking organisations' objectives.

Another aspect that manifested at this stage regarding quality assessment was the predominantly ***objective nature of the evaluation process***, granting institutions significant freedom in determining implementation methods. While participants contended that critique is an expected outcome, it is noteworthy that there have been no reports of universities facing closure due to accreditation mishaps. Typically, institutions receive constructive feedback and recommendations for improvement, mainly in terms of content. One participant articulated this perspective, stating,

"[speaking about quality of teaching] In this situation, we will become co-teachers in the classroom. They will also be evaluators of my performance. In the past, over ten years, we never really had any issues. It is ***not really an audit****; it is more like a collaboration and communication to discuss the teaching and materials and how to deal with the classroom"* **Interview/ ACNT2**.

[1] According to Shanghai Ranking, it uses 6 objective indicators of which 3 are research oriented: number of highly cited researchers selected by Clarivate, number of articles published in journals of Nature and Science, number of articles indexed in Science Citation Index - Expanded and Social Sciences Citation Index.

[2] In 2023 the Top Universities introduced 3 new indicators, namely: Sustainability, Employment Outcomes and International Research Network.

[3] According to US Daily 23 indicators used for Ranking: Global Research Reputation, Regional Research Reputation, Publications, Books, Conferences, Normalised Citation Impact, Total Citation, Number of Citations that are among the 10 most Cited, Percentage of Total Publications that are among the 10% most Cited. International Collaboration – Relative to the Country, International Collaboration, Number of Highly Cited Papers that are among the Top 1% most cited in their respective field, and lastly, Percentage of Total Publications that are among the Top 1% most Highly Cited Papers.

Moreover, participants stressed that management expects the individual faculty members to make changes accordingly when required, keeping these changes as minor as possible and meeting minimal feedback requirements.

A third aspect that surfaced at this stage concerns instances of assessment that carry the ***assessors' stigma*** and are not entirely objective. Assessment focuses on content, and little gauge falls on didactical approaches. This reflects assessors out there and their personal preferences. One participant put this into context,

*"…if I want to do it **old fashioned, classroom wise,** the accreditation will say only OK. Have they had this? Did they do that? They **just tick the boxes,** and in the content, they cover all the issues. And it is clear what the students should learn from the learning goals. **Not the way to do it,** but how the result is finally presented. That is what the accreditation committee will look into. Yeah, sometimes they will be very enthusiastic about an **application of a very modern way of learning**, but in the accreditation committee, there are only like five people [who may have a different opinion], so others will say no more **traditional is better"*** **Interview/ ACP5.**

As such, HE accepts this as an expectation that is vague and volatile. As a participant noted,

*"Now the attitude problem is of course, a result of, as I said, my dear colleague might have **teaching as a fourth priority**. If something is your 4th priority, where priority no longer really applies, It's just something you do out of politeness. And I'm also being polite and saying, well, you are perhaps good enough"* **Interview/ ACT3**.

Finally, an aspect that arose concerning the evaluative system is that it can be ***counterfeited*** or ***results influenced***. Participants questioned the validity of evaluation and accreditation processes, raising concerns about whether an accreditation panel conducting an evaluation at an HEI can genuinely identify all potential discrepancies. This leads to the perception that the procedure becomes more of a checkbox exercise than a thorough examination. One participant asserted that fabricating information may also be of concern.

*"… people are **just making stuff up**, inventing a report and hoping that they will talk the peer review team to death."* **Interview/ ACT3**.

Another participant added that even though this is not always the case,

"… you have influence about the setting of the accreditation committee. You can invite somebody in the accreditation committee who knows you a little bit." **Interview/ ACP5**.

6.2.1.3 The Lack of Practical Experience and Training (Q&C3)

As participants continued to reflect on current practices, they began questioning the prevailing approaches to Learning, Teaching, and Assessment in logistics HE. At this juncture, a *conflict of motives* emerged centring on the clarity of *logistics as a discipline*. The discussion focused on whether the current pedagogical models adequately reflected the applied nature of logistics: was it to be treated as a theoretical field of study or as an applied science rooted in practice? This conflict prompted an *abstract projection* which allowed participants reconsider the discipline's embeddedness with HE, that is how institutional norms, traditions, and expectations have shaped its current form.

Several participants argued that logistics should be regarded as an applied science, emphasising that its value lies in the ability to translate theoretical knowledge into operational practice. Others questioned whether the dominant theoretical orientation within universities, reinforced by academic performance metrics and institutional practices, had led to that gap of HE from industry realities. These reflections revealed that pedagogical practices are not simply instructional choices but socially and institutionally embedded behaviours, influenced by how HE defines legitimate knowledge and academic success. In this sense, questioning LTA practices became a way of exposing the deeper systemic and cognitive factors that sustain the gap between theory and practice in logistics HE.

One participant articulated,

"*Logistics is specific, it is real and sometimes it is dirty but it always has an end result. It is an applied science with an art element in it. Logistics and supply chain management design, and application in all the necessary forms confirms the discipline as an applied science, a formal science of performance, from movement over time, whilst requiring analytical ability of cost, efficiency and objectives achieved*" **Interview/ PBR1.**

Another aspect of this instance of Q&C was to further probe attention to the alleged advantages of the tenure pathway within the academic system. These advantages set an expectation for faculty members with a diverse didactical portfolio that can benefit

students. This anticipation stems from the belief that doctoral education equips faculty with the necessary means and techniques. One participant expressed a shared sentiment in strongly emphasising the disparity in this expectation, stating,

"The sad thing is that it doesn't really even expects us to know it. This is the ***hypocrisy.*** *Even though there are mechanisms to develop teachers and certified teachers, these models are not applied. These models have knowingly been ignored by academia for decades, and you see the hypocrisy if you put it like that: We assume that we prepare our students to face the industry's challenges. But we have a big challenge and have been ignoring it for generations"* **Interview/ ACT3**.

Numerous participants consistently expressed the same concern throughout the sessions. Descriptive phrases such as *"boring"* or *"crappy"* teachers were employed to characterise faculty members, reflecting a perceived deficiency in the management system within HE.

Finally, it is essential to mention that most participants who view logistics as an applied science fall under the category of Academic Practitioner or pracademic (refer to Chapter 4, Section 4 for further details). Industry and PO representatives also shared the same opinion. Those academics representing a more traditional model of education consider theory unequivocally vital without necessarily disagreeing on the pragmatism of logistics as an applied science.

6.2.1.4 Summary of Instances of Questioning and Criticising

During this phase, participants engaged in the first expansive learning action:

Q&C1: Participants questioned the boundaries and purpose of collaboration between industry, academia, and POs. They highlighted how each sector often works in isolation, leading to weak or transactional relationships rather than sustained partnerships. This questioning revealed a shared recognition that robust, long-term collaboration is essential but institutionally difficult to sustain.

Q&C2: Participants criticised the effectiveness of evaluative practices within HE, particularly how leadership structure and KPIs privilege research over teaching and engagement. This questioning directed attention to institutional rules and leadership accountability, exposing a contradiction between the stated goals of employability and the internal priorities of universities.

Q&C3: Participants reflected on the nature of logistics HE, questioning whether current LTA approaches appropriately reflect the discipline's applied character. Many argued that logistics, as an applied science, requires a more practical-oriented pedagogy to effectively prepare graduates for industry roles.

Collectively, these instances of questioning and criticising mark the beginning of expansive learning, as participants started to articulate contradictions within and between their activity systems.

6.2.2 Manifestations of Transformative Agency

This section is designed to elucidate instances of transformative agency at each stage of the process. The articulation of expansive learning actions, specifically Q&C, in the narrative section above has allowed the manifestation of transformative agency. As depicted in Figure 6.1 below, participants deliberated extensively, offering both praise and robust critique of current practices within today's fragmented activity characterised by isolated actors working in ″siloes″.

Overall, the research process, encompassing both workshops and semi-structured interviews, yielded a rich inventory of transformative manifestations. The elucidation of existing practices served as the foundation for critical analysis and forward-looking considerations, revealing a staggering six-hundred and fifty (650) discernible episodes (Figure 6.1).

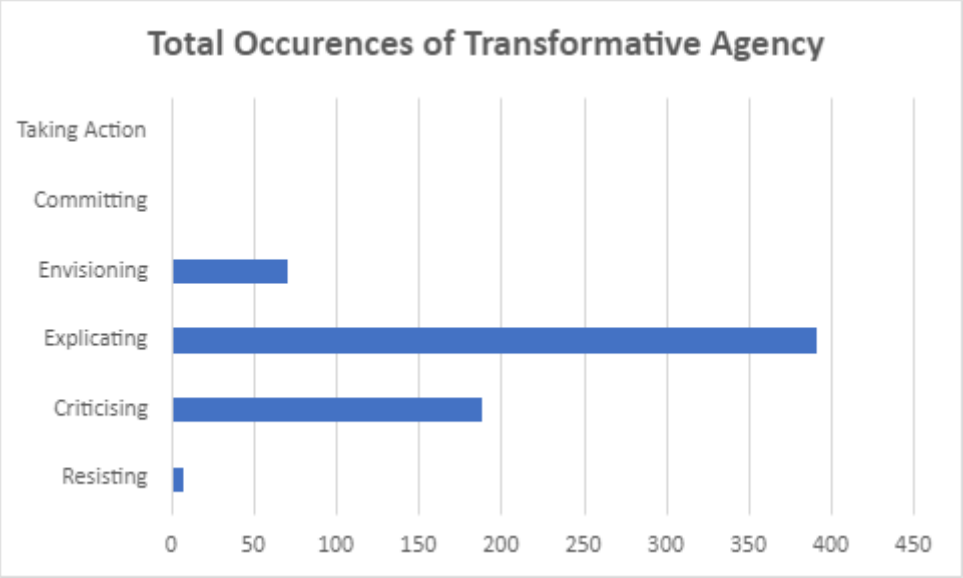


Figure 6.1: Total Occurrences of Transformative Agency.

Among these, explicating emerged as the most frequent, manifesting in three-hundred and ninety-one (391) evident episodes. Resistance appeared as the least frequent, manifesting in eight (8) instances throughout the sessions. Instances of criticism were identified in one hundred and eighty-nine (189) cases. Envisioning expressions comprised fifty (50) examples across both workshops and semi-structured interviews, while about twenty-one (21) additional instances added to the list after the follow up interviews.

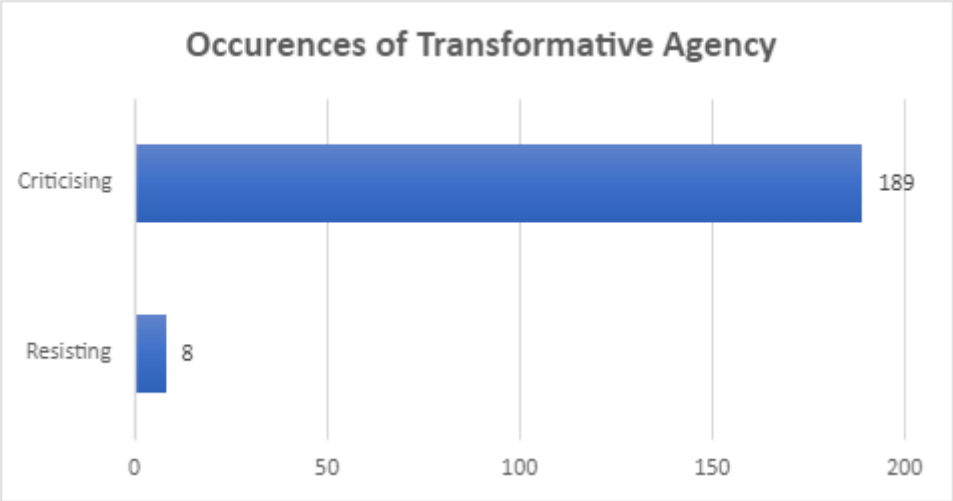


Figure 6.2: Occurrences of Criticising and Resisting at this Stage.

The identified aspects of Q&C within the narrative sections above, revealed instances of transformative agency. Participants, upon concluding the Q&C phase took a noteworthy step forward. This advancement highlights the intricate interplay between the embeddedness of activities within a broader context of ensuing transformative agency within specific interactions, set against a backdrop of social and cultural dynamics. Specifically, participants recognised the significance of collaborative efforts and the reduction of the gap between industry and academia, foreseeing benefits for companies, HEIs, students, and beyond. The anticipated advantages extend to societal and economic spheres overall.

Despite encountering instances of resistance, participants strongly supported a central concept – the indispensability of collaboration between industry and academia. Participants, moreover, acknowledged that despite its benefits, collaborative practices are not consistently practiced.

Resistance played a crucial role as a catalyst for critical reflection; for that reason, instances of resistance were utilised as stimuli in semi-structured interviews. The areas where resistance was observed can be grouped into the following categories, namely the resistance as result of well-defined boundaries between the different organisations and the belief that maintaining these boundaries is required.

Participants expressed differing views on the inevitability of the gap in business practices, with some participants asserting that the existence of the gap is inevitable and "*should*" exist. One participant particularly verbalised:

"*There has to be a gap. I would say because we teach methods and skills and not so much pure knowledge, [we cannot] focus on processes, since they may vary from one company to the other and therefore, this is not what we should do"* **Interview/ ACTP1**.

A limited sample of the academic participants expressed their belief that these boundaries between industry and academia are there for a good reason and they should not be crossed. Therefore, academic and industry affairs are neither compatible with nor conducive to alingment. One participant, in an example of practical training proclaimed:

"*There is that thing about training. It is important, but it not the most important thing because what you are doing is you are educating young people generally, to be able to use their minds effectively and to move things forward within businesses"* **Interview/ ACP6.**

In the same way a number of academics opposed the use of professional standards; however, they expressed minimal appetite for the use of professional standards in HE. One participant claimed that:

"*[regarding standards] it's more than enough rules to cover for the education as it is, so I do not think we want them, I do not think we need them"* **Workshop 1/ ACP1**.

Industry also supported to an extent the concept of boundaries in that it is not their business to educate students, nor to pay exorbitant amounts of money to retrain students after graduating. Industry has a specific job to do and this is to provide customers, consumers and shareholders with value. And working with academia on closing the gap is not their first priority. One industry representative asserted that:

"*We never have time... the only constant we have in our business is change!*" **Workshop 1/ INP3**

Instances of resistance served as excellent opportunities for discussion, and therefore, an excellent source of reflection upon which instances of criticising current practice were based on. Not all criticising instances were the result of tensions created by the use of resistance quotes, but gave a healthy basis for many participants in the semi-structured interviews. Criticising targeted HE operations at different levels, with participants noting gaps in academic programme development and a lack of industry interest in collaboration, particularly stressing the lack of time for such endeavours. Communication gaps were observed from both industry and academia.

The primary focus of criticism pertains to the operational dynamics of HE across various levels, as illustrated in the preceding narrative section. Notably, HE has become a target not only for industry stakeholders but also for POs and academics themselves who have expressed criticism towards developments in HE, or lack thereof. HE representatives criticised industry for purportedly lacking the time and inclination for collaborative efforts – a theme explored through various events in the ongoing discussions. Both HE and industry, in turn, directed criticism towards POs, alleging their excessive focus on financial gains and lobbying rather than contributing productively to address the identified gap.

Instances of criticism concerning the scope of business were articulated by a participant in the following quote, which found unanimous agreement amongst participants. This criticism has been recognised for shaping perspectives, guiding attitudes that extend beyond merely bridging the gap. The participant stressed the prevalence of this in academia, stating that,

"*Biggest gap that I see between industry and academia is the way academic programmes are built… the starting point is the competencies available in the faculty and not the requirements from the market. Very often, universities tend to offer a menu which is based on what the house has available, independently of what the industry might actually need"* **Interview/ PBRP1**.

Additionally, many participants highlighted the obligation of the industry to prioritise service provision at a cost, thereby restricting their availability for involvement in and with academia. Significantly, a critical element of the industry's critique was their

perceived lack of interest in these collaborative endeavours. Furthermore, a lack of communication has been observed from both sides.

The above instances set the stage for embeddedness and objectification. Further exploration of transformative agency will unfold as the research progresses.

6.2.3 Design Elements Evident at this phase

The design elements at this current stage are characterised by actors in the logistics realm working independently.

The current system, illustrated in Figure 6.3, operates with each actor functioning independently in "siloes". This silo-working mentality creates three divergent expected objects and outcomes, one for each actor, that are shaped by the overarching aspect of the gap in the scope of business and were supported by several participants.

Each element of the activity system at this stage reflects the conditions that participants identified as sustaining the gap. The instruments available to each sector are oriented entirely toward internal objectives rather than shared ones. The rules governing each system, whether academic policies and accreditation frameworks, industry standards and company regulations, or bylaws of professional organisations, reinforce these boundaries rather than creating conditions for dialogue. The division of labour within each system similarly reflects inward-facing structures: faculty, administrators, and students within HE; operational departments within industry; and representative functions within POs. Critically, none of these structural arrangements creates a natural point of contact between systems, which explains why collaboration, where it exists, tends to depend on individual initiative rather than institutional design.

More importantly, one may easily identify three different activities, that share contradictions at different levels, that nevertheless, have little vision in integrating their efforts in creating a single activity, where the ultimate goal is to minimise or bridge the identified gap. Table 6.4 identified the different elements of the independent activity systems providing their independent object and outcome.

Design element			
Subject	*Academia*	*Industry*	*Professional Organisations*
Object	*Provide knowledge*	*Serve the needs of customers*	*Serve the needs of industry/ members/ provide training*
Outcome	*Graduates*	*Provide Cost-Effective Services*	*Members/ Trainees*
Instruments	*LTA*	*Daily Tasks*	*Lobbying/ VET*
Rules	*Academic Policies, National Regulations, Accreditation Agencies*	*Industry Standards, Company Rules, National & International Regulations*	*Bylaws, National Regulations*
Community	*Academic*	*Professionals*	*Professionals*
Division of labour	*Faculty, Admin, Students*	*Relevant Departments*	*Relevant Departments*

Table 6.4: Design elements of the independent activity systems.

It has been expressed several times throughout the semi-structured interviews, making reference to either academics or industry or both, and using words like siloes, ivory towers, working independently, or mentioned as a communication problem.

Figure 6.3 depicts the stark contrast in objectives and outcomes among the three actors. This divergence is influenced by multiple factors extending beyond the business scope and is embedded within the organisation's structure and culture. HE is rigid in accepting that something is wrong and may not necessarily accept that things can improve if the structure changes (refer to Q1, Figure 6.3).

The significance of this design stage lies in what it reveals about the starting conditions of the intervention. Before any collaborative learning could take place, participants first needed to recognise and articulate the degree to which the three activity systems were structurally oriented away from each other. The questioning and criticising phase made this visible, establishing the baseline from which the subsequent phases of historical

and empirical analysis, and modelling would develop. Without this initial mapping of divergent design elements, the contradictions identified later in the research would have lacked the structural grounding necessary to understand why they persist.

Table 6.5 summarises the key design elements evident at this phase of the ELC. It presents the main activity systems, their objects, and the emerging tensions that shaped the questioning and criticising actions illustrated in Figure 6.3. Notably, Table 6.5 introduces the central collaborative activity as a fourth system, capturing the aspirational object (alignment), against which the divergence of the three independent systems becomes more clearly visible.

Activity System	Object/Purpose	Key Motives & Expectations	Emerging Tensions and Contradictions
Higher Education (HE)	*To promote knowledge exchange, research and innovation with skills for changing markets (UNESCO)*	*Emphasis on theoretical models, accreditation, and academic outputs; limited engagement with applied industry practice.*	*Misalignment between academic priorities (research, theory) and the applied nature of logistics practice.*
Industry	*To provide goods and services, create jobs, and drive innovation while remaining competitive in dynamic markets*	*Focus on short-term productivity and efficiency; limited time and resources for collaboration with HE.*	*Tensions between immediate business goals and the long-term commitment required for education partnerships.*
Professional Organisations (POs)	*To advance the profession, support members, and serve the public good through training and certification*	*Provide professional development and sector standards; limited authority in influencing HE policy.*	*Fragmented role across ministries and limited power to mediate between HE and industry.*
Central Collaborative Activity	*Collaboration between HE and industry, supported by POs*	*To align graduate capabilities with labour market needs and foster co-production between stakeholders.*	*Contradictory expectations around roles, responsibilities, and the purpose of collaboration.*

Table 6.5: Design elements evident at the Questioning and Criticising phase of the ELC.

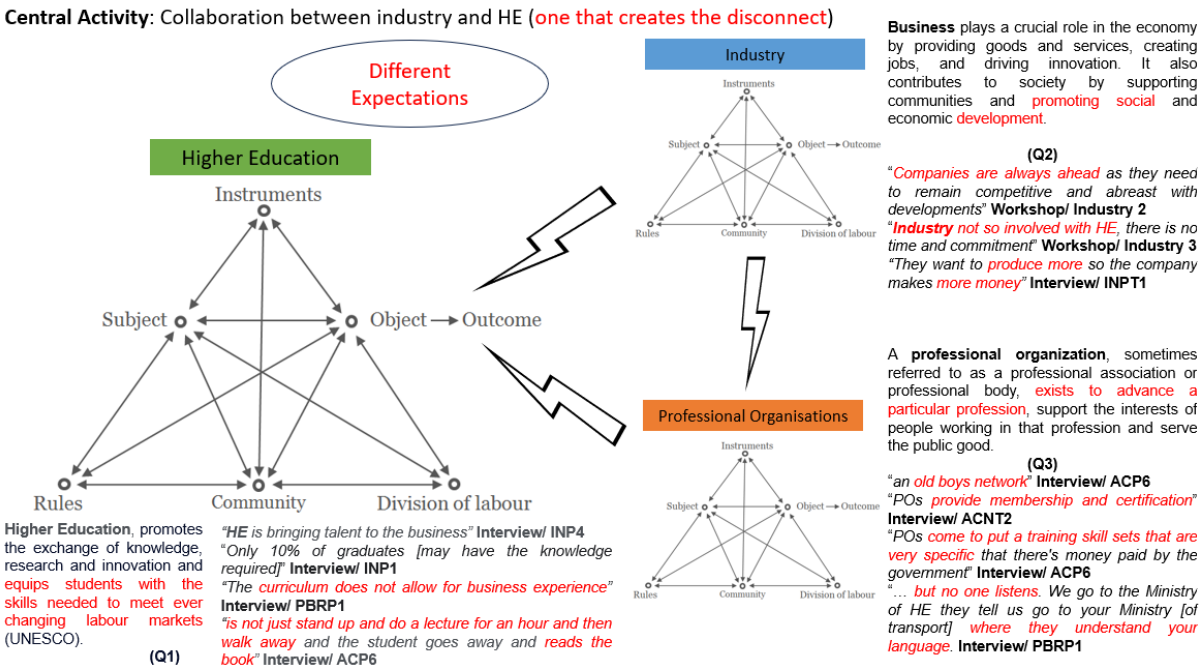


Figure 6.3: Working in silos. Interaction or lack thereof between the various stakeholders in the logistics domain that interact and contribute to the disconnect.

An issue concerning solely HEIs that arose in the discussion is owing to the discerning scopes between the organisational structures of universities themselves. The segregation occurs at the point of practice and can be attributed to a profound clash of perspectives and objectives within the HE system, as is depicted in Figure 6.3. The conflict emanates from divergent viewpoints concerning the fundamental purpose of academia vis-à-vis industry needs. Notably, from the above figure, the chasm arises between the traditional and the more practically oriented academics, or pracademics, which consider Logistics an applied science and should be primarily connected to the industry. Further elaboration on this conflict ensues in the following sections.

6.3 Historical Analysis

At this stage, following the preceding learning actions of questioning and criticising, the current focus pertains to the analysis of practice. This analysis encompasses both present and past practices, where historical analysis assumes a pivotal role in offering a robust discourse to shed light on the intricacies of the past, which have contributed to the current state of affairs. The aim here is to derive generalised and verified principles suitable for guidance.

Instances of historical analysis were present in both workshops and semi-structured interviews. Forty instances were recorded throughout the sessions, and were prompted by discussion or quotes utilised by preceding workshops and interviews, which served as stimuli.

6.3.1 Narrative Overview – Setting the Stage

In exploring the historical development, the study aims to reexamine critical areas where the logistics industry and HE converged or diverged in their activities. These historical points serve to highlight the evolution of both sectors and the forces that hindered their collaborative efforts. Historical analysis offers valuable information, not only for understanding the origins of the present gap between industry and HE but also for elucidating the transformative potential inherent in these historical accounts. This knowledge informs this study in its effort to foster a mutually beneficial partnership between the logistics industry and HE.

As illustrated in Table 6.5, specific prompts, questions and comments from other participants served as stimuli. One example was a brief presentation and historical education examples from previous centuries (refer to Figure 6.5). The table broadly addresses the second stage of the ELC, focusing on further studying the gap from a historical perspective.

This presentation prompted participants to raise issues from their own experiences within the broader logistics system and provide examples of systemic practices that may have played a role in perpetuating the gap. During this stage, and through the discussion, the research identified a *conflict of motives* indicating that industry and academia, and other stakeholders parted ways early in the development of the domain. This conflict can be identified in cross-boundary activities and is concerned

with a personal understanding of logistics and the way each stakeholder develops within the domain, since the understanding of the different actors varies significantly throughout its development, therefore, highlighting the lack of embeddedness across the domain.

ELC – Learning Action 2	**Outcomes**
First Stimulus	Brief task to help each stakeholder group reflect upon past practices (video – in workshops; questions – in workshops and interviews).
Second-Stimulus	Questions are presented on PowerPoint or verbally.
Explicating past practices related to the disconnect.	Challenging participants to identify the origins of the problem: 1. Going back and looking at what might have gone wrong. 2. Scrutinising the past practices that led to a withstanding problem. Analysing elements of practice that have contributed to the ongoing divide: 3. Appraising previous practices that have contributed to the divide.

Table 6.6: Learning Action 2 (Historical Analysis) stimuli and outcomes.

Despite the historical developments, the enduring gap between the logistics industry and academia remains challenging. In this research, participants have shared insights highlighting this gap's resilience, drawing connections between historical developments and the current state. To gain a deeper understanding of this ongoing challenge, targeted questions required participants to review past events that may be relevant to the existing gap.

The concerns expressed by participants in the study revolve around the historical context and its continued relevance to the contemporary dynamics between the logistics industry and academia. These concerns encompass three key themes arising from the discussion: the perception of **logistics as a discipline** which influences its **status quo**, **leadership** issues, and the persistence of academics in adhering to conceptions of the **role of HE**, that may not represent the contemporary needs of the surrounding industry and society.

6.3.1.1 Status Quo: Logistics as Discipline (HA1)

Regarding the perception of logistics as a discipline, participants have brought attention to its historical lack of recognition and acknowledgement. Many participants contended that logistics has not received the respect and recognition it deserves from business or government entities. A participant voiced their concern,

"*Nobody treated or treats international trade or anything around this as **a real discipline.** So if you are looking for an accountant, you'd go to an accountancy practice, or you would go to specialist recruitment. I do find that quite frustrating because, these [logisticians] are really valuable members of staff. And yet they're not really getting the value. The government's message is always this is easy… just do it. They're **not being valued in the same way.***" **Interview/ INP3**.

This lack of recognition is attributed to logistics not being regarded as an academic discipline until recently, as one participant noted,

"…because of the history of logistics and the fact that logistics was not regarded really as an academic topic until relatively recently, supply chain management, procurement exactly the same [not enough attention was given]." **Interview/ ACP3**.

In fact, this has been the case on both sides, another participant supports,

"*…**universities historically have never been interested in logistics** or anything like that*" **Interview/ INP3**.

Even in the present day, another participant confirmed, logistics courses exhibit limited differentiation and appeal, noting,

"*there's not the differentiation [needed in industry] between courses at the moment; they're tiny little courses, 20 students on a logistics course is a damn good course*" **Workshop 1/ Professional Body 3.**

A similar scenario appears evident in primary and secondary education, where students receive limited exposure to the logistics industry and its operations, and the reason for this is that there is a constrained perception of logistics centred around the narrow understanding of the field. One participant articulated,

"*because logistics really **is not a thing that is in** [country name] **schools**. It is lorries on the motorway, you know, it is about driving lorries. Well, no it is not. But that is what they perceive, and that is what their parents perceive*" **Interview/ ACP3**.

This deficiency results in a significant disparity in students' perceptions of logistics as they progress through their educational journey. This situation raises concerns about whether logistics receives adequate attention in the academic curriculum and whether students and their parents view the discipline as simply being about trucks traversing highways.

6.3.1.2 The Role of HE within Industry and Society and the Role of Leadership (HA2)

In HE, there has been a prevailing sense of complacency regarding the role and societal contribution of HEIs, with minimal changes occurring over an extended period. Echoing this perspective, a participant pointed out the lack of emphasis and highlighted a conspicuous failure to identify the issue, stating,

"*… academia has always been very complacent of its role within society. …you have got a lot of traditional universities as well, and they just seem to be doing what they were **doing 40 or 50 years** ago. They are still continuing to do it. And because we have always done it, it is right. **We do not need to change***" **Interview/ PBR3**.

Participants have raised concerns in this regard, suggesting that leadership bears responsibility for this misalignment and the inability to pinpoint the pertinent issues. A participant argued,

"… 20-25 years ago, that was the same argument. I left [university name] in 1999 and that was still a problem then, and it has not changed so. Which kind of goes back to the point of what problem we are trying to solve and that is the piece" **Interview/ INPT1**.

Participants further emphasised the influence of heavily unionised academic staff, noting that,

"… ***universities have been and are quite heavily unionised***" **Interview/ ACP8**.

This historical prevalence of unionisation has fostered a significant cultural chasm between industry and academia, exerting a discernible influence on leadership actions. Additionally, a combination of these factors, influenced by the approach to

quality assessment in HE since the 90s (as elaborated in another section of this chapter), has led academics to prioritise the mass production of research. One participant clarified

"*... but the pressure for **publishing** has been growing, particularly at the start of the 90s...* " **Interview/ ACT2**.

Furthermore, participants contended that many universities today primarily adhere to the "red brick philosophy", emphasising a teaching-centric approach. As one participant suggested,

"*Universities in this country all model themselves, whether they admit it or not, on the **red brick philosophy**. That is how they think they are going to get on*" **Interview/ ACT2**.

This perspective contradicted the prior notion that universities predominantly prioritise research. Nonetheless, as one participant articulated, despite the expectation that universities should generate research with tangible applicability to the industry (impact), they frequently fail to do so, often revisiting and repeating identical or insignificant subjects to meet ranking expectations. In their words,

"*We see a lot of journal papers where they just **salami slices of existing research**, so they use existing research and then just try and **publish the same stuff**. Now you're not supposed to do that, and also, I can tell you a whole raft of things that really go on that shouldn't. Some academics as well belong to what **we call big networks**. So and what they do is they'll publish a piece of research, as an individual and then say look "I write my paper and I'll put all of your names on it". If you put, if you put my name on all of your 20 on all of your in now, So what you have there is what we call a **publication "racket"** and that goes on in academia*" **Interview/ ACP8**.

Moreover, a noteworthy observation by several participants, echoed the enduring nature of this situation. It stems from academics' reluctance to adapt to contemporary developments and societal expectations, including those from industry. Finally, a participant highlighted a historical academic practice aimed at fostering a purely educational tenure trajectory, explaining that,

"*… which has become **commonplace**, which means take a brilliant student suggest him or her to attend a PhD course, offer him a year, one year postdoc, then have the*

same person as a researcher, and then that researcher will become a member of the faculty" **Interview/ PBRP1.**

As argued in the previous sections, the tenure trajectory has largely contributed to the disconnect by widening the gap between industry and academia, since academics are far removed from industrial practice and have little understanding of it, making it difficult to sufficiently integrate it in the classroom. This gap also contributes to the widening of the communication gap between industry and academia, since little connection over practice exists.

6.3.1.3 Summary of Instances of Historical Analysis

During this phase, participants engaged in the second expansive learning action: Historical Analysis, which involves tracing the origins and development of current practices to uncover how contradictions have evolved over time. These expressions appeared mainly in the early phases of semi-structured interviews, where the researcher prompted participants to reflect on past developments in logistics HE and industry practices.

While some additional reflections emerged as participants connected historical insights to concurrent discussion topics, the consistency of historical analysis was influenced by the specificity of the interview questions, particularly among those with first-hand experience of earlier practices. A common challenge was linking current activities to their historical roots, with some participants finding it easier than others to articulate these connections.

This phase generated two main areas of historical reflection:

HA1: Participants argued that many of the current shortcomings in collaboration stem from the long-standing structures and norms that define logistics, both in industry and in HE. Historically, logistics has struggled to gain recognition as a formal academic discipline, often viewed as a technical or operational function rather than a science in its own right. Several participants noted that even at the school level, logistics is commonly portrayed as “lorries on the motorway”. This narrow understanding has shaped institutional and societal attitudes, where both governments and companies have often failed to recognise or respect the strategic importance of logistics. As a

result, the function has been undervalued, its educational development neglected, and its potential contribution to economic and societal systems largely overlooked.

HA2: Participants also highlighted how the growing pressure on universities to produce research, driven largely by ranking organisations (Section 6.3.1.3), has constrained the development of HE. They suggested that this emphasis on research output has overshadowed engagement and teaching practices, further widening the gap between academia and industry.

Together, these insights situate the present challenges within the historical context. This sets the stage for the subsequent phase of actual-empirical analysis, where participants examined how these inherited contradictions manifest in current practice.

6.3.2 Manifestations of Transformative Agency

This section is designed to highlight instances of transformative agency at this juncture. Historical analysis is a crucial manifestation of transformative agency and in the development of ELAs. It serves as a catalyst for transforming the study from mere criticism to a deeper exploration of the issue as the participants draw on historical developments to understand the enduring gap between the logistics industry and HE. Specifically, as depicted in Figure 6.3, there were 12 instances where participants engaged in historical descriptions of the current situation and the extent of the gap that, as discussed above, were either brought up by the participants or prompted by the researcher.

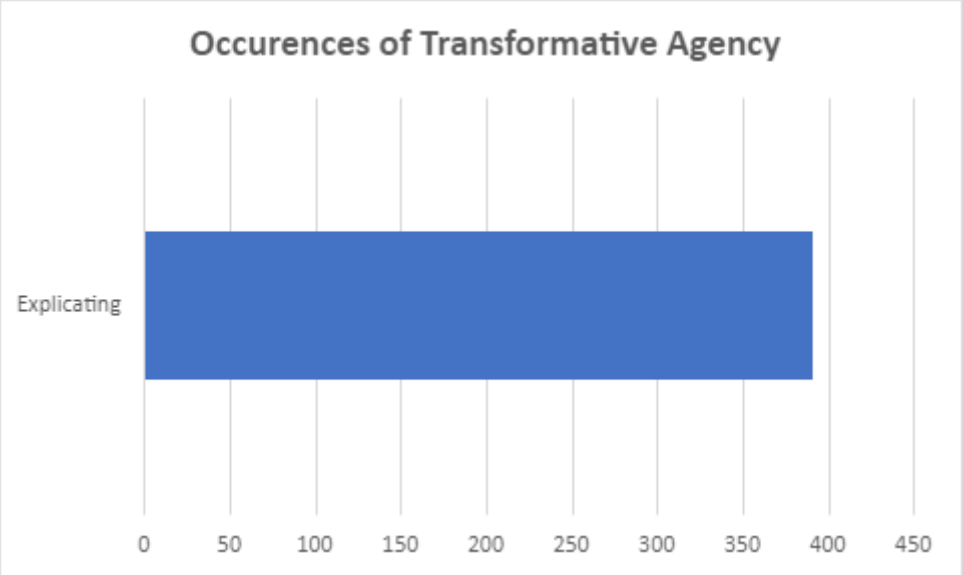


Figure 6.4: Occurrences of Explicating at this stage.

Historical developments constitute a central element of the ELC and its underpinning actions of transformative agency are crucial in the identification of deeper insights into the roots of the problems in and across respective systems. Through the historical analysis, it was identified that one of the main contributors to the gap is participants' understanding of why the divide has endured to this day. The perception that logistics has been undervalued and under-recognised was brought up in three instances in three individual interviews. Notably, the three instances arise in interviews from each representative actor within the logistics domain, including academia, industry and POs. Acknowledging such a historical event as a negative past shows their intent to change the perception and recognition of logistics. It works as a transitional episode to mark critical turning points in research, where dynamic shifts and new possibilities emerge. Participants also agree that the turning point has come. Since logistics got so much attention during the Covid-19 pandemic, it could mean that,

"*… the silver lining of COVID for us as logisticians and supply chain managers was the fact that organisation suddenly thought I am going to minute this, [it] is important… And all of a* ***sudden the importance of the discipline*** *has come from the back to the front."* **Interview/ ACP3**.

Episodes such as the following get the transformative discussion going since they make issues more prominent. A participant suggested,

"*There are huge issues around attracting young people to this and I think unless we treat it as a profession, we're not going to get anywhere… I think increasingly, people are realising, but it's the usual thing where* ***we have this problem*** *where* ***we work in siloes.****"* **Interview/ INP3**.

Lastly, revisiting historical academic practices and the complacency of HEIs to meet current needs, highlighting the priorities and tenure trajectory practices, which involve numerical research values, seek a shift in the priorities of academia. The episodes expose disturbances and issues that have been consistent, indicating the need for greater alignment with industry needs and societal expectations. One participant addressed this concern,

"*I think that's a massive risk. I think we're in a real danger and I think we've got to* ***change that mindset.****"* **Interview/ ACP8**.

At this juncture, it becomes increasingly evident that the questioning stage of the ELC has prompted participants to engage in what was earlier considered mild criticism regarding a series of historical events that may have contributed significantly to widening the gap between the logistics industry and HE. Participants are involved in a historical analysis that seeks to highlight potential mishaps. Within this context, participant backgrounds and motives surfaced as they strove to establish a more robust and constructive foundation with a focus on student development and better collaboration with industry towards impact research. For pure academics, this involves forging partnerships with industry to incorporate practical examples into the curriculum, while pracademics advocate for an entirely different pedagogical approach – one that is firmly rooted in practical application and industry relevance. The upcoming phase of empirical analysis provides a substantial illumination of this distinction. In terms of the previous discussions, what is advocated by both pure academics and pracademics as a sign of embeddedness of a collaborative system is a change in the approach to HE, curricula and assessment. They are significantly supportive of utilising industry standards in HE and there are few participants that consider this as the only viable option for logistics HE, since the red-brick philosophy, or at least its historical definition does not meet the needs and requirements of industry.

6.3.3 Design Elements Evident at this Stage

At this stage, it is noteworthy that the HE component grapples with primary and secondary contradictions as a distinct and prominent element within the logistics discipline's activity system. These contradictions are illustrated in Figure 6.5, which maps the tensions arising from the differences in practice and philosophy of teaching in the HE, and become even more conspicuous in the subsequent stage of empirical analysis. Several comments aimed at highlighting the matter rather than delivering severe criticism predominantly originate from academics, albeit with support from the industry and PO representatives. These comments reveal a notable movement within academic circles that attributes the gap to issues inherent within the HE system. These historical factors have had a significant impact on the productive partnership between industry and academia.

The design elements visible at this stage differ from those of the questioning phase in an important respect: historical analysis reveals not only that the activity systems are divergent, but why they became so. The instruments of HE, centred on lecturing and theoretical knowledge, are not simply current choices but the product of decades of institutional tradition reinforced by ranking systems and tenure structures that progressively isolated academics from industry practice. Similarly, the rules governing academic promotion, shaped by research output metrics introduced in the 1990's represent historically embedded features of the system rather than neutral administrative arrangements. Understanding these elements as historically produced, rather than naturally given, is significant because it reframes the gap not as a failure of individual actors but as the outcome of structural trajectories that developed in parallel and progressively diverged. The contrast between the two academic archetypes identified at this stage, illustrated in Figure 6.5 and detailed in Table 6.7, makes this historical divergence concrete, showing how different tenure trajectories and institutional cultures have produced fundamentally different orientations toward the object of logistics HE.

The resulting differentiation engenders tensions within the components of the activity, made visible by the contrasting objectives denoted by the use of "**vs**", emphasising the emerging contradictions. As shown in Figure 6.5 these instances underscore the

historical evolution of the differentiation, the conflicting expectations and the distinct interpretations of the different actors within the activity system.

Contradictions manifest within but also between constituents of the activity or neighbouring activities, as depicted in Figure 6.1. These contradictions derive primarily from varying perspectives within each segment, namely, pure academics and pracademics, regarding the role of HE, pedagogical approaches, and graduate expectations. Tensions surface across various elements of the HE system. Among these, participants have shown particular concern for those occurring within nodes (primary contradictions), denoted as tensions 1 and 2 in Figure 6.2 and those emerging between nodes (secondary contradictions), labelled as tensions A and B in Figure 6.5.

The distinction between pure academics and pracademics is particularly significant as a design element at this stage because it reveals a primary contradiction within the subject of HE activity itself (labelled as 1 in Figure 6.5). The two archetypes do not simply hold different pedagogical preferences; they represent structurally different orientations toward the object of logistics HE, one oriented toward knowledge production and the other toward workforce preparation. This internal division within HE means that any attempt to reform the activity system must contend not only with contradictions between HE and industry but with contradictions embedded within HE itself. Table 6.7 illustrates how these two orientations differ across each element of the activity system.

Design element		
Subject	*Academia – "Traditional" Academics*	*Academia – Pracademics*
Object	*Passing Knowledge*	*Providing skillset*
Outcome	*Impart Knowledge*	*Workforce Preparadness*
Instruments	*Lecturing*	*Case Studies*
Rules	*Academic Freedoms*	*Institutional Standardisation*
Community	*Research Orientation*	*Practical & Skills Orientation*
Division of labour	*Individualistic Researchers*	*Collaborative Facilitators*

Table 6.7: Design elements of the academic activity.

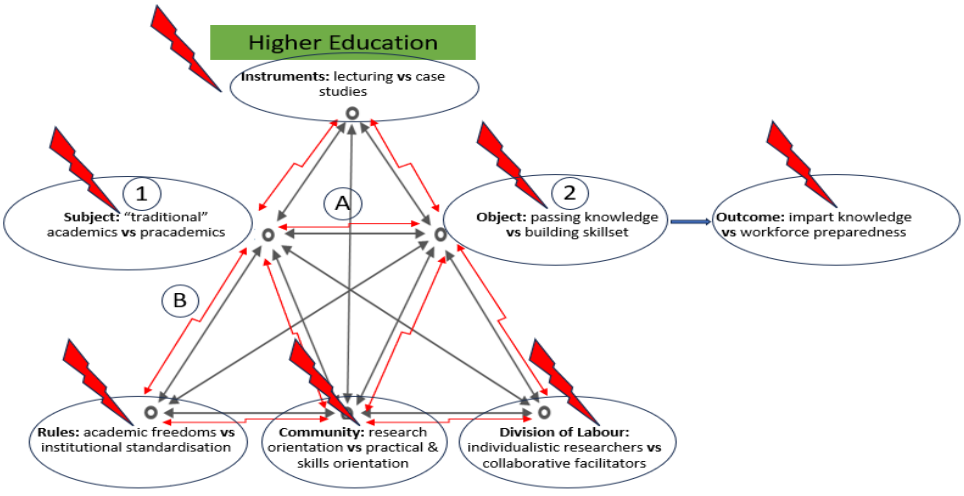


Figure 6.5: The HE activity and the tensions arising from the differences in practice and philosophy of teaching.

Based on mainly interview-derived data, the distinction between the two archetypes becomes evident. Traditional pure academics typically follow a traditional academic trajectory, commencing with undergraduate studies and progressing through postgraduate levels. They often lack practical experience within the logistics industry

and are immersed in scholarly pursuits. Pracademics, by contrast, represent individuals in academia who have transitioned from careers within the logistics industry. They maintain a solid connection to industry practices and bring industry-specific knowledge to their academic roles.

This distinction becomes apparent in various aspects discussed above. The following statement highlights the conviction that academics today, particularly those coming from industry, that practical knowledge is required in the classroom for the supply chain and logistics concepts to make sense to students. At this stage of the research, the findings of the historical context provided further insight as to why the gap exists and creates the basis for targeted objectification in connecting theory and practice.

"*It is all very well having a PhD and they are very, very gifted and intelligent individuals, but it is about the application of it as well. That is why I use the term* ***pracademic.*** *If you can take the academic idea and put it into the practical environment…*" **Interview/ ACP3**.

6.4 Actual Empirical Analysis

At this juncture, subsequent to the preceding ELC learning action involving the analysis of historical developments that had a lasting impact on the current dynamics between the logistics industry and academia, the current focus pertains to the analysis of contemporary practice. The aim is to locate identified systemic contradictions and tensions within a real-world activity system more explicitly and derive generalised and verified principles to guide effective problem-solving.

The study addresses problematic current practices, with a specific focus on instances of explicating the communication challenges amongst stakeholders. The study aims to elucidate how these practices contribute to the divide. Actual-empirical analysis offers real-world and timely insights revealing the complexities and nuances of the current activity system. This analysis provides valuable perspectives on its components, relationships and dynamics, facilitating the enhancement and expansion of these nuanced representations. It is important to note that during this analytical phase, participants occasionally moved beyond describing current problems to spontaneously suggesting potential solutions or future possibilities. These emergent ideas, arising organically from critical reflection on present practices, differ from the

more deliberate and coherent solution-development that characterizes the subsequent Modelling stage (Section 6.5). Here, participants explore fragmented possibilities; later, they systematically construct and examine integrated models for change.

6.4.1 Narrative Overview

Instances of actual-empirical analysis were present in workshops and semi-structured interviews, with the more significant segment comprising over 300 examples. As illustrated in Table 6.5, specific prompts, questions and comments from other participants served as stimuli.

ELC – Learning Action 2.2	**Outcomes**
First Stimulus	Brief task to help each stakeholder group reflect upon past practices (video – in workshops; questions – in workshops and interviews).
Second-Stimulus	Questions are presented on PowerPoint or verbally.
Explicating current practices related to the disconnect.	Challenging participants to identify the contemporary roots of the problem: 1. Addressing the current practices and discussing their contribution to the divide. Analysing elements of practice that currently contribute to the divide: 2. Appraising the contribution of the involved stakeholders to the divide.

Table 6.8: Learning Action 2 (Actual-Empirical Analysis) stimuli and outcomes.

At this stage, as the discussion unfolds and the method of double stimulation is employed, participants are inclined to expound on the diverse factors underpinning the disconnect between the logistics industry and HE. It becomes evident through the sessions that criticism predominately stems from explicating the current system rather than the reverse being true. Furthermore, the rationale for combining instances of criticism and explication in this section lies in the desire to illustrate the cause-and-effect relationship between these two phenomena.

Several factors emanate from organisational structures or the scope of business of both actors, as they prioritise their core objectives over collaborative efforts aimed at enhancing graduate competencies. These factors correspond to the three categories that emerged from the thematic analysis of the collected data. They pertain to either **process(es) or practice(s)**-related; they are attributed to limitations in **resources**, as these resources are allocated for purposes perceived as individually important by each actor. They are finally owed to **communication** issues between the different actors. Notably, there is an obvious overlap among these three categories in several examples, highlighting the complexity of their interplay.

HE has been at the forefront of various pivotal concepts and initiatives, including the transition into the digital age of the 4th industrial revolution, fostering innovation within the knowledge-based economy, and contributing to sustainable development and its associated goals (SDGs). These are just a few examples of the significant roles HE is expected to play in helping societies and economies adapt to the world's evolving demands and technological disruptions.

However, despite this attention, HE has faced criticism regarding its effectiveness in achieving these goals. This apparent ineffectiveness is somewhat paradoxical, as Buller (2014) noted. The concept of change within the realm of HE is pervasive and ever-present. Nevertheless, despite the continuous transformations that HE undergoes, it often struggles to navigate and adapt to change effectively. Specifically, logistics HE has received unfavourable comments regarding its ability to drive internal and external change.

Participants have enthusiastically accepted the challenge facilitated by double stimulation and contributed numerous aspects of current practices that appear to be problematic. The subsequent sections effectively provide a complete overview of the comments on which empirical evidence and subsequent analysis have been based.

The empirical analysis is organised, with each section commencing with examples of criticism related to a specific topic. Subsequently, a thorough explication unfolds, elucidating both exemplary instances of problematic practices identified across various universities. The subsequent sections delve deeply into the issues that have been previously touched upon, necessitating a more comprehensive exploration to understand how these issues impact the relationship between industry and HE.

6.4.1.1 Tenure and Leadership and their Impediment to Change (AEA1)

As previously addressed, HE has been subject to scrutiny due to its perceived sluggish response to change. This challenge is attributed to the distinctive cultural characteristics within HEIs, which differ from those of commercial organisations. The pursuit of recognition within a ranking evaluative system is identified as a significant contributor to the disconnect. Participants shared their perspectives and expressed strong concerns about the current state of HE, which they believe poses a potential threat to its sustainability. One participant articulated, "*I think that's a massive risk. I think we're in a real danger and I think we've got to* ***change that mindset****".* The participant went on to elaborate on this concern, stating, "*because these types of academics and I see them all the time, really super clever, the research looks good, but if you were to ask them to articulate it or relate it to the real world, or apply it to a case study, they just can't do it"*. **Interview/ ACP8**

The issue is attributed, in part, to the structural organisation of the HE system, as several participants emphasised, particularly regarding education and the development of academics at the doctoral level. There was consensus in that improvement is needed, especially in doctoral training programmes. One participant pointed out, "*I think there's something around the education and the learning and development of academics. At doctoral level that needs to be a lot better and it's certainly in our doctoral training programs"* **Interview/ ACP8.**

Another participant shed light on what they perceive as the **"***biggest gap***"** in HE, which relates to the standardisation of academic pathways that have essentially become a predetermined **"***menu***".** This pathway often involves taking a competent student and guiding them through a predetermined path. The participant suggested that academia "*take a brilliant student, suggest him or her to attend a PhD course, offer him a year postdoc, then have the same person as a researcher, and then that researcher will become a member of the faculty".* This approach is criticised for being overly theoretical and failing to incorporate practical business experience. The participant emphasised, "*this curriculum does not leave space for any business experience. The way professors, the way academics work today, most of them in public universities, is a sort of a tunnel. It's a of track that does not have way-outs and way-ins. So there is very* ***little cross fertilisation between business and academia****"* **Interview/ PBRP1.**

Participants have identified Key Performance Indicators (KPIs) as a significant factor contributing to this situation. These KPIs have traditionally allowed academics to focus on research output, leading them to prioritise the quantity of papers and citations. Another participant agreed that this was the case during annual performance meetings, where collaboration and industry relevance, *"Simply because we just, it is not the first thing that we get to talk about when we have sort of this yearly job sort of talks"* **Interview/ ACT2**. However, participants argue that this emphasis on research quantity has overshadowed the relevance and real-world impact of academic research. As one participant pointed out, academics "*have been a little bit in **their ivory towers working on the research…** they become **obsessed** with how many papers are **published**, the number of citations that how many people have cited their work. Their Google research indexes, but some of them missed the blooming obvious thing, which is what is the relevance and impact of their research to the real world? Because that's really where the magic happen"* **Interview/ ACP8**.

Furthermore, the pressure on HE leadership to meet the criteria set by international university ranking organisations have been perceived as reinforcing this problematic dynamic, or as a participant claimed *"drive[n] the wrong behaviour"* **Interview/ ACP8**. Participants have critiqued academic leadership for not providing adequate support to faculty, stating "*also **leadership** in academia has not been good mentorship"* and fostering a culture that lacks agility compared to the corporate world. This discrepancy in the pace of change is viewed as partly arising from leadership decisions. As one participant expressed, "*So you find that there's an entirely different culture that there isn't an agility that you would find necessarily in the corporate world. So that's something that I've always kind of found quite difficult. **The pace of change is much slower.** And I don't know if that comes through from the leadership or through just that general culture"* **Interview/ ACP8**.

A third participant contributed to the ongoing discussion by shedding light on the role of academic leadership and the autonomy of universities in shaping their policies. The participant offered an insightful perspective, stating, "*Universities basically run as their own business so **they can make up their own rules** and they can also create posts in different ways"*. To illustrate this situation, the participant provided a concrete example, "*I had a member of staff who had worked in the industry for 20 years he was the best teacher in the classroom that we had. He was the best person who worked*

with industry. He did not want to do research. At my university they decided that everybody who did not have a PhD had to do one. He said, I am not". According to the participant, the outcome was the forced departure of the faculty member, despite his exceptional performance in teaching. This situation highlights a misalignment between the HEI's emphasis on teaching and learning and the practices applied within. The participant stressed, *"… is not necessarily the fault of the academic, it is often the fault of the* ***culture of the organisation*** *in which that academic works, and also the ways in which you are able to secure promotion within the academic arena"* **Interview/ ACP6**. The pressures exerted on academics to meet the criteria set by international-ranking organisations often compel them to prioritise research over teaching. This shift in emphasis can have significant implications (refer to Section 6.3.1.2 - The Role of HE within Industry and Society and the Role of Leadership, under Historical Analysis).

Another participant suggested that leadership has significantly affected the strained relationship between industry and academia. A participant indicated that a change in leadership has recently led to curricular adjustments, demonstrating a greater commitment to industry engagement. The participant noted, *"…quite recently just this year we have changed our curriculum again after, I think it is 10 years. but our new professor [Head of Department] was just instated two years ago. He is well connected to the industry. He was involved in a programme for subsidising research projects which is trying to make this connection between the industry and academia"* **Interview/ ACT2**.

This change, aimed at aligning educational practices with industry needs, has been discussed by various participants and is closely associated with the concept of the *"pracademic"*. Pracademics, as explored, bring a distinctive perspective to the academic system, advocating for closer ties with industry. A participant explained the value of having a blend of academic and industrial experience, stating, *"…there needs to be a mix of [academic and industrial experience], that's what we call a pracademic. So, they've got industry, pre-industry experience and they've also got the academic, they've done a PhD so they understand it from both angles. I mean that you want a well-rounded academic, that's a unique mix. And then what you do is you have an academic that understands and appreciates both [industry and academia]"* **Interview/ ACP8**.

6.4.1.2 Academic Practice and its Implications to Employability (AEA2)

As discussed above, one of the issues concerning the lack of industry experience, as a result of the predetermined tenure path through academia, has led to a focus on theory. The characteristics of the practised Learning, Teaching and Assessment (LTA) deprive students and teachers of an on-the-ground learning approach and, therefore, a better understanding of what a role within the industry requires, causing the divide. Participants have seen the results of an enriched mix of LTA techniques and agree they fit the subject discipline, as *"logistics is an action-oriented discipline, therefore it requires action-oriented teaching"*. Action-oriented teaching underpins the real world within theory using a plethora of techniques, which other participants argue they have not seen being used all that frequently in HEIs. These techniques are identified in *"case studies, field trips, guest speakers, game-based learning"* and an equally practical and problem-oriented assessment. The participant stated that the best approach to teaching and learning is that there is a balanced distribution between theory and practice, or to put it simpler, that theory finds its way into practical application so that students better understand the industry and the expectations of the industry, *"So we'll say as part of this, you've been taught this subject area, this module, we're now going to go and see a distribution centre. And I want you to solve this problem from the theory that we've taught you. You're going to look at a real-life distribution centre, and that is going to be your assessment. It's about bringing that kind of getting them to really think on their feet as if they were a practitioner and designing the assessments so that it is what we call authentic real world, because then it will give them, the student, employability and a level of understanding which is far superior"* **Interview/ ACP8.**

And owing to this academic practice, trust is also lost and, along with it, the opportunity to engage in meaningful research that will return funds, either from within industry or in publicly coordinated and funded projects. Nevertheless, this academic culture and practice limits academic access to these funds. Universities and teams within these that have invested in such collaborative projects with industry have seen a build-up of potential projects knocking on their door. The participant stated that for such collaborations *"to be successful we spend a lot of time on that it's a relationship development isn't it. It's developing partnerships and that takes. That does take investment, and I don't think universities are very good at that"*. However, several

participants have stated that such a culture is not there, and synchronicity and alignment are missing. The participant states that HEIs are "*shocking at it"* and that to reap the benefits of a fruitful partnership "*but you've got to commit. You've got to not take your eye off the ball and listen"* **Interview/ ACP8.**

Also, as previously discussed under Section 6.3.1, under Addressing the Evaluative system, quality assessment is focused on content when content may not necessarily be at fault. The participant expresses that *"It's not necessarily the content. The content I think because you do research, because you are up to date more by itself, but with the didactics, those [we] want to improve, they can improve. But those that would need to improve but do not want to, they also would not react to incentives. The incentive system that usually exists mostly in universities of applied sciences is that you get points for publications that you write and then you get a teaching offload that is kind of a kind of balancing research for teaching, but not for kind of improvements or personal development or these kinds of things"* **Interview/ ACTP1**.

6.4.1.3 Stakeholder's Diverging or Converging Interests (AEA3)

In the current landscape, collaboration has gained significant prominence, reflecting the value placed on it. Government involvement in fostering collaboration is evident in multiple instances. Governments actively support collaborative research endeavours by providing essential funding. Intrinsic motivations often drive this growing inclination towards cooperation with HEIs. As emphasised by one participant, actors are more *"intrinsically motivated to work together"* **Interview/ ACNT1**. It is particularly notable that in countries with organised funding systems that aim to achieve specific outcomes through collaborative projects, the objective revolves around investing time and effort. One participant concurred with this perspective, emphasising the significance of, *"spend[ing] a lot of time on relationship development and developing partnerships"* **Interview/ ACP8**. This underscores the substantial commitment of effort and resources from the involved parts, consequently, the provision of funds serves as an additional motivational catalyst in this collaborative endeavour.

The fast-paced nature of the industry has led to increased expectations for HEIs to respond swiftly to potential collaborative opportunities. Industry stakeholders highly value responsiveness as it affects the perceived value of joint activities. Prompt, attentive, and solution-oriented engagement is paramount to establishing trust and

open dialogue between industry and academia. One participant pointed out, *"If you respond quickly and you listen, you've got to listen to what their problem is. The question is, what do you need from us? And then, if you can quickly understand that, then think about what I need to tap into here at the university to solve their problem, and that's the key thing. When you get them into that space where there is trust, you can have that open dialogue… but you've got to commit"* **Interview/ ACP8**.

However, the industry's readiness for collaboration faces time constraints, often due to operational demands. Smaller organisations may struggle to allocate dedicated resources to initiate partnerships, such as internships or other forms of collaborations, including Research and Development (R&D). Government support has played a crucial role in offering motivation to industry stakeholders. For instance, the Netherlands introduced a programme called IMPACT, *"where the university should have more impact on society, meaning more in touch with research that is aimed at actual problems with society at large"* **Interview/ ACT2**. In the UK, frameworks like the Research Excellence Framework (REF) and the Knowledge Exchange Framework (KEF) aim to fund research with real-world impact. According to a participant, the KEF comes as a recognition that the *"*KEF *coming in as a recognition that there's a gap and that it needs to be addressed"* **Interview ACP8**.

Participants also discussed the evolving role of POs within the HE landscape. POs have gradually recognised their potential to support HEIs in connecting with industry. While some participants view POs as partners facilitating engagement and curriculum development, others have expressed concerns and criticisms. These organisations have assumed a role in bringing employers and HEIs together to shape HE jointly. The current emphasis for POs is *"a facilitating and engagement role bringing the employers to HEIs and then actually jointly developing the curriculum, developing the right sort of subject matter. We saw the opportunity in it really"* **Interview/ PBR2**.

Additionally, involving POs in projects to modernise HE and leveraging their networking abilities have proven beneficial. A participant noted, *"We try in our projects is to involve the branch organisations, where more companies are coming together and representing a range of companies. So, we try to involve them in our projects to modernise our education. And they also serve as the matchmaker. They also often organise networking events and workshops, so also our news articles, if they are*

interesting for more people, we send to them, and they post it on their website. So yes, that is of great value because you don't have to find all the companies yourself. You use them as a spokesperson also" **Interview/ ACNT1**.

Geographical location plays a pivotal role in the level of involvement and impact of POs on the sector. These organisations vary in significance and recognition, with some highly regarded for their certifications and others less so. For instance, certifications like those for accountants are in demand, while logistics-related certificates may not hold the same value. A participant noted that *"the industry does not care—this kind of professional organisation because of their legal status. Certificates for accountants are in demand, but when it comes to logistics, they don't care whether there is a charter or certificate or system."* **Interview/ ACNT2**.

The logistics industry's perception of academic institutions has raised concerns, particularly among senior members who have gained seniority through practical experience rather than academic study. This scepticism about the relevance of academic education amongst higher management is articulated in the following statement, "*…because many of the more senior members of the logistics professional community have not studied to any depth. They are products of the profession in that they've commendably, in many cases, worked their way up from the shop floor, from doing the practical front-end logistics and worked their way up into managerial positions within organisations. And I include the military in that. So many of the more senior logisticians question the relevance of academic development and education for their junior staff members. He's almost like, well, I didn't need it. I don't think they appreciate the value that academia can bring when linked to relevant practical challenges"* **Interview/ ACP3**.

Moreover, another reason for the limited interaction between industry and academia is the nature of conferences. While these events are perceived as opportunities to bring together representatives from both sectors, participants noted a significant disparity in reality. A participant attributed industry's hesitance to engage in conferences to constraints related to time and resources available, but also to the fees conferences charge. The reasons concerned the conference's intrinsic value and the associated attendance costs. This hesitation was presented in the following example, *"I've seen conferences; unfortunately, conferences that academics like to go to are*

filled with government people and not industry people. I've spoken to well-attended industry conferences and realised my target audience was not even in the room because it was filled with government employees and academics. At $3,000 a pop, I was questioning why academics are here and why there aren't any industry people. And it turns out, $3,000 for a conference is way too much money to spend to go to a conference" **Interview/ ACP7.**

Despite prevalent reluctance, there are instances of successful collaboration between HEIs and industry. Notably, the establishment of academic boards has gained significant attention, especially among participants advocating for a localised approach. Emphasising the importance of catering to local needs, one participant stated, *"But I do think when students are choosing to stay local for university and, therefore, likely to be looking in the local area of the jobs that we need to reflect the balance of the modes."* **Interview/ PBR1**. A participant offers an empirical example from Austria, articulating the system currently implemented there, *"In Austria, universities have boards, which is mandated by law. The requirement* [for a board] *includes a representative from the regional government, one nominated by the manufacturing association. This is a tool to improve communication among the stakeholders. Two sets of stakeholders. Industry and the civil society."* **Interview/ PBRP1**.

Participant emphasised the value of industry boards in shaping curricula that meet industry requirements. The efforts to involve industry in curriculum development were deemed beneficial for creating a curriculum that is both localised and internationally relevant. A participant highlighted the diversity of their industry board that *"represents all sectors, the public and private third sector. Some of them are alumni, so they're ambassadors. Some are not. Some are national, some international, and with gender diversity as well. That's really important. So, they've helped us design the new curriculum."* **Industry/ ACP8**.

6.4.1.4 Professional Standards and their Implications to Quality and LTA (AEA4)

The role of professional standards emerged as one of the most contested and persistently unresolved issues across the intervention. Unlike other topics, where participants progressively moved from critique towards modelling, the standards

debate remained characterised by ambivalence and avoidance throughout all phases of the research, making it a particularly revealing site of contradiction within the logistics HE activity system.

The issue surfaced early in Workshop 1, where participants were invited to reflect on how quality and relevance in logistics HE might be strengthened. For some participants, professional standards were viewed as an opportunity to legitimise logistics as a discipline and strengthen its academic and professional standing. From this perspective, standards could enhance institutional credibility, provide access to international networks, and ensure quality consistency across programmes. An initial proposal to adopt professional standards as a shared framework for curriculum design was met immediately with resistance. One academic participant rejected the idea outright, stating: "*it's more than enough rules to cover for the education as it is, so I don't think we want them, I do not think we need* them" **Workshop1/ACP1**. This reaction was not isolated, several participants expressed concern that professional standards would function as a certification system rather than a pedagogical guideline, prioritising compliance over disciplinary flexibility: "*A standard wants to be a certificate. Not a guideline*" **Interview/ACP1**. Others feared that adopting industry-defined standards would reduce logistics HE to short-term, skills-based training, undermining the broader educational purpose: *"…industry sees HE as training, whereas we educate the mind rather than train for specific jobs*" **Interview/ACT1**.

Recognising that this tension had not been worked through collectively, the asynchronous sessions hosted on Notion were deliberately designed to extend the discussion and invite participants to reflect more carefully on whether and how standards might be embedded in logistics HE. Those who engaged with the legitimisation argument acknowledged both its appeal and its difficulty. As one participant argued: "*you also want to have a certification system and training partners who would desire to be certified and who would see value in it*" **(Notion/ ACNT1)**, while another acknowledged that to develop such a system "*you need to build up critical mass of universities agreeing among themselves… this is a good standard. Let's go for that standard. This needs a lot of time and effort*" **(Notion/ ACNT1)**. However, overall participation was sparse. Those who did engage largely sidestepped the core question of whether standards should exist at all (in the context of logistics HE), gravitating instead toward the practical difficulty of selection. This pattern of

engagement, acknowledging the problem while deflecting responsibility for resolving it, reflected a form of transformative agency that remained at the level of explicating contradictions rather than advancing towards modelling solutions.

When the issue was revisited in the semi-structured interviews, the same pattern persisted, though with greater analytical depth. Participants began to articulate why the logistics field resists uniform standards more precisely. One participant noted that logistics is not a single domain but encompasses intralogistics, transport logistics, freight forwarding, and shipping, among others, questioning whether the gap even originates from a lack of standards: "*I don't think the gap is there because there is a lack of standards because what happens when you have a standard, then someone comes around and develops a new standard*" **Interview/ACTP1**. The same participant raised the cultural dimension of standardisation, noting that contextual relevance varies significantly across national settings, and drew a Venn diagram metaphor to illustrate that the more logistics programmes are compared, the smaller the shared curriculum component becomes, making a comprehensive, integrated framework extremely difficult to achieve in practice. One participant characterised the pursuit of uniform standards as potentially leading to a "club membership" mentality, benefiting a selected few HEIs while offering little real value to students and employers. Another cautioned that professional standards risk becoming "*tick-box exercises*" that prioritise compliance and documentation over meaningful learning: "*it all becomes about filling forms rather than improving what or how we teach*" **Interview/ ACT2**. This criticism underscores a shared concern that without contextual sensitivity and co-development, standardisation could reinforce existing practices rather than drive genuine educational enhancement.

A further complication was raised regarding the accessibility of existing standards. Several participants highlighted that many of the frameworks currently in use within the logistics industry operate as closed networks, accessible only to subscribing organisations. GS1 was cited as an example of a globally recognised standards body whose frameworks, while widely used in practice, remain behind a subscription model, limiting their uptake in HE contexts and raising questions about equity and openness in standard adoption.

Despite the widespread resistance, the discussion did not amount to a wholesale rejection of standards. Several participants acknowledged that a standards framework conceived as a guideline rather than a certification system could serve a legitimate purpose. One participant noted: "*a standard as a guideline is a very good thing*" **Interview/ACP6**, while another argued that the movement within the logistics industry toward standard operating procedures is gathering strength, and that the real challenge lies in how academia might incorporate these into learning rather than whether to engage with the at all. From this perspective, standards held potential as a mechanism for creating a shared language across academia, industry, and professional organisations, but only if co-created rather than imposed, and only if sufficiently flexible to accommodate disciplinary and contextual diversity.

The sector's limited influence over policy further complicated the picture. A representative from a professional organisation noted that logistics professionals are frequently perceived as technicians rather than educators, stating: "*Do you think the Ministry of Education and Research would listen to me? They would tell me, can you please go to my colleague in the Ministry of Infrastructure, because they speak your language?*" **Interview/PBRP1**. This marginalisation within educational policy frameworks constrained the sector's ability to lead on standard-setting, reinforcing the fragmented intermediary capacity identified elsewhere in the research.

Considered across all phases of the intervention, from Workshop 1 through the asynchronous sessions to the semi-structured interviews, the standards debate illustrated a contradiction that participants could name and analyse but not resolve. The concept kept surfacing, each time gathering new associations and greater analytical complexity, yet it never consolidated into a stable shared position. This unresolved tension underscores the depth of the divide: professional standards represent a contradiction so embedded in the structural and cultural divide between academia and industry that participants could not reach consensus on standards; the absence of a shared framework continued, however, to shape the emerging proposals for new practice from beneath the surface of the discussion.

6.4.1.5 Summary of Actual-Empirical Analysis

During this phase, participants engaged in the third expansive learning action: Actual Empirical Analysis, which involves examining how historically rooted contradictions

manifest in current practices and organisational structures. This phase was particularly prominent across the semi-structured interviews and workshop discussion, where participants reflected critically on the realities of teaching, leadership, and collaboration in logistics HE.

Researcher-led stimuli, such as mirror data, encouraged participants to analyse contemporary systems, revealing how established patterns continue to shape daily practices and professional interactions. Among all learning actions identified in the ELC, empirical analysis generated the highest number of instances, indicating participant's strong engagement with the practical realities of the HE-industry interface. Participants, often speaking candidly and with evident frustration, used this opportunity to articulate their experiences of what currently works, what fails, and what might constitute ideal collaborative systems.

Three key areas of reflection emerged from the empirical analysis.

AEA1: Participants identified entrenched tenure systems, KPIs-driven evaluation, and weak academic leadership as key barriers to change in HE. The prioritisation of research output and ranking "*drives the wrong behaviour*" and dismisses teaching and engagement with industry. This "*tunnel*" career path, which offer "very little cross-fertilisation between industry and academia" was seen as widening the gap between theory and practice. However, examples such as departments led by industry-connected professors and the introduction of "*pracademic*" roles illustrated emerging opportunities for more balanced academic development.

AEA2: Participants argued that logistics, as an "*action-oriented*" discipline, requires equally action-oriented teaching through "*case studies, field trips, and game-based learning*". Yet such approaches remain inconsistent, with many programmes still dominated by theory-led lectures. This imbalance was said to weaken student employability and industry trust. Incentive systems that reward publications rather than teaching innovation further discourage pedagogical improvement. Participants stressed that meaningful collaboration demands relational investment and continuity: "*you've got to commit and listen*".

AEA3: Stakeholders recognised both shared and conflicting interests in collaboration while intrinsic motivation and government frameworks such as the KEF, and TEF or applied research with impact, promote engagement, time and resource constraints

limit sustained cooperation. POs play a bridging role by “bringing employers to HEIs and jointly developing the curriculum, though their influence varies. Persistent scepticism from senior logisticians about the value of HE contrasts with positive examples such as diverse industry boards helping design curricula.

AEA4: The role of professional standards emerged as the most persistently unresolved area of the empirical analysis. Despite being introduced in Workshop 1 and deliberately extended through the asynchronous sessions, the debate never consolidated into a shared position. Participants wavered between recognising the potential of standards to legitimise logistics as a discipline and create a shared language across sectors and fearing their reduction to certification exercises or tick-box compliance. The logistics field’s diversity, the cultural specificity of national contexts, and the closed-network nature of many existing frameworks all reinforced resistance to uniform adoption. Crucially, the sector’s marginalisation within educational policy further limited its capacity to lead on standard-setting. Rather than resolving these tensions, participants consistently sidestepped the core question, explicating the complexity without advancing toward modelling solutions. This unresolved contradiction sets the stage for the modelling phase, where its implications resurface in the proposals participants generated for new collaborative practice.

Together these insights capture how systemic and relational contradictions manifest in current academic and industry practices. They reveal the everyday barriers, structural, pedagogical and organisational, that sustain the divide, while also pointing to emerging spaces of alignment and reform. This sets the stage for the next phase of analysis, where participants began modelling and examining potential solutions to bridge these persistent tensions through collaborative and developmental approaches.

While the actual-empirical analysis revealed numerous emergent ideas and possible directions for change—particularly evident in participants' reflections on what "could" or "should" work—these remained fragmented insights arising from critique rather than systematically developed solutions. The transition to Modelling (Section 6.5) marks a shift from spontaneous possibility-thinking toward deliberate, coherent design of new collaborative frameworks and practices.

6.4.2 Manifestations of Transformative Agency

Actual-empirical analysis serves as an indispensable tool for enabling transformative agency. This process entails collecting, examining, and interpreting data from real-world observations. The data is garnered through interactions with participants during workshops and semi-structured interviews. In conjunction with historical analysis, as previously detailed, empirical analysis plays a pivotal role in enabling an in-depth exploration of the issue at hand. Participants actively draw on current events contributing to the persistent disconnect between the logistics industry and HE. Over 100 instances arose wherein the current state of affairs provided participants with opportunities to elucidate their experiences and assess their impact within the current activity system. The insights, evidence, and information gathered through empirical analysis are fundamental for informing and guiding transformative actions.

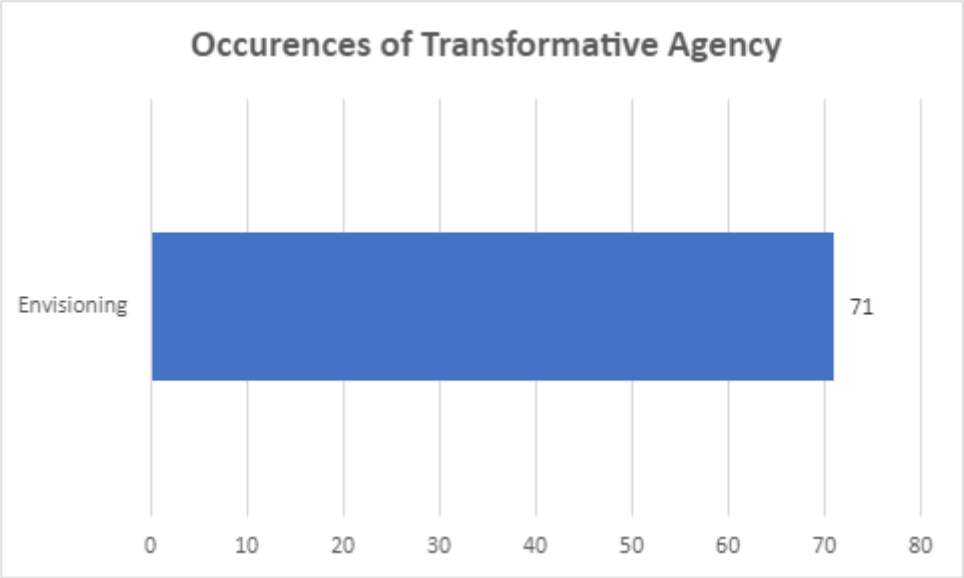


Figure 6.6: Occurrences of Transformative agency.

As elaborated at the beginning of this chapter, the process of explication followed instances of criticism, serving as an additional avenue for acquiring deeper insights. This approach aims to further elucidate the underlying reasons behind participants' perceptions of exacerbating the disconnect. For instance, when discussing academics and the academic pathway, one participant candidly expressed their viewpoint, stating, *"Can I just raise a flag that PhD sucks?"* **Interview/ ACT3.** Another participant acknowledged that a PhD *"prepares you for research. What happens in the class, how*

to teach, how to deal with students, no!" **Interview/ ACT2**. Subsequent participants echoed this sentiment, each briefly offering their perspective and rationale.

The agency for transformative action develops through escalating the tensions that surface during semi-structured interviews prompted by appropriate stimuli. These tensions facilitate the subsequent learning phase, wherein individuals are motivated to make informed decisions and advocate for necessary changes. In the process of explication, participants begin to think innovatively, providing initial solutions to identified problems. For instance, one participant articulated their concern regarding academic practitioners without industry experience, stating, *"people that have come straight up from school, college, straight into PhD and they've never stepped one foot in an industry environment. And that's not to say that they can't, but that puts them a little bit on the back foot"* **Interview/ ACP8.**

Furthermore, participants emphasised that theory alone often falls short of representing reality in practice. They cited examples to highlight the limitations of relying solely on theory. One participant noted, *"But what doesn't it do? Give you the reality of how you crack solutions. Cracking solutions is what logistics is about."* **Interview/ ACP2**. Participants in agreement emphasised that logistics, as an applied science, demands more than theoretical knowledge for comprehensive understanding. Another participant added an example, stating, *"But where's the actual application to the shop floor or to the transport or to the to the supply chain? And it's all very well and good talking theory all the time. And they all talk in conjunctions and what would happen if, and when, and we do it every day. Should make it happen"* **Interview/ INP1**. Yet another participant stressed the importance of addressing unforeseen issues, saying, "*If my forklift collapses today, I've got a real problem, right, and so all of these little things and they're the things that nobody wants to talk about and nobody ever tells you about until they actually happen"* **Interview/ PBR3**.

Participants actively engaged in discourse across various topics, shedding light on their concerns regarding prevailing practices. They delved into each topic, articulating why, in their view, these practices are flawed. Moreover, participants took incremental steps towards identifying potential solutions to address these issues. It is also crucial to examine each topic through the lens of transformative agency, elucidating the ways in which participants' insights and actions contribute to fostering transformative

change. The subsequent sections of this study, those of Modelling and Examining, delve into multiple solutions.

6.4.3 Design Elements Evident at this Stage

At this stage, the activity system grapples with several issues characterised by primary, secondary, tertiary and quaternary contradictions. The contradictions manifest within individual nodes, or between nodes, and at the tertiary and quaternary levels, particularly when new elements are introduced into the activity, as illustrated in Figure 6.7. Contradictions arise as participants delve deeper into examining current practices and begin introducing new elements to provide suitable solutions. The emergence of quaternary contradictions occurs as participants recognise that closing the existing gap requires neighbouring activities to offer essential support to the current activity.

This shift in the design of the activity system is analytically significant. Whereas the questioning phase revealed three independently operating systems, and the historical analysis phase explained how they became structurally divergent, the empirical analysis phase marks the point at which participants began to recognise, however tentatively, that the systems are interdependent. The emergence of quaternary contradictions, between the activity systems of HE, industry, POs, and government, signals that participants could no longer account for the gap by examining any single system in isolation. Figure 6.7 captures this developmental moment, showing the activity systems moving closer together as participants began to envisage the support that neighbouring systems might provide. The design of the activity at this stage therefore reflects a more complex and relational understanding than was visible at earlier phases, even if participants had not yet moved toward modelling solutions.

In this context, the role of POs assumes growing importance. However, it is worth noting that tertiary contradictions arise as some participants express their reservations about this path. They propose further modifications to the new activity, especially if additional systems are to become part of a new central activity system considered “culturally more advanced”. This central activity is anticipated to foster the ecosystem necessary for achieving desired outcomes.

The tertiary contradictions surfacing at this stage are particularly revealing in terms of design. The resistance to integrating professional standards, identified here as a tertiary contradiction reflecting academia's bureaucratic avoidance culture, exposes a

tension not simply between systems but within the rules and instruments of HE itself. Standards, which might function as a bridging instrument connecting the activity systems of academia, industry, and professional organisations, are resisted precisely because the existing rules of HE are oriented toward accreditation and research metrics rather than toward shared professional frameworks. This means that introducing standards into the system would require not only agreement between actors but a fundamental redesign of the rules and instruments governing HE's activity. It is this recognition that begins to orient participants toward the modelling phase, where the design of a new central collaborative activity becomes the focus. This transition is reflected in Table 6.9, which captures the emerging design elements at this stage, including the reorientation of POs toward an intermediary and standard-setting role, and the appearance of concrete pathways for co-production within the central collaborative activity.

Table 6.9 below, summarises the key design elements evident during the Analysing phase of the ELC. It highlights how participants moved from abstract critique towards analysing concrete practices, tools and institutional rules that could enhance collaboration between HE, industry, and POs as illustrated in Figure 6.7. The discussion unfolded within emerging Zones of Proximal Development, collective spaces where participants began to envisage new forms of collaboration that extended beyond their existing practices.

A key feature of the design elements at this stage is the emergence of the central collaborative activity as a fourth system in Table 6.9. This represents an important analytical development: participants are no longer simply describing the three independent activity systems of the questioning phase but are beginning to conceptualise a shared space in which their objects, instruments, and rules might converge. The central collaborative activity is not yet a fully formed model (it remains an aspiration rather than a design) but its presence in participants' thinking signals the beginning of the transition toward the modelling phase. The ZPDs identified at this stage are the structural preconditions for that transition, marking the points at which existing understanding reaches its limits and new possibilities begin to emerge.

Activity System	Object/Purpose	Key Motives & Analytical Focus	Emerging Insights & Implications
Higher Education (HE)	*Strengthen the relevance of logistics HE through applied and practice-oriented teaching.*	*Integrate industry expertise into curricula; reform academic preparation and teaching competence.*	*Recognition that collaboration in programme design and lecturer development can close the gap between academic theory and practice.*
Industry	*Contribute to academic programmes and co-develop applied learning opportunities*	*Encourage internships, project based learning, and advisory panels.*	*Industry engagement viewed as essential for authentic learning and for ensuring graduates' work readiness.*
Professional Organisations (POs)	*Establish and maintain professional and ethical standards to support collaboration.*	*Develop guidelines and frameworks for communication, teaching and research practice.*	*POs identified as key intermediaries capable of sustaining quality and coherence across systems.*
Central Collaborative Activity	*Collaboration between HE, industry and POs to create an ecosystem of shared responsibility.*	*Jointly produce tools, rules, and standards that link theory with practice.*	*Concrete pathways for co-production began to emerge, signalling a shift from critique to actionable collaboration (ZPD 1 and 2)*

Table 6.9: Design elements at the Analysing Phase - Zone of Proximal Development.

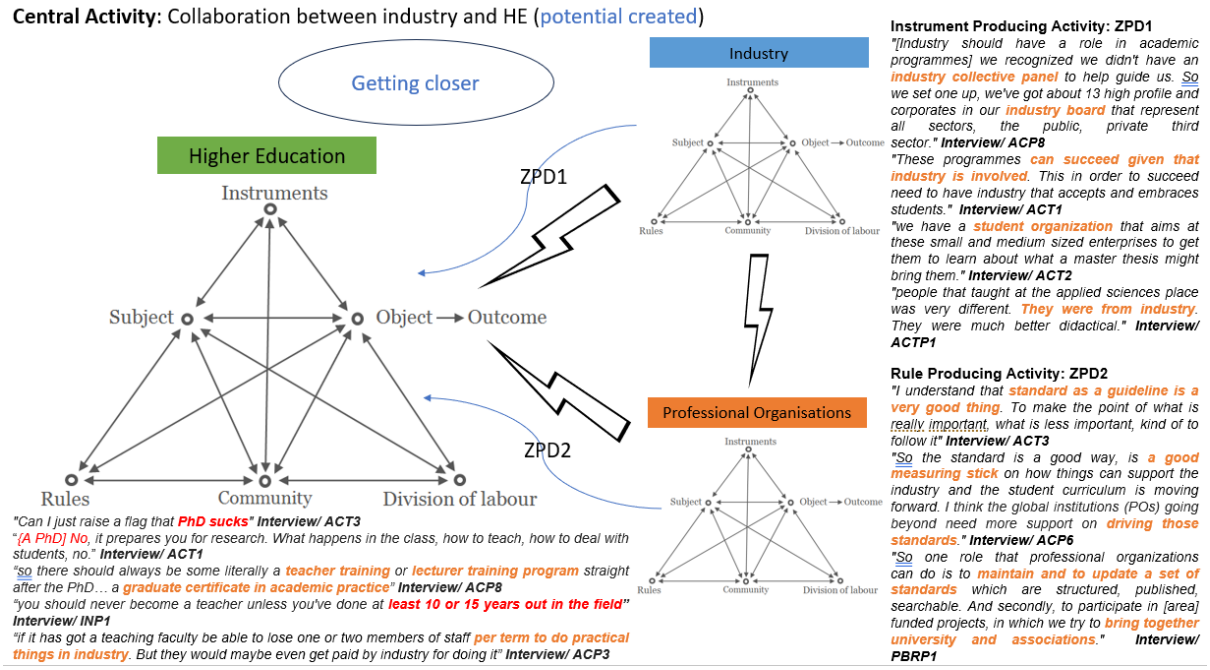


Figure 6.7: Getting closer. ZPD is progressing in recognising that other stakeholders may provide crucial support to the system.

Two key points emerge at this stage, holding significance in creating new opportunities for the activity. Firstly, it is crucial to acknowledge that none of the involved actors has a flawless approach. Instead, a better understanding of the discrepancies can lead to more targeted and appropriate solutions. Within each section and the concepts discussed therein, specific Zones of Proximal Development (ZPD) are identified. These ZPDs highlight particular gaps in participants' understanding of the activity. For instance, in the case of tenure, the ZPD reveals a gap in participants' comprehension of academic pathways, emphasising that doctoral education doesn't align effectively with classroom dynamics or the intricacies of teaching and learning in diverse student settings. Consequently, this misalignment may hinder their employability in the industry. Nevertheless, participants recognised, through the discourse process, that logistics is an applied discipline rather than purely theoretical. This sheds further light on design-related issues and facilitates ZPD progress while enhancing participants' learning experiences.

At this juncture, it is obvious that ZPDs have progressed significantly, even for participants with exposure to the industry. It is important to note here that AT and the

utilisation, as a philosophical approach, of the methodology of the CL, with the insider researcher employing concepts like double stimulation, were pivotal in prompting and achieving significant progress in transformative agency. This progress also highlights important issues within the current activity system.

6.5 Modelling & Examining

The exploration has been characterised by a purposeful progression through its various learning actions. This phase marks the last stop of this journey and a conscious decision to combine the two learning actions, recognising their simultaneous occurrence. Despite the progress achieved through the modelling and examining learning actions, it is imperative to acknowledge a deliberate decision not to proceed through the entire ELC. This strategic choice is motivated by the need to consolidate insights, engage in reflective analysis, and chart a more informed and refined path for subsequent research endeavours, which extends beyond this study's purpose.

The modelling learning action resulted from a turning point, a germ cell, that was identified during the empirical analysis phase. Participants initiated the visualisation of a new activity early in the process, already in workshops. However, this initial conceptualisation was characterised by spontaneous responses to instances of resistance and criticism, lacking a structured and concise approach. The modelling phase serves as the juncture where these more theoretical/ abstract underpinnings, laid during questioning and analysis, sprang into more concrete and tangible solutions. Additional interviews were held to facilitate participants' further envisioning of the new activity. Figure 6.8 illustrates the elements that participants were presented with to initiate the discussion (refer to Chapter 4 for additional details). This learning action involves the creation of a new conceptual model, acknowledging key stakeholders (the tripartite in Figure 6.8 was used as an example). The model is designed to address the contradictions and challenges that surfaced within the existing activity system. Participants had to surrender their defences and embrace creativity and collaborative thinking. This collaborative ecosystem allowed diverse perspectives to converge into transformative and synthesising actions, setting the stage for subsequent exploration.

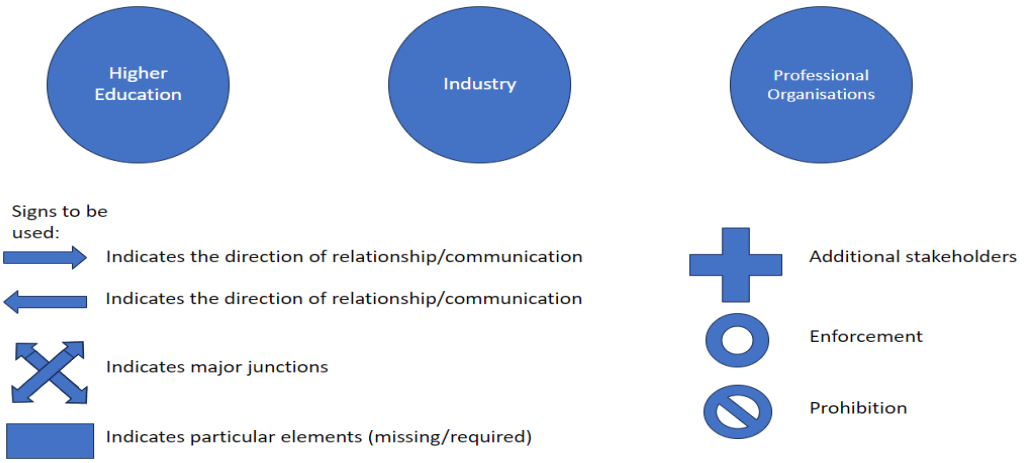


Figure 6.8: Presentation illustrating the prospective participants, elements of change and policy suggestions.

Simultaneously, the learning action of examining and testing unfolded in tandem with modelling. Participants provided their immediate opinions on the viability and efficacy of the proposed model, further prompting a decision to discuss these two actions together. The examination phase involves subjecting the identified model to rigorous scrutiny, probing its viability, and testing its effectiveness in addressing the identified contradictions. Through empirical investigation and evidence from practical application, the sections seek to comprehend the potential impact of the suggested model, acting as a crucible, where theoretical constructs meet the reality of implementation, providing valuable insights to inform the subsequent steps in the expansive learning process.

The Germ Cell: Standards as a Bridge Between Theory and Practice

The transformative potential of this modelling phase originated from a deceptively simple idea, what Engeström (2001) terms a "germ cell", that emerged early in Workshop 1 and reappeared throughout the research, even though not with the same interest or intensity. A germ cell represents the most basic, generative unit of a new practice, an idea simple enough to be grasped immediately, yet powerful enough to contain the potential for systemic transformation.

In this case, the germ cell emerged organically during the first workshop when participants were grappling with the question of how to ensure that logistics graduates

were adequately prepared for industry practice. **ACT1**, an academic participant proposed: "*There should be some standards. We know that for each course, we have some required courses and some electives and logistics are evolving, science is evolving, processes are changing. For the theory utilised there should be some standards. They could create the trust between academia and industry, that these students meet minimum requirements*".

This quote marks the first time the concept of standardisation of logistics curriculum was introduced as a way to bridge academia and industry. At its simplest, the idea was this: if all logistics programmes agreed on a core set of standards for what students should know and be able to do, it would create trust between academia and industry. This seemingly modest proposal captured something fundamental that resonated across stakeholders' groups.

What made it a true germ cell was not its immediate adoption; indeed the idea met with mixed reactions and was temporarily set aside, but its latent generative power. The concept of standards kept resurfacing throughout the workshops and interviews, each time gathering new layers of meaning. Participants began to see standards not merely as fixed learning outcomes, but as a potential mechanism for:

- Creating a shared language across academia, industry, and professional bodies.
- Establishing trust through transparent expectations and quality assurance.
- Providing a flexible framework that balanced consistency with institutional diversity.
- Serving as a bridge between theoretical knowledge and practical application.

This evolution from a simple suggestion to a multifaceted solution exemplifies how germ cells function in expansive learning. The initial idea was abstract enough to accommodate multiple interpretations yet concrete enough to serve as a focal point for collaborative modelling. As participants progressed through the analysis and questioning phases, they repeatedly returned to this germ cell, refining and expanding it into the more elaborate collaborative models described later in this section. The significance of identifying this germ cell lies in its role as an anchor point for transformation. Unlike top-down reforms imposed externally, this idea emerged from

within the practitioner community itself, making it more likely to gain genuine traction and representing what Engeström (2007) describes as a "historically new form of activity" that participants could collectively develop, rather than merely implement.

However, even as the germ cell gained traction, significant ambiguities and tensions persisted around its practical implementation. While participants found the concept of standards intellectually compelling, they struggled with fundamental questions: Which framework should serve as the foundation—existing professional body standards, newly developed academic standards, or industry-defined competencies? Would all institutions adopt the same standard, or would there be regional or national variations? Who would govern the standards, and how would they be updated to keep pace with the rapidly evolving logistics sector? Participants recognised that moving from the abstract principle of "standards as trust-builders" to concrete, implementable frameworks would require sustained negotiation, institutional commitment, and potentially uncomfortable compromises around autonomy and control. This tension between the generative potential of the germ cell and the complexity of its realisation remained a defining characteristic of the modelling phase, underscoring that transformative ideas, however brilliant, must navigate the messy realities of multiple stakeholders with divergent interests and capabilities.

Both modelling and examining instances are present in workshops and semi-structured interviews in different forms and phases of development. Envisioning, a key action, is exemplified by over 50 examples presented throughout the research. Table 6.7 illustrates how specific prompts, questions and participant comments served as stimuli facilitating the expansion of the model into problematic areas identified through the research, particularly in the intricate relationships among the different stakeholders.

ELC – Learning Action 3 & 4	Outcomes
First Stimulus	Brief task to help each stakeholder group identify potential solutions (video – in workshops; questions – in workshops and interviews).
Second-Stimulus	Questions are presented on PowerPoint or verbally.
Germ Cell	Standards as trust-builders: The foundational idea that emerged during Workshop 1—"There should be some standards... They could create the trust between academia and industry, that these students meet minimum requirements" (ACT1)—served as the generative concept around which collaborative modelling developed.
Explicating current practices related to the disconnect.	Challenging participants to identify potential solutions taking into account any potential synergies between the stakeholders. 1. Bridging the gap between the logistics industry and HE effectively and efficiently. Synthesising a new approach, considering elements of each stakeholder that may be in direct conflict with other actors in the field: 2. Devising a plan of action that will elicit collaboration and create synergies among stakeholders, the industry and the society at large. 3. Envisioning, how the new activity would solve the problem of the gap.

Table 6.10: Learning Action 3 & 4 (Modelling and Examining) stimuli and outcomes.

The following section provides the suggested conceptualisation of the new and updated model.

6.5.1 Narrative Overview

At this juncture in the ELC, participants have progressed through the developmental process of the ELC learning actions to establish a shared understanding of specific performance expectations for each actor within the logistics domain. Each actor has a distinct role that is confined to their specific practice area. The pivotal realisation in this phase is the acknowledgement that certain functions performed by different actors may not align with the interests of others within the system. Consequently, the primary learning action is the recognition that despite serving diverse functions in their daily

routines, cooperation and synergy are essential for the collective benefit and advancement of logistics.

A notable concern emerging from this shared understanding is the practical and applied nature of logistics. This recognition has steered participants towards approaches necessitating a more applied curriculum and the practical application of theory. This awareness was sparked by a germ cell introduced early in the discussion, temporarily set aside, and later revisited – a germ cell embodied in the discourse on standards in logistics HE.

Following the germ cell and a progression in the ZPD, after an “I don’t know” period, participants-initiated suggestions that concerned some of the previously discussed topics. Logistics HE is not different from other disciplines that have gone through the same process in the last couple of decades; however, participants seem to think that a model that could work for logistics may be a much more complicated and delicate process.

6.5.1.1 Stakeholder Involvement & Ecosystems Thinking (M&E1)

The progression through various phases of the ELC has provided substantial buy-in from participants, prompting them to contemplate collaboration as a viable path forward. HEIs, programmes and individuals have employed numerous commendable strategies, either to bolster their international brand image or due to a firm conviction among leadership that effective logistics education necessitates the involvement of industry professionals in curriculum development, the integration of practical elements in TLA, and a staunch advocacy for internships.

A consensus among participants underscores the importance of involving all stakeholders, though there exists a divergence on the role of government intervention – some view it as a mere tick-the-box formality, while others see it as an inevitable synergy. A participant claimed that:

“*Government has to have a role in this. They have to set up the regulatory framework. They have to see it as driving the standards. And creating that competitive landscape. It's how you create the playing field for getting the best out of society.*” **Interview/ ACP6.**

Participants agree that government involvement should focus on two key aspects: 1. Developing a collaborative framework, with input from the different stakeholders, that supports, rather than enforces, the operation of the activity system, and 2. Provide requisite funds and incentives for collaborative research with a tangible impact on the industry and society. During the second round of interviews, concerns were raised about the wording in certain elements of the guiding Figure 6.5. Enforcing or prohibiting sounded too stringent for a fruitful activity system.

Stakeholder motivation, even though different amongst the various actors, centres on achieving performance goals. A change in goals, promoted by the Teaching Excellence or the Knowledge Transfer Frameworks, for example, in the UK, serves towards this change. Participants acknowledge that the policy landscape is relatively new, requiring time for HEIs to adapt. Overcoming entrenched practices in academia, characterised by the persistence of “ivory towers”, necessitates obtaining buy-in from academics as much as from everyone else within the system.

Participants collectively recognise the need to enrich the role of POs as intermediaries between industry, academia, and government. However, reluctance persists among participants, contingent on witnessing tangible value to the overall system provided by POs, beyond financial motives and lobbying efforts. Additionally, a participant from within POs agreed that *“We would have to develop very good lobbying capabilities with the national governments, which is something we were not able to do.”* **Interview/ PBRP1.** Additionally, the same participant that previously raised a concern about speaking the same language across the different stakeholders articulated the need for a common language to be established in order for the different actors to be able to interact, which is something that participants considered as non-existent.

A recurring concern raised by participants revolves around organisational tendencies to adhere to familiar practices, which were elucidated in the historical and empirical analysis sections. Despite glimpses of innovative practices, participants note that organisations often gravitate towards known methodologies. Even exemplar approaches require improvement. As a participant noted, *“We do need to improve like I mentioned about a CRM system because you don't know who's speaking to whom when it's a little bit disjointed”* **Interview/ ACP8.** The need for greater transparency and a commonly accepted ecosystem is universally acknowledged, with an emphasis

on initial standardisation while allowing flexibility for subsequent evolution. In the participant's view, standardisation may encompass industry standards; while some see their value, others express concerns about their extensive application. Participants agree on the necessity of policy governing interactions between HE and industry, advocating for flexibility rather than stringent measures to avoid turning it into a tick-the-box exercise.

6.5.1.2 Training of Involved Actors (M&E2)

Participants advocated for a strategic approach to discerning the needs of the system and providing training for the relevant actors, including academics or their representatives when facilitating connections with industry. The call for a complete change of mindset extended to the acknowledgement that academics require ongoing training to stay abreast of developments. These developments encompass not only new teaching methodologies involving simulation or industry-supported projects but also updates in the field related to emerging practices and technologies. One participant emphasised the necessity for a continuous lecturer training programme, highlighting its potential benefits for its impact on quality, saying, "*there should always be a teacher training or lecturer training programme"* **Interview/ ACP8.** Another participant echoed this sentiment underscoring the need for training, saying, *"The quality of education would benefit a lot from whatever form of mandatory support and mandatory training. [Currently] there is no training, but [universities] realize that students rightfully expect a certain level of quality."* **Interview/ ACTP1.** A third participant emphasised the importance of providing opportunities for academics to engage with industry developments, saying "…*involving them in in new projects. [A member of staff], is now actually promoting digitalisation within a company within our organisation. And he tries to involve the lecturers, connects lecturers with people from the industry, shows best practices, and asks industry partners and startups to present new things. And that helps people get interested in it"* **Interview/ ACNT1.**

In the identification of various roles contributing to the promotion of an activity system aiming to bridge the gap and foster collaboration and innovation, the creation of a specialised department, within HE, with administrative staff facilitating connections between industry and HEIs was discussed in the empirical analysis section. Participants acknowledged the need for training for such roles, even though

awareness of existing offices with such responsibilities within HEIs was limited. The consensus was that this responsibility should not fall solely on academics, despite their involvement in subsequent phases of collaboration with industry, including student internships and knowledge transfer capabilities. A participant emphasised the argument for training individuals with such administrative responsibilities, saying "*to train up if it is not going to be an academic job to create that link with industry benefit the students, then there is an argument for actually training up the people who work within the administrative units."* **Interview/ APC6.**

Finally, participants stressed the importance of training industry personnel to guide and mentor students during their industry experiences, citing examples from Germany, where qualified trainers play a crucial role in overseeing interns. As one participant articulated, "*Over here, to have interns on a large scale you need to have a qualified Ausbilder (Trainer). Yeah, somebody who is trained to, to take care and assigned to making a plan for these people."* **Interview/ INP1.**

6.5.1.3 Practice, Teaching, Learning, and Assessment (M&E3)

Given the recognition of logistics as an applied science, participants engaged in a conversation emphasising the importance of not only establishing connections to industry through internships but also configuring the curriculum and LTA methods. One participant expressed this viewpoint, stating, "*I would say that logistics is more suitable for a practical way of approach"* **Interview/ ACNT1.** The participant also lauded the role of UAS, noting, *"I think they are a bit closer to what is the work practice"* **Interview/ ACNT1.** Participants collectively reached a consensus that HE must leave the traditional approaches and focus on providing impact *"…not only to industry but the society also."* **Interview/ ACT1.** Additionally, they stressed the need for HEIs to adopt growth-oriented strategies and train students effectively in the development of logistics. One participant asserted, *"then universities should be focusing on growth strategies that students get engaged and trained somehow in a way that that they are growth oriented."* **Interview/ ACT1.**

Concerning student internships, participants recognised the pivotal role of industry in ensuring the participation of all students. Academics emphasised their crucial role in providing students with the opportunity to experience industry first hand. While participants acknowledged the importance of an organised framework for

administering internships, they cautioned against making it over strict, fearing potential negative consequences. The participants underscored the significance of individual connections and the need for HEIs to build networks. One participant highlighted this by stating, "*[it is mainly down to the individual connections that this happens, that collaboration with industry exists if it is not down to the individual, to the person that has the knows people in the industry, then it is very unlikely that collaboration of any form would happen]. Network is very important. You must build up the network."* **Interview/ PBRP1.**

Regarding the content of the curriculum and LTA practices, various examples were identified as potentially beneficial to students in applying theory and grasping its operations. A notable disagreement among participants emerged regarding the frequency of curriculum review, with differing opinions on whether it should change *"every 5-6-7 years"* **Interview/ INP4,** or **"***I believe [the curriculum] that it should be [revised] done internally every 2-3 years and for external review 3-5 years."* **Interview/ ACT1.** Examples from empirical analysis highlighted practices at UAS in the Netherlands, where continuous discussions occur to adapt the curriculum based on feedback. The participant articulated this practice, stating, *"every three months or every four months 3 times a year they come to us, we have that discussion, we make notes, we report back, we give them information about what we change and everything."* **Interview/ ACP1.**

However, one participant argued that changes in the job market occur so rapidly that a four-year degree may witness transformations in job roles that did not exist when students began the programme. This participant emphasised the importance of monitoring the evolving needs of the sector and reflected on the example of a flexible curriculum design in a UK HEI where modules adapt continuously to the fast-paced environment, where "*The course director has put in more nebulous modules. So, there's one called "transport through the window"* **Interview/ PBR1.** Finally, the same concept of block-theme teaching was noted to be implemented in the Netherlands, within UAS.

6.5.1.4 Summary of Modelling and Examining

During this phase, participants engaged in the fourth and fifth expansive learning action of Modelling and Examining, which involved co-developing and testing potential

solutions to the systemic contradictions identified in earlier phases of analysis. While envisaging an ideal system that could overcome the structural and relational contradictions identified earlier, examining required participants to critically assess these emerging models, considering their feasibility, potential limitations, and adaptability across contexts.

The modelling process required participants to move beyond critique and imagine alternative configurations of practice. Through collective dialogue, they began articulating how logistics HE could operate as an ecosystem of interdependent stakeholders rather than as separate institutional entities. While participants expressed enthusiasm for the process, they also acknowledged the challenge of reconciling competing interests and organisational constraints, especially across international and sectoral boundaries.

Three key areas of reflection emerged from this phase:

M&E1: Participants agreed that effective collaboration depends on stakeholder involvement supported by ecosystem thinking. They argued for frameworks that enable coordination without enforcement, recognising that "*government should set up the regulatory framework, and create a competitive landscape*" while avoiding overly prescriptive or "*tick-the-box*" interventions. Participants emphasised that trust and a "common language" across academia, industry, and professional organisations were prerequisites for sustainable cooperation.

M&E2: The training of involved actors was identified as essential for ensuring quality and alignment. Participants proposed continuous lecturer training to enhance pedagogical standards, professional development for administrative staff tasked with industry liaison, and qualified mentors to guide interns, drawing on examples such as Germany's Ausbilder model. These proposals reflected a shared understanding that sustained collaboration depends on investing in human capability across all levels of the system.

M&E3: Participants underscored the need to reform teaching, learning, and assessment practices to strengthen the link between theory and practice. They described logistics as more "*suitable for a practical way of approach*", emphasising internships, case studies, and applied problem solving as essential pedagogical tools. Examples from UAS in the Netherlands, where industry boards meet "*three times a*

year" to adapt the curriculum, were highlighted as models of agile and context-sensitive practice.

Together, these insights capture how participants moved from diagnosing challenges to modelling feasible solutions for a more coherent and collaborative logistics HE ecosystem. They uncover an emerging consensus around the principles of flexibility, trust, and capability-building, even as tensions persisted over standardisation and government involvement. The Modelling and Examining phases thus mark the conclusion of the expansive learning process, where participants proposed new collaborative models and critically reflected on potential directions for future transformation.

6.5.2 Manifestations of Transformative Agency

At this stage in the development of the ELC, expressions of transformative agency became more visible, emerging through participants' efforts to move from critical reflection to collective envisaging and planning. Rather than formulating a collective plan of action, participants offered tentative proposals and ideas for how collaboration between logistics HE and industry could evolve in the future. These suggestions reflected an emerging sense of shared responsibility, though often accompanied by hesitation about feasibility, commitment, and institutional support.

Participants acknowledged that meaningful progress would depend on the alignment of efforts across sectors and a willingness to sustain dialogue beyond the confines of the research process. Despite these uncertainties, there was a common belief that if different actors acted in concert, transformative outcomes could gradually unfold, benefiting industry, society, and the academic environment alike. In this way, participants acknowledged that meaningful transformation could not rest on HE alone; all actors, including industry, government, and POs, must take ownership of the process, challenge their own assumptions, and contribute actively to building a collaborative logistics ecosystem.

6.5.3 Design Elements Evident at this Stage

At this stage, the collaborative activity network appears to find stability through a constructive acknowledgement that there is the need for change. The previous contradictions appear to have settled with a consensus that a change of mindset is

required. The contradictions have helped participants develop through the ELC Zones of Proximal Development, through which it becomes clear that it is to the benefit of all, that collaboration at different levels across the multiple activity systems are required for the logistics domain to progress.

The germ cell identified at this stage of the intervention can be formulated as follows: the advancement of logistics HE requires the recognition of cross-sector collaboration, between academia, industry, and professional organisations, as the foundational unit of a transformed activity system, rather than as an optional supplement to existing institutional arrangements. This represents not the contradiction itself but the minimal conceptual solution to it: a simplified abstraction that captures the core relational shift required and from which more developed models of partnership can be derived. The collaborative frameworks and structural proposals that participants began to model in this phase, including tripartite governance arrangements, pracademic roles, and intermediary functions for professional organisations, should be understood as attempts to pursue and elaborate this germ cell, giving it operational form within the specific conditions of logistics HE.

The design elements at this stage represent a qualitative shift from all preceding phases. Whereas the earlier phases mapped divergent systems, traced their historical origins, and identified the contradictions sustaining them, the modelling and examining phase produces, for the first time, a design oriented toward integration rather than description. This shift is made visible by comparing Figure 6.3, which depicted three independent operating systems at the questioning phase, with Figure 6.9, which presents a fully integrated collaborative activity network in which HE, industry, and POs share a common object: advancing logistics through collaboration. This convergence on a shared object is the defining design feature of this phase and represents the most significant structural change across the entire intervention. It does not mean that contradictions have been resolved (participants remained cautious and conditional in their commitments) but it does mean that the design of the activity system has been collectively reimagined in a way that was not possible at earlier stages.

Figure 6.8 illustrates the elements that participants used as a basis for discussion during the modelling phase, showing the new model of activity as this has developed through direct and indirect interactions between participants. Participants accepted

that involvement of government is inevitable, nevertheless, should be kept flexible to motivate instead of deter actors, POs can help create a common language and assist on one hand HE to become more applied through the use of standards, working as intermediary between industry and academia for internships, curriculum development, LTA development, for instance working together on developing case studies or project-based learning activities, visits to industry, etc. Additionally, it could collect funds from government and allocate them to promising impactful collaborative projects between industry and academia.

It is significant that the role assigned to POs in this new design directly addresses the tertiary contradiction identified in the empirical analysis phase. The resistance to professional standards, which manifested as a reluctance to introduce shared frameworks into HE, is not resolved here but is reframed. Rather than standards being imposed on HE by external bodies, the envisaged design positions POs as co-creators of a shared language, developing frameworks collaboratively with academia and industry. This reframing of the rules and instruments of the central collaborative activity represents an implicit response to the germ cell identified above, even though participants did not name it as such. The rule-producing activity depicted in Figure 6.9, assigned POs and supported by industry and government, captures this reframing structure, positioning the development of shared standards not as an external imposition but as collaboratively organised function of the new activity system. The design of the new activity system thus encodes a response to the foundational contradiction of the research within its structural arrangements.

Table 6.11 outlines the key design elements that emerged during the modelling and examining phases of the ELC. It illustrates how participants collectively redefined each of the four activity systems, their objects, and their rules to envision a more integrated and practice-oriented collaboration between HE institutions, industry and POs as these are exemplified in Figure 6.9 below, which depicts the envisaged collaborative activity.

Activity System	Object/Purpose	Key Motives & Expectations	Proposed Resolution
Higher Education (HE)	*Enhance collaboration with industry through applied teaching, research, and professional development.*	*Integrate field-based, project, and simulation learning; strengthen practical relevance of curricula.*	*Develop faculty industry experience, encourage lecturer training, and promote pracademics bridging research and practice.*
Industry	*Partner with HE to co-design programmes and support applied research.*	*Participate in curriculum boards, internships, and field-based learning; accept students as collaborators.*	*Co-develop long-term structures (boards, co-funded research, student/learner integration)*
Professional Organisations (POs)	*Coordinate collaboration and uphold standards across the sector.*	*Provide professional and ethical standards; serve as mediators between HE, industry, and government.*	*Lead standardisation, facilitate communication, and align rules for impactful research and learning.*
Central Collaborative Activity	*Shared, sustainable ecosystem for collaboration between HE and industry, and as intermediate with government agencies.*	*Develop co-produced projects and teaching models that integrate theory and practice.*	*Strengthen policy support, ensure funding, and promote quality evaluation mechanisms linking all stakeholders.*

Table 6.11: Design elements at the Modelling and Examining phase - Envisaged Collaborative Activity Network mediated by a new central collaborative activity.

Comparing Table 6.11 with the design elements tables from earlier phases reveals the developmental arc of the intervention. The instruments of HE have shifted from LTA oriented toward knowledge transmission to field-based, project, and simulation learning oriented toward applied practice. The rules have moved from accreditation-driven metrics toward co-produced standards and quality evaluation frameworks. The division of labour has expanded from internally focused roles, faculty, administrators, students, to collaborative arrangements that include industry partners, professional bodies, and government agencies. These changes are not merely aspirational; they reflect the concrete proposals that participants generated through the CL process and represent the furthest point of collective modelling achieved within the scope of this study. Figure 6.9 presents the envisaged central activity for working together and synergising to advance logistics, depicting the structural outcome of this developmental journey across all four phases of the ELC. While the cycle did not extend to implementation and testing in practice, the redesigned activity system captured in Table 6.11 provides a coherent and theoretically grounded basis for future transformation.

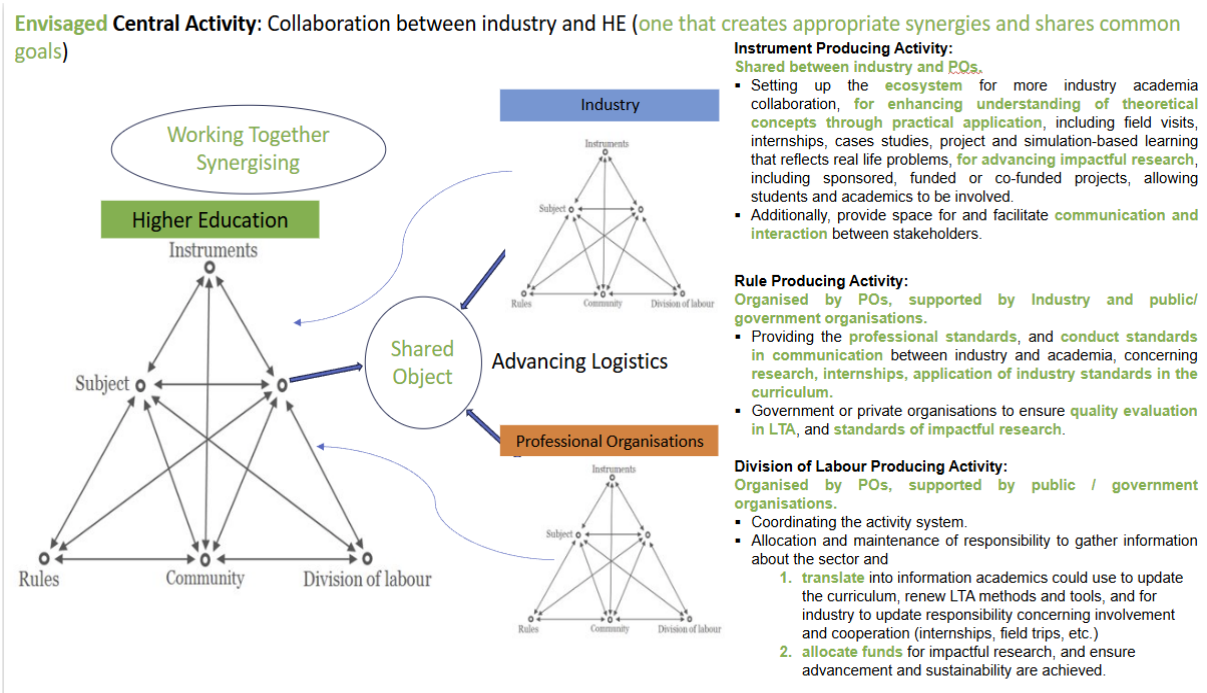


Figure 6.9: The envisaged central activity for working together and synergising to advance logistics.

6.6 Summary of Data Analysis

This chapter examined how stakeholders in logistics HE, industry, and professional organisations engaged in a structured CL process informed by AT. Through expansive learning action, questioning, analysing, modelling, and examining, the study highlighted both the promise and difficulty in creating collaborative change in a historically fragmented system. At each phase, the design elements of the activity system were mapped to show how the structural arrangements of HE, industry, and POs evolved across the intervention, from three independently operating systems at the questioning phase, through historically embedded divergence at the analysis phase, toward a collectively reimagined integrated network at the modelling and examining phase.

The findings, summarised in Table 6.12 below, illustrate that participants moved from initial critique of isolated practices towards a shared, though tentative, vision of co-production. Early discussions exposed deeply embedded contradictions and tensions: unclear and divergent business scopes, rigid evaluative systems, lack of practical experience, and weak intermediary roles. Historical analysis highlighted that these tensions arise from the long-standing undervaluation of logistics as a discipline, entrenched tenure and leadership structures, and cyclical industry engagement driven by market pressures. The distinction between traditional academics and pracademics, mapped as a primary contradiction within the HE activity system itself, further illustrated how the gap is reproduced from within HE as much as between HE and industry.

Empirical analysis highlighted how current practices, particularly in academic pathways, traditional teaching practices, limited industry engagement, and intermediary roles, continue to reinforce the divide, while also identifying the spaces where collaboration can grow. Crucially, the empirical analysis phase also surfaced the role of professional standards as the most persistently unresolved contradiction of the intervention. Introduced in Workshop 1, extended through the asynchronous sessions, and revisited in the semi-structured interviews, the standards debate never consolidated into a stable shared position, with participants consistently sidestepping the question of whether standards should exist at all, focusing instead on the practical difficulty of selection. This unresolved tension, traced in full in Section 6.4.1.4,

established the empirical foundation for the germ cell discussion in Section 6.5, where its latent generative role in shaping the emerging model for new practices becomes analytically visible.

ELC Learning Action	Themes arising from discourse
Questioning & Criticising:	Q&C1: Realising the Importance of Collaboration Q&C2: A Problematic Scope of Business in the Sector Q&C3: Addressing the Evaluative System in HE Q&C4: The lack of Practical Experience and Training Q&C5: Professional Organisations and their Role
Analysis:	
Historical Analysis	HA1: Status Quo: Logistics as Discipline HA2: The Role of HE within Industry and Society and the Role of Leadership
Actual-Empirical Analysis	AEA1: Tenure and Leadership and their Impediment to Change AEA2: Academic Practice and its Implications to Employability AEA3: Stakeholders' Diverging and Converging Interests AEA4: Professional Standards and their Implications to Quality and LTA
Modelling:	M&E1: Stakeholder Involvement & Ecosystems Thinking M&E2: Training of Involved Actors M&E3: Practice, Teaching, Learning and Assessment
Examining:	

Table 6.12: Instances of ELC learning actions and areas of interest arising during inductive analysis.

Through modelling and examining approaches, participants proposed practical mechanisms for change, including the introduction of training of involved actors, redefined teaching models, and the development of an ecosystem conducive to sustained collaboration. The envisaged design, captured in Table 6.11 and Figure 6.9, reframed the role of professional standards, positioning POs as co-creators of shared frameworks rather than external certifying bodies, representing an implicit structural response to the foundational tension identified through the germ cell, even though participants did not name it as such.

Through reflective dialogue, participants began envisaging applied, practice-based, and ecosystem-oriented approaches, including strengthening intermediary functions. Although collaboration proved difficult to achieve in practice, the process demonstrated that structured dialogue could foster transformative agency and open

new pathways for alignment between industry and academia. Overall, the chapter highlights both the potential and the complexity of creating sustainable, practice-oriented change in logistics HE. The developmental arc across all four phases, from divergent systems to an envisaged collaborative network, is captured structurally in the design elements sections and analytically in the identification of the germ cell as the contradiction that, though never resolved, continued to shape the proposals for new practice from beneath the surface of the discussion.

Chapter 7 Discussion

7.0 Introduction

This chapter serves as the culmination of the research presented thus far, focusing on synthesising the findings with two primary purposes: 1. to summarise the key findings and demonstrate how they address the research questions, and 2. to illustrate how these findings contribute to the existing body of knowledge in HE and "gap" research, highlighting the problematic relationship between logistics industry and HE. Building on the data and analysis detailed in the previous chapter, we now turn to a comprehensive discussion of the implications of these findings.

As established in Chapter 2, the existing literature presents various perspectives on the disconnect between industry and HE, yet it does not consider the historical and socio-cultural aspects that shape the relationship and interaction of actors in the logistics domain, such as industry and academia. This chapter revisits the literature, positioning the findings of this research within the broader context of industry-university collaboration and co-production to highlight where this study confirms, challenges, or extends current understandings. The structure of this chapter is designed to systematically explore these themes:

- How the research connects to the research questions, and
- Positioning the findings against existing literature

By methodically exploring these areas, this chapter aims to provide a nuanced understanding of the factors contributing to the gap between the logistics industry and HE, offering both theoretical and practical implications for future research and collaborative initiatives.

7.1 How the Research connects to the Research Questions

The thesis set out to conduct a holistic investigation into the relationship between the logistics industry and HE, with the aim of understanding how the dynamics between the two actors contribute to the persistent gap between academic preparation and

industry needs. Rather than simply diagnosing skills mismatches, this research sought to bring together stakeholders from both domains, fostering dialogue, mutual understanding, and transformative agency through a structured Change Laboratory intervention. The research was guided by two central questions:

Research Question 1: "*How can a collaborative research approach empower participants to advance collaborative transformation efforts and foster alignment between industry and academia through co-production, thereby enhancing graduate capabilities*?"

Research Question 2: **"***What factors contribute to the communication and collaboration gaps between logistics higher education and the logistics industry, and how do the dynamics and power relationships between these two actors influence these gaps?*"

The importance of studying logistics as a discipline lies not only in its critical role in enhancing competitiveness and sustaining national economies but also in its dynamic, evolving demands, which require a workforce prepared to navigate increasingly complex supply chains. Logistics HE plays a crucial role in meeting these challenges; however a persistent gap exists between the competencies nurtured in academic settings and the practical realities of industry, which jeopardises both graduate employability and industry innovation.

To address this, this thesis employed Activity Theory (AT) as a framework and implemented a Change Laboratory (CL) methodology, designed to create a space where industry professionals, academics, and professional bodies could actively listen to each other's perspectives, unearth systemic tensions, and collectively identify opportunities for expansive learning and transformative agency. The intention of this research is not merely to bridge the gap, but to foster a deeper shared understanding of the historical, cultural, and organisational factors shaping the disconnect, and to explore how new, collaboratively developed practices might emerge.

Through workshops, interviews, and asynchronous engagement, the research uncovered critical tensions: the divergent motivations and evaluation systems, within academia and industry; differing interpretations of quality, employability, and the role of professional bodies; and the limitations of current educational practices in embedding practical experience. Importantly, the intervention highlighted moments

where participants began to reframe their assumptions, envision collaborative solutions, and express transformative agency towards systemic change.

The variety of the tools used in the research, as discussed above, highlights the importance of collaborative research, but also underscores the challenges of implementing the Change Laboratory in addressing the gap. The implementation of the CL proved daunting. At first glance, one might assume that the primary challenge was the geographic distance and the selection of participants across different continents and time zones, which complicated the organisation of workshops. However, the main difficulty stemmed from constraints faced by practitioners and the persistent challenges in addressing the gap itself. These constraints on participating actors and the persisting difficulty in addressing the gap reflect deeper structural barriers within the activity systems under study. Despite the obstacles, maintaining a focus on the core concept of CL and activity theory facilitated progress. This focus allowed me to advance the work, even in the absence of other participants, by using interviews and mirror data to surface contradictions and navigate a deeply embedded, historically persistent issue.

Thus, this thesis contributes to both an empirical and conceptual advancement: it demonstrates how collaborative dialogue, supported by expansive learning methodologies, can deepen mutual understanding and catalyse relational transformation between logistics HE and industry. In doing so, it opens the topic to discussion not simply as a technical curriculum issue, but as a relational, systemic and developmental challenge for the future of logistics HE and practice.

7.2 Addressing the Research Questions

The findings of this research show that a collaborative approach, rooted in AT and operationalised through the CL methodology, enabled stakeholders from industry, HE, and POs to surface underlying tensions, explore each other's perspectives and co-develop preliminary shared understandings. This was facilitated through active listening and the use of mirror data, which served as a key stimulus for critical reflection and dialogue. While mirror data was initially employed during workshops to prompt interactive group discussions, it was later adapted for use in individual interviews to maintain its function as a provocation tool, encouraging participants to reflect critically and consider alternative viewpoints. This process supported the co-development of

preliminary shared understandings among stakeholders, despite differences in roles, priorities, and institutional cultures.

However, while this collaborative process proved successful in creating a space for mutual understanding and recognition of systemic issues, it did not directly lead to the joint development of novel or implementable solutions. The entrenched nature of institutional boundaries, conflicting priorities, and limited time for collective modelling meant that participants could identify contradictions and envisage possibilities but struggled to translate these into coordinated actions. As a result, the research subsequently adopted a more analytical, interview-based phase to deepen understanding of these constraints and capture individual reflections that could not fully emerge in the group context.

In this sense, the study highlights both the promise and the difficulty of applying a collaborative research approach within the context of logistics HE and its industry interfaces. The process revealed the potential of expansive dialogue for aligning perspectives across academia, logistics industry, and professional organisations, enabling stakeholders to articulate shared priorities and mutual challenges. Yet it also exposed the practical and cultural challenges specific to this field, such as misaligned institutional incentives, differing scopes, and persistent divide between theoretical and applied knowledge, which constrains the transition from shared understanding to collective transformation.

7.2.1 Addressing Research Question 1

This study set out to address this question, RQ1: "*How can a collaborative research approach empower participants to advance collaborative transformation efforts and foster alignment between industry and academia through co-production, thereby enhancing graduate capabilities*?". Drawing on the Change Laboratory (CL) and the Expansive Learning Cycle (ELC), this study demonstrates how a collaborative and interventionist research design empowered participants from academia, industry, and professional organisations/ bodies (POs) to identify systemic contradictions, develop transformative agency, and co-create models for change within logistics HE.

Through the use of structured dialogue, double stimulation and mirror data, used in workshops and semi-structured interviews, participants progressed through several

phases of the ELC, moving from questioning to modelling, and towards consolidation of new perspectives. Importantly, this process was not only a progression through phases but also a rich learning experience, enabling participants to gain insights about the failures of the current system. Extending the CL methodology beyond the initial workshops, which by themselves fell short, and into the semi structured interviews, proved crucial in creating the conditions for learning and development. Through this unique experience, participants not only confronted the deeply rooted tensions in the current activity system but also transitioned from critical observers to active co-producers of alternative futures. While the cycle did not reach the phase of examining and testing new models in practice, the emergence of shared understandings and initial proposals suggest meaningful movement towards potential transformation.

In the sections below, I will draw on the theoretical framework, using the actions of expansive learning to map the collaborative approach as a process and the manifestations of transformative agency to trace how participants' empowerment could be seen to have emerged in their contributions to the project. Table 7.1 plots the expansive learning actions against transformative agency expressions.

	Questioning	Analysing	Modelling	Examining
Resisting	Industry and academic participants defend HE-industry boundaries ("there has to be a gap"); industry claims: "not our business to educate"; academia "training not most important" (Section 6.2.2). Industry and academic participants express their lack of interest in collaboration (Section 6.2.1.4)	Many academics showed resistance to changing entrenched academic traditions "we have always done it this way" and "we do not need to change" mindset (Section 6.3.1.2) Some academics and industry participants have expressed their reservations on the role of POs seen as unnecessary or ineffective (Section 6.4.1.3) Many academic participants express opposition to the use of professional standards in HE (Section 6.4.3)	Many participants (mainly academic) push back on the implementation; administering internships: flexibility required (Section 6.5.1.3)	Some academic and industry participants resisted feasibility of suggestions for teacher training regarding industry networking (Section 6.5.1.2 – train individuals with such admin responsibilities)
Criticising	Many academic participants have criticised evaluation and accreditation bias/fabrication and the focus on content (Section 6.2.1.2). Many industry and academic participants have criticised HE programme development. Claims of "hypocrisy"; HE pedagogy "boring/crappy teachers" (Section 6.2.1.3) Industry and academic participants label POs as "lobbyists" focusing on profit over evaluation (Section 6.2.1.1) Industry and academic participants criticise communication failures and misaligned priorities on both sides (Section 6.2.3)	Many participants critiqued the "red brick" philosophy emphasising a teaching-centric approach (Section 6.3.1.2) Some academic participants criticised the way research is undertaken, characterising it as "salami slices of existing research" (Section 6.3.1.2) Industry participants critique academia's misaligned priorities and risk of irrelevance (Section 6.4.1.1 – "ivory towers", doctoral education) Some academic participants criticised previous generation logistics professionals as undervaluing HE (Section 6.4.1.3 – I didn't need it!)	Implicit criticism of the role of academics as impeding communication and alignment with industry (Section 6.5.1 and 6.5.1.1)	Some academic participants critique the feasibility of proposals (Section 6.5.1.1 government too strict, Section 6.5.1.3 and 6.5.1.4 – curriculum reviews and their timing
Explicating	Participants from POs identified that an element of application confirms "logistics is an applied science" (Section 6.2.1.3) Many participants identified the existence of siloes and lack of shared scope visible; "we have this problem where we work in siloes" (Section 6.2.2) Many participants have highlighted that programmes are built "on the competencies of the faculty and not the requirements from the market" (Section 6.2.2)	Industry participants highlight misaligned priorities and risk of irrelevance based on tenure track/ research KPIs/ theoretical nature (Section 6.3.1.2 – …tenure trajectory, from BA to MA to PhD, maybe Post Doc, then faculty. No connection to industry. Some academics suggested that the "historical prevalence of unionisation has exacerbated the divide" (Section 6.3.1.2) Many participants identified an undervaluation/neglect of logistics as a persistent issue across academia, industry, POs and government (Section 6.3.1.1) All participants identified complacency in HE entrenched academic culture and the role of leadership as reasons for the gap (Section 6.3.1.2 – Section 6.2.1.4) Many academic and PO participants explained the way tenure-track is designed it isolates academics from industry (Section 6.4.1.1 – from BA to postdoc, to faculty)	Some participants, stated that logistics is not different from other disciplines that have gone through the same process, but the model that could work would be a lot more complicated and delicate process (6.5.1) Some academic participants highlighted the difference in stakeholder goals, such as, "ivory towers" mentality, poor networks, CRM gaps, tick-boxing quality assurance (Section 6.5.1.1)	Many participants scrutinised envisaged models against practical examples – practical systems in Germany (Section 6.5.1.2), UAS practices in the Netherlands; flexible curricula in the UK (Section 6.5.1.3)

Envisaging	Many academic participants expressed an implicit desire for a change in the evaluative system of HEIs (Section 6.2.1.2) Many academic participants emphasised the need for "more practical pedagogy" (Section 6.2.1.2)	Many participants place emphasis on treating logistics as a profession to attract youth and legitimise the discipline (Section 6.3.1.1 – changing the perception that logistics is lorries driving the motorway…) Many industry and PO participants identified the Covid-19 pandemic as a turning point in raising the visibility of logistics (Section 6.3.2) Some academic participants envisaged the emerging role of the "pracademic", to ensure quicker response and better listening - responding to industry requirements (Section 6.3.3 – envisaging more responsive universities) Many participants begin to suggest that academic pathways should incorporate practical, real-life/problem-based logistics training (Section 6.4.2 - Reality of logistics is cracking solutions)	Many participants envisaged POs support for curriculum and assessment reforms aligned with industry standards (Section 6.5.1.1). Many participants envisage collaborative systems and applied pedagogy are essential to the future of logistics HE (Section 6.5.1 and 6.5.1.1 – Ecosystems Thinking! – Section 6.5.1.3 – logistics is an applied science). Some participants suggest the necessity of industry exposure to academic staff (Section 6.5.1.2 teacher training programmes – ability to create networks with industry). Many participants see pracademics, the government in conjunction with POs as intermediaries – creators of a common language (Section 6.5.1.1 and 6.5.1.2) Some academic participants envisaged a holistic approach to changing the curriculum (Section 6.5.1.3 – block-theme teaching, without indicating nevertheless how this system should be applied and when it should be reviewed) Many participants agree that integration should be implemented carefully to avoid tick-the-box outcomes (Section 6.5.1.4)	Many participants test envisaged models by debating frequency of curriculum reviews; stressing network vs institutional systems; envisioning flexible government role in existing systems (Section 6.5.1.1)
Committing	**Low/absent** – Many participants made clear that they could not commit to stating that they are too time consuming (Section 6.2.1.1 "that is not our job", Section 6.2.2 – "we never have time"	**Emerging/ tentative** – Some participants have recognised the risks "we are in real danger, and I think we ve got to change that mindset" (Section 6.3.2) **Emerging/ conditional** – Many participants showed at this stage more solid commitment to change. Participants, especially from POs have recognised the undervaluation of logistics and have articulate that "the turning point has come" (Section 6.3.2)	**High level of Commitment** - Many participants expressed the need for renewal and away from the traditional way of doing things and discussed best practices, examples of flexible curriculum implementation (Section 6.5.1.3) Many participants commonly agreed that "if all parties pull their weight, there will be a fruitful outcome for all" (Section 6.5.2) Many participants emphasised on real-life, everyday problems demonstrate awareness of what needs to be addressed in education (Section 6.5.1.2 – Section 6.5.1.3). Many participants highlighted the need of re-evaluating stakeholder roles and the importance of flexibility over enforcement (Section 6.5.1.4)	
Taking Action				Not present in this study – only external cases discussed (Section 6.5.1.3)

Table 7.1: Dashboard summarising manifestations of transformative agency across the various parts of the ELC.

The table above maps the phases of the Expansive Learning Cycle (ELC), against transformative agency expressions. It displays participant engagement and the progressive struggle to overcome the systemic contradictions embedded in the current logistics HE activity system. As illustrated throughout the previous chapter the research design actively empowered participants not just to voice concerns, but to critically analyse their roles, question prevailing practices, and contribute to the reimagining of logistics HE. This empowerment was not abstract, but was realised through structured dialogue, double stimulation techniques, and collaborative modelling that gave participants agency to express themselves deeply and openly, influence decisions and propose viable alternatives. Each form of transformative agency as presented in the table above (resisting, criticising, explicating, envisioning, or committing to change and taking action), played a concrete role in surfacing and navigating the tensions between academia, industry, and professional bodies. In this way, the research process itself functioned as a mechanism of empowerment, enabling participants to shape the direction and content of the proposed new activity system for logistics HE.

Building on these manifestations, each category of transformative agency contributed uniquely to the research findings by revealing and working through systemic contradictions. The overall picture across the intervention is summarised in Table 7.1 above, which illustrates how expressions of transformative agency developed alongside the learning actions of the ELC. The table shows a clear trajectory: participants began resisting and criticising in the questioning stage, often defending established practices, voicing frustration, or rejecting the idea of closer HE-Industry collaboration. As the cycle progressed, these resistant stances gradually gave way to explicating contradictions in both historical and contemporary practice, enabling participants to articulate their concerns about topics and areas of concern other actors might not have been aware of, such as evaluative practice and KPIs, undervaluation of logistics as a profession as well as an academic discipline, tenure, and leadership.

This paved the way for envisaging new solutions in the modelling phase, where participants moved from critique to creativity, exploring ideas such as pracademics, applied pedagogy, flexible curriculum design, and the role of POs and government in facilitating collaboration. By the examining stage, a higher level of commitment became visible: participants collectively agreed that change was necessary and that

“if all parties pull their weight, there will be a fruitful outcome”. While direct action-taking did not occur within the study, participants referenced external models (e.g. UAS in the Netherlands, UK flexible curriculum examples and Germany’s administrative support frameworks) as benchmarks suggesting readiness to translate conceptual commitments into practice in the future.

This overall trajectory from resistance through critique, explication, and envisioning towards collective commitment highlights the development of transformative agency, enabled by the Change Laboratory methodology. The following paragraphs unpack this progression in greater detail, drawing on concrete examples from across the intervention to illustrate how participants’ agency evolved in practice.

In the initial phases of the ELC, **questioning and criticising**, were marked by expressions of **resisting** and **voicing discontent**. This form of transformative agency served as a catalyst for deeper reflection, laying the foundation for critical engagement. Double stimulation techniques and mirror data played pivotal roles in surfacing latent frustrations and creating a psychologically safe space for critique. Participants began to challenge prevailing assumptions about logistics HE, surfacing concerns about curriculum relevance, institutional KPIs, tenure pathways, and the lack of alignment with industry needs. For instance, the struggle of *resistance* is evident in the table, for academics Section 6.2.2 includes the following instances – “*there has to be a gap!*” and “*education is never effective… and cannot be effective*”. An earlier section highlights this struggle when in a discussion academics oppose the use of industry/ professional standards, Section 5.5.3 – “*these [frameworks] are different, how do we know which one is most complete?*” who agreed that *“there are enough rules as it is… we do not need them”.* Industry professionals also expressed their fair amount of resistance, in examples such as “*we never have time…”* or “*academics are on their ivory towers… obsessed with research*”*.* These statements represent not only the first stimulus but also reveal contradictions in expectations, values, and time horizons between the two systems.

As the CL sessions progressed and more input was collated through semi-structured interviews, **criticism** emerged as a deeper form of agency, making the transition toward systemic analysis. By fostering open questioning through structured dialogue, this collaborative research empowered participants to move from resisting to critique,

a key expression of transformative agency that lies at the heart of collaborative transformation.

For instance, in Section 6.3.1.2 one academic reflected that "*academia has always been complacent of its role…"* and in the same section, described how tenure tracks prevent meaningful interactions with industry and as a result "*there is little cross fertilisation between business and academia*". Similarly, in Section 6.2.1.2, participants criticised academic leadership, noting "*I think KPIs have driven the wrong behaviour…leadership in academia has not been good mentorship".* Leadership was therefore viewed as partially responsible for the lack of industry relations. Another academic participant observed in Section 6.4.1.1 – industry engagement was marginalised in performance reviews, "*it is not the first thing we get to talk about when we have our [performance review] - [which primarily focuses on producing research]*", while teaching had become "*a fourth priority… and if something is 4th priority, priority no longer applies".*

Through this process, participants used their agency not just to voice dissatisfaction but to collectively reveal embedded structural problems in academia that hinder collaboration and alignment with industry. These critiques demonstrate how a collaborative research approach can empower participants to advance transformative efforts by identifying systemic barriers that limit co-production and shared responsibility for improving graduate outcomes.

During this phase, dissatisfaction also extended towards Professional Organisations, originally brought in as part of a holistic-inclusive approach to the logistics activity system. In Section 6.2.1.1, one participant remarked "*FIFA representatives are certainly not the right ones to speak about soccer players*" reflecting the perception that organisations lacked credibility and contributed little to alignment. While participants were critical of such superficial or financially motivated involvement, they also emphasised the importance of involving multiple stakeholders in any co-produced solution. This progression illustrates how the collaborative research approach, through the CL methodology, empowered participants to move beyond voicing individual dissatisfaction into expressing systemic contradictions, an essential foundation for advancing collaborative transformative efforts.

With critique as a foundation, participants moved into the **analysis** phase. By fostering systemic analysis through mirror data, this collaborative research approach empowered participants to explicate embedded **actual-empirical** and **historical** contradictions that sustained the gap between academia and industry. For example, in Section 6.3.1.1 one participant noted: "*Nobody treated or treats international trade as a real discipline… the government's message is always this is easy, just do it! They [people working in logistics] are not being valued in the same way"*. Other reflections reinforced this undervaluation: "*logistics was not regarded really as an academic topic until relatively recently"* and "*was about lorries on the motorway".* Through these reflections, participants articulated how structural undervaluation contributed to the gap between industry and HE.

Moreover, within academia, faculty development was criticised for its narrow-mindedness. In Section 6.4.1.1, participants described the "tunnel" approach where "*they take a brilliant student, suggest a PhD, then offer a postdoc, then have the same person as researcher, and then member of faculty*", which leaves the faculty "*without any business experience*", leaving little space for industry engagement. These discussions directly relate to graduate capabilities, as participants recognised that this tunnel approach limits the practical preparation of students and widens the gap between industry needs and academic outcomes. In Section 6.2.1.2 the "*massive risk*" associated with KPI-driven behaviour was also highlighted, where performance metrics, shaped by International Ranking Organisations, prioritised research over engagement. By surfacing these contradictions, participants used their agency to identify how institutional structures obstruct co-production and alignment, demonstrating empowerment through collaborative analysis.

During this phase, participants also scrutinised the role of Professional Organisations/ Bodies (PO), noting their limited influence and fragmented responsibilities. Although critical of POs, participants reaffirmed the need for cross-sectoral collaboration to achieve alignment between industry and academia, recognising that co-production depends on shared authority and communication across systems. As one participant stated in Section 6.5.1.3 – "*they have a network within the industry, and that's a good thing"*, while another emphasised the importance of having good connections with the logistics association, suggesting that, despite shortcomings, participants viewed POs

as potential enablers of co-production capable of linking academia, industry and government.

In the **modelling** phase, participants began to co-create potential solutions. They proposed a new conceptual framework, in the form of a tripartite model representing the roles of academia, industry and professional bodies. Through the phase of collaborative envisaging, the research approach empowered participants to move from abstract critique to co-production of new ideas, demonstrating their capacity for collaborative transformation efforts. For instance, Covid-19 was seen as an opportunity to create visibility into the challenges of the sector: "*organisations suddenly thought this is important… and all of a sudden the importance of the discipline has come from back to front*" (Section 6.3.2). Participants also envisaged the government as a key supportive stakeholder, expected to provide funds and incentives without overregulating (Section 6.5.1.1).

Participants proposed reforms to enhance graduate capabilities by linking teaching more closely to practice. In Section 6.5.1.2, participants argued that lecturer training and stronger industry interaction would allow academics to stay abreast of developments in the field related to emerging practices and technologies. Through collaborative dialogue, they proposed tangible methods, such as simulations, industry projects, internships, block-theme teaching, and the introduction of the "pracademic", to integrate theoretical and practical learning. These proposals exemplify how a collaborative research approach empowered participants to co-produce ideas that strengthen alignment and directly improve graduate readiness for industry.

Participants also recommended administrative support roles, such as the Ausbilder model in Germany (Section 6.5.1.2), to connect companies and universities in better supporting interns through their industrial experiences and making the necessary connections. Although context-specific, such proposals further demonstrate the transformative potential of dialogue in advancing collaborative reform. Many participants further emphasised the absence of a "*common language*" between all the different actors, as a major barrier. By highlighting this, participants emphasised that alignment requires not only institutional reform but also cultural and communicative bridges.

Although **examining** as an ELC phase, did not involve testing a novel model, participants benchmarked their proposals against external cases such as Universities of Applied Sciences and UK-based examples. In doing so, they compared their ideas to successful implementations that had achieved a balance between research, theory and practice through the inclusion of pracademics. By fostering reflective benchmarking, this collaborative research approach empowered participants to extend their co-production efforts and move closer toward collaborative transformation, even though this remained at a conceptual stage.

At this stage in the research, participants demonstrated a clear commitment to action, voicing the need for systemic renewal within logistics HE. Emphasising the applied nature of logistics and the need to address real-life operational problems, participants collectively supported a transition to more practice-based approaches. By engaging in this reflective benchmarking, participants extended their collaborative transformation efforts, translating critique into conceptual innovation.

In summary, the developmental environment fostered by the CL methodology, through double stimulation, mirror data and structured dialogue, empowered participants to transition from resistance to constructive agency. It enabled them to advance collaborative transformation efforts to transition from resistance to constructive agency, foster co-production between industry and academia, and propose actionable ways to enhance graduate capabilities. Mirror data in particular created a safe yet challenging reflective space, especially when discussion stagnated. It provoked recognition of systemic contradictions, facilitated analysis, and reinvigorated critical thinking. These mechanisms empowered participants to assume responsibility for shaping a new logistic activity system. Regarding co-production, participants used their agency to move from isolated criticism (blame game) to joint modelling and collective envisaging of new approaches and solutions. While no direct implementation occurred, these outcomes demonstrate how collaborative research approach can empower participants to foster alignment between academia and industry and lay the groundwork for enhancing graduate capabilities.

7.2.1.2 Addressing Research Question 2

Key findings that support RQ2: **"***What factors contribute to the communication and collaboration gaps between logistics higher education and the logistics industry, and how do the dynamics and power relationships between these two actors influence these gaps?*", can be recognised in the multiple factors identified by participants themselves in the ELC process. To address Research Question 2 it is essential to examine how these gaps were surfaced through the identification of underlying contradictions. Using the framework of AT and the CL methodology, the study analysed the activity systems of both academia and industry, focusing on their motives, tools, rules, division of labour, and community. Viewing these challenges as contradictions is crucial because it enables the analysis to locate problems structurally within their systemic and historical contexts, rather than attributing them to individual shortcomings. Moreover, contradictions are generative, meaning that they expose the tensions that both constrain and propel transformation, pointing to pressures for change within and between the two systems (Moffitt and Bligh, 2024).

The process of identifying contradictions started by analysing the data from the collaborative workshops and semi-structured interviews, as well as online asynchronous interaction. As participants engaged in dialogue, tensions were externalised and became visible sites of tension, highlighting both the disconnections and the opportunities for rethinking the logistics education system. These contradictions became apparent when stakeholders attempted to jointly plan or reflect on collaborative activities, only to encounter misaligned expectations, differing terminologies, and incompatible institutional logics. For example, academia was understood to be driven by knowledge production, theoretical frameworks, and educational KPIs, while industry was more focused on efficiency, immediate problem solving and market competitiveness. The differences are not merely operational but are shaped by distinct historical trajectories and power structures, which manifest in how each actor perceives time, success, and responsibility. As these contradictions were brought to the surface (Table 7.2), it became clear that they are not just by-products of miscommunication but are constitutive of the systems themselves, directly leading into and reinforcing the communication and collaboration gaps.

Level of Contradiction	Contradiction Theme	Systemic Location	Description
Primary	*Tensions between knowledge generation vs practical application.*	*Tools (within Academia)*	*Reliance on theoretical models and academic KPIs conflicting with the practical needs of the logistics field.*
	Lecturers are the product of closed tenure loops (PhD-Postdoc-Faculty).	*Subject (within Academia)*	*Reliance on faculty that has no industry experience.*
	Industry supports academia only when there's immediate benefit.	*Object (within Industry)*	*The industry's object of having a "skilled workforce" is when labour shortages or cyclical market demands pressure them to do (short vs long term commitment)*
Secondary	*Universities' contribution toward employability.*	*Subject – Object (within Academia)*	*Academics aim to produce knowledge and meet academic KPI's overlooking the development of industry fit graduates.*
	Reinforcement of Siloed practice.	*Rules – Division of Labour (within Academia)*	*Academic KPIs and research output vs expectations to teach and engage with industry.* *Industry KPIs based on profit, speed and efficiency vs expectations to workforce planning and innovation.*
Tertiary	*Resistance to integrating professional standards.*	*Resistance to Practice-Based Change*	*Academia's bureaucratic model avoidance culture regarding adapting professional standards.*
Quaternary	*Industry sees logistics as "applied science" but is met with hesitation from academia who is prioritising theory.*	*Academia vs Industry Activity Systems*	*Real-world demands in the logistics industry give rise to contradictions with the academic system, particularly regarding differing views on what constitutes "valuable knowledge".*
	Difficulty in communicating HE needs with Government and Ministries.	*POs/HE vs Government*	*Historical divide obvious in the structures of Ministries, not interested in understanding the needs of logistics HE.*

Table 7.2: Summary of the Contradictions.

The table above presents eight key contradictions. These contradictions emerge across several interacting activity systems, including logistics HE, the logistics industry, professional organisations, and government (agencies), rather than being confined to a single system. They represent systemic and historically embedded tensions that continue to hamper effective communication, collaboration, and alignment between these actors. Drawing on Engeström's AT and framed by the CL methodology, the analysis demonstrates how power relationships and structural dynamics both shape and reinforce these gaps. Importantly, these contradictions do not operate in isolation, rather they are experienced, resisted, and transformed through expressions of transformative agency across multiple phases of the ELC.

Primary contradictions surfaced clearly within the HE activity system. The first centres on the tension between theoretical knowledge generation and practical application. This reflects a misalignment between the tools of academic practice, particularly theoretical models and publication-driven KPIs, and the object of logistics HE, which should respond to the applied needs of the field. As one academic participant observed, "*Academics have been a little bit in their ivory towers… obsessed with research (Section 6.4.1.1)".*

However, perspectives among academics were not uniform. Some, particularly those with industry backgrounds, shared this concern and emphasised the need for stronger engagement with practice. Others, however, defended the current system, arguing that theoretical approaches offer long-term insights that industry often overlooks due to its short-term focus. As one participant noted, "*our role is to think beyond immediate solutions; industry wants quick fixes, but research takes time*".

A second primary contradiction concerns the composition of the academic workforce, located at the subject level. The system reproduces academic staff through closed tenure loops, limiting exposure to industry experience "… *take a brilliant student, suggest a PhD, offer a postdoc and then they become faculty*" (Section 6.4.1.1). This structural cycle weakens curriculum relevance and limits faculty understanding of real-world logistics operations.

On the industry side, a third primary contradiction arises in the object of the activity system. One noticeable tension is that between short-term efficiency and long-term workforce development. While companies claim to need a skilled workforce, their

engagement with education is largely transactional and driven by immediate needs rather than sustained partnerships. This contradiction in the industry's object reflects a misalignment of motives that limits meaningful collaboration and long-term co-production with HE.

Secondary contradictions emerged from conflicts between components within the same system. Within academia, tension exists between the rules (e.g. meeting Key Performance Indicators focusing on research outputs) and the division of labour (expectations to teach and engage with industry). As one participant explained, "*it is not the first thing we talk about when we have our performance review*" (Section 6.4.1.1), indicating that industry engagement remains peripheral to institutional priorities, with direct implications for alignment and co-production. This contradiction underscores how universities' focus on research performance diminishes their contribution to employability and practical skill development.

A parallel secondary contradiction exists within industry, where internal rules prioritise profit, speed and efficiency, while the division of labour increasingly demands innovation and long-term talent development. The tensions create siloes and misaligned expectations between what each system claims to value and what it structurally enables. The implications for collaboration are visible in participants' repeated observations of the lack of personnel to support partnerships with HE, meaning collaborative research or projects often depend on the ad-hoc involvement of individuals rather than systemic commitment.

Tertiary contradictions reflect resistance to practice-based change within academia. Some participants rejected the introduction of professional standards or applied pedagogies outright: "*there are enough rules as it is… we do not need them*" (Section 6.2.2). This resistance to curricular innovation sustains outdated teaching models that struggle to keep pace with the applied, fast-evolving nature of the logistics work.

The contested role of professional standards within logistics HE emerged as the generative core of this research, though its trajectory across the intervention was uneven. Introduced explicitly early in the CL process (Section 5.5.3), it provoked immediate and strong resistance. Despite this initial salience, it was not sustained as a shared focus in subsequent workshops. The asynchronous engagement activities were deliberately designed to extend this discussion and invite participants to reflect

on whether and how professional standards should be embedded in logistics HE. However, participation was sparse, and those who did respond largely sidestepped the question of whether standards should exist at all, focusing instead on the practical difficulty of selection: "*these frameworks are different, how do we know which one is most complete?*" **Participant/Notion.** When the issue was revisited in the semi-structured interviews, the pattern persisted, few participants offered a clear position on the matter. While the concept of standards resurfaced at different points across the research, each time gathering new associations, it never consolidated into a stable shared position. This difficulty in collectively holding the question, rather than diminishing its significance, underscores the depth of the contradiction: professional standards represent a tension so embedded in the structural and cultural divide between academia and industry that participants found it difficult to collectively hold, let alone resolve.

Nevertheless, the emerging model can be read retrospectively as an implicit response to this foundational tension, even though participants did not develop the germ cell into a stable conceptual framework during the intervention itself. The tripartite collaboration framework, the pracademic role, lecturer training programmes, and ecosystem-oriented partnerships, each address, in different ways, the absence of a shared professional language that agreed standards would otherwise provide. That participants arrived at these proposals without explicitly naming professional standards as the driver, suggests that the contradiction was operative even when invisible, shaping the emerging model from beneath the surface of the discussion.

Quaternary contradictions extended to neighbouring activity systems, highlighting the systemic interdependencies between academia, industry, and government.

The first arises between industry and HE, where a divide exists in their understanding and valuation of knowledge. This contradiction occurs between academia and industry activity systems and reflects fundamentally different views of what constitutes valuable knowledge. Industry regards logistics as an applied science, but this view often clashes with academia's preference for theory abstraction. This clash was summarised by one participant's question: "*where is the actual application to the shop floor?*" (Section 6.4.2).

The second quaternary contradiction arises between professional organisations and HE on the one hand, and government on the other, whose institutional structures created siloed governance between educational and infrastructural ministries. As one participant clearly explained: "*They would tell me to speak to the Minister of Infrastructure, because they speak your language*" (Section 6.4.1.4). Another participant from academia observed that *"most of the organisations, especially government ones, work in* siloes" while a second added that *"the changes are within different ministries but not communicated across* departments". These reflections illustrate how fragmented governance and overlapping mandates hinder coordination across systems. Such bureaucratic boundaries reinforce institutional fragmentation (siloes), constraining opportunities for integrated policy development and systemic integration.

Considered together, these contradictions illustrate a misalignment not only within the activity systems of academia and industry but also between them and their broader institutional neighbours. These tensions are maintained and magnified by differences in priorities, timelines, evaluation mechanisms, and even language, all of which exacerbate communication and collaboration gaps. Importantly, identifying and naming these contradictions through collaborative examination proved productive. Participants gradually moved from resistance and critique towards envisaging alternatives, such as POs acting as translators of a "*common language*", the emergence of the "*pracademic*", expanding internship models, and policy frameworks that enable, but do not overregulate collaboration. These proposals show how contradictions, once surfaced, can become resources for co-production and collaborative transformation.

Figure 7.1 presents the envisaged central activity system as organised around three interconnected producing activities, instrument, rule, and division of labour, and this structure warrants explanation. These three components were not chosen arbitrarily; they correspond directly to the most deeply contested nodes of the activity system as revealed through the contradictions analysis in Table 7.2. The instrument producing activity, shared between academia, industry, and professional organisations, addresses the primary contradiction between knowledge generation and practical application by proposing concrete mechanisms, e.g. internships, simulation-based learning, co-funded projects, and field visits, through which theoretical and applied

knowledge can be brought into productive dialogue. The rule producing activity, organised by professional organisations and supported by industry and government, responds directly to the tertiary contradiction and to the germ cell itself: the absence of agreed professional standards and conduct frameworks that could create shared expectations, trust, and quality assurance across academia and industry. The division of labour producing activity addresses the quaternary contradictions of siloed governance and fragmented intermediary capacity, by clarifying who coordinates the system, who translates knowledge across sectors, and who allocates responsibility for sustaining collaboration. Together these three producing activities represent a model that does not simply describe a desired future state but maps a set of functional responses to the specific structural contradictions that participants identified as sustaining the misalignment between logistics HE and industry.

Finally, the communication and collaboration gaps between logistics HE and industry, are deeply rooted in multilevel systemic contradictions that span historical, cultural, and structural domains. These contradictions are maintained by institutional power dynamics and conflicting motives, but they can be addressed through a participatory and expansive learning process that empowers stakeholders in reimagining the future of logistics education (Figure 7.1). The dynamics between academia and industry are deeply historical and shaped by power imbalances, sector-specific cultures, and competing priorities. The participatory structure of the CL allowed these tensions to surface and to be discussed openly by participants.

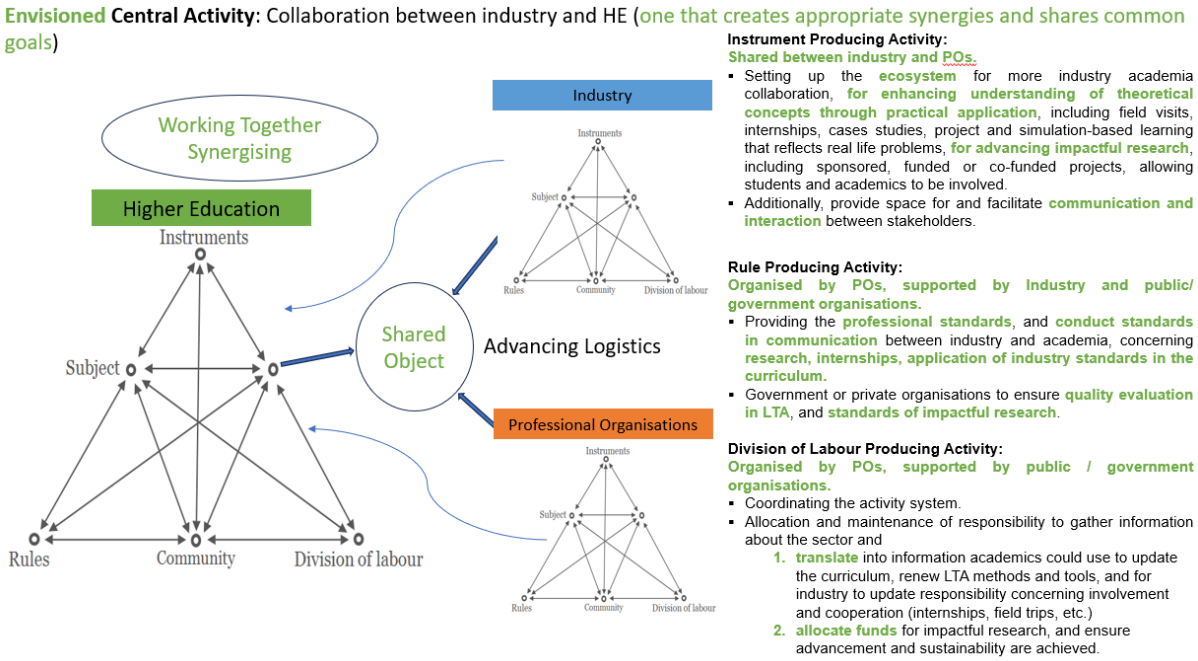


Figure 7.1: Logistics domain Activity System at later phases of the research.

7.3 Contributions to Knowledge

The study emerges from a practice-informed, critical investigation of the persistent disconnect between HE and industry, specifically in the logistics sector. The literature review was undertaken to critically explore the relational and structural dynamics underpinning the disconnect between HE and industry, with a focus on the logistics sector. It examined two key areas, namely: 1. Industry-University collaboration, highlighting how a lack of engagement has contributed to skills and curriculum gaps, and 2. Co-production across organisational boundaries, exploring boundary crossing and spanning as potential mechanisms for more sustainable partnerships.

Building on these insights, this study offers a distinct perspective that moves beyond diagnosing gaps towards exploring the relational and systemic conditions that perpetuate them. From this perspective emerge two overarching areas of contribution (Table 7.3): Industry-University Collaboration, Co-production between industry and academia, which directly align with the themes established in the literature review.

Area	Contribution	Evidenced Through
Industry-University Collaboration	*Broadening the focus from a skills gap towards a need for relational process (ecosystems thinking)*	*Challenging the dominance of skills-gap and deficit framing in logistics HE research by showing that relational processes and multi-stakeholder dialogue generate more actionable insights than skills surveys or gap analyses.*
	Identifying historical and structural challenges that contribute to the divide.	*Revealing how institutional mechanisms, such as accountability systems, KPI-driven performance rules, and closed-tenure loops, reproduce distance between academia and industry, shifting the focus from blame game to systemic understanding.*
	The role of intermediaries in bridging systemic divides across industry, academia, and government	*Demonstrating that intermediary structures must go beyond partnership models (e.g. the Triple Helix) to address deeper misalignments in values, discourses, and institutional logics that hinder collaboration.*
Co-production between industry and academia	*Extending co-production beyond curriculum design towards, translation, sustainable collaboration, and transformative change*	*Showing that co-production should evolve from one-off curriculum initiatives to sustained and mediated, transformative engagement that co-produces understanding and redefines inter-organisational relationships.*
	Demonstrating how dispersed stakeholders can be brought together meaningfully	*Illustrating how dispersed stakeholders can be convened to collectively surface contradictions, negotiate shared priorities, and co-develop pathways for ongoing collaboration and system-level learning.*

Table 7.3: Summary of Contributions to Knowledge.

7.3.1 Contribution 1

Broadening the focus from a skills gap towards a need for relational process (ecosystems thinking)

This research contributes by broadening the focus *beyond a conventional perception of the "skills gap"* (Radermacher and Walia, 2013; Ramesh, 2017; Tushar and Sooraksa, 2023) that dominates academia-industry debates. Much of the existing literature adopts a deficit or input-output failure view, assuming that industry needs are fixed and universities simply fail to deliver. As argued in Section 2.1, this framing, positions HE as inadequate because it captures only part of the problem and does not explore why such approaches often fail to generate workable solutions.

The analysis revealed a persistent contradiction between knowledge generation and practical application (Section 6.3.1.2), where an overemphasis on theoretical models within academia leaves little space for engaging with the applied realities of logistics practice. This study extends earlier work (Radermacher and Walia, 2013; Bartunek and Rynes, 2014; Ramesh, 2017; Alshare and Sewailem, 2018; Kralj, 2018; Uzoka *et al.*, 2018; Succi and Canovi, 2020) that have focused on skills surveys and isolated feedback mechanisms, by surfacing the institutional mechanisms, evaluation systems, leadership priorities, and divergent timescales, that sustain the divide

Rather than framing HE as deficient, the findings reveal the problem as relational and systemic. Participants across sectors acknowledged long-standing siloed practices and competing accountabilities that restrict dialogue and collaboration. Through the CL intervention, these dynamics were made visible, allowing participants to reflect on their own roles in maintaining distance between systems.

The implications for industry-academia are conceptual as much as they are practical: repositioning the problem through ecosystem thinking shifts this discourse from one of blame to one of mutual learning and responsibility. The findings demonstrate that participants across different systems have been working in siloes, and that an approach is required that fosters dialogue, attends to historical context, and uncovers systemic contradictions. By surfacing these embedded dynamics through a CL intervention and enabling participants to actively reflect on their own roles in

maintaining the gap, the study shifts the discourse from one of blame and misalignment to one of mutual understanding and transformative potential.

7.3.2 Contribution 2

Identifying historical and structural challenges that contribute to the divide

A second contribution made by this research is the identification of the historical and structural challenges that have sustained the divide between logistics HE and the logistics industry. Previous studies often describe the gap in terms of mismatched expectations or isolated failures between universities and employers (Powell and Dayson, 2013), but rarely explain the institutional logics and dynamics that make collaboration so difficult. As argued in Section 2.1, the literature tends to describe the symptoms of misalignment but rarely traces them to the historical and structural roots that produce and sustain the divide.

The findings of this study make these roots visible. Participants highlighted the cyclical nature of industry's commitment to education, noting that companies tend to engage with universities only in times of growth or labour shortage, while disengaging during downturns (Section 6.3.1.1). They also pointed to academia's closed tenure loops (Section 6.4.1.1), which tend to reproduce academics with limited or no industry experience. In addition, the rules shaped by institutional KPIs (Section 6.2.1.2) prioritise research outputs at the expense of teaching and engagement, reinforcing the divide. Participants observed that such accountability systems and leadership practices drive a culture where industry collaboration is marginalised: "it is not the first thing we talk about when we have our performance review" (Section 6.4.1.1).

The analysis further revealed how the historic neglect of the logistics domain, by governments, schools, and universities, has embedded these structural barriers into current practice, something that many participants identified as siloes.

The implications for industry-academia collaboration are significant. By tracing the divide to historical undervaluation, structural reproduction through tenure and KPIs, and the cyclical orientation of industry motives, this study demonstrates that the gap is not about failures and expectations but is institutionally embedded. Addressing it therefore, requires systemic interventions: sustained industry commitment beyond market cycles, reform of academic evaluation systems, embedding of application into

teaching amongst others. Recognising these conditions provides a stronger basis for collaborative transformation and for aligning logistics education with industry needs in ways that genuinely enhance graduate capabilities.

7.3.3 Contribution 3

The role of intermediaries in bridging systemic divides across industry, academia, and government

A central contribution of this research lies in identifying the critical role of intermediaries in facilitating collaboration across the fragmented landscape of industry, academia, and government. Rather than assuming that alignment naturally emerges through partnership models such as the Triple Helix of innovation (Etzkowitz and Leydesdorff, 2000), this study provides empirical evidence of the practical challenges that prevent such alignments from materialising. As Pfotenhauer and Jasanoff (2017) argue, such models often remain idealised concepts rather than actionable frameworks for systemic change.

The findings of this research explain why. Participants highlighted fundamental contradictions in the valuation of knowledge. Industry viewed logistics as an applied science, while academics privileged theoretical abstraction, leading one participant to ask: “where is the actual application to the shop floor?” (Section 6.4.2). Such divergent logics produced not only communication barriers but also a lack of coordination in goals and expectations.

Importantly, the research revealed that potential intermediaries, actors or organisations positioned to mediate between sectors, often lack authority, legitimacy or capacity to bridge these divides effectively. Professional Organisations were described as “just printing money from the government” (Section 6.2.1.1), while government ministries themselves were caught in siloed structures: “they would tell me to speak to the Minister of Infrastructure, because they speak your language” (Section 6.4.1.4). These examples demonstrate the structural weaknesses of intermediary functions in the current system, helping to explain the persistence of misalignment despite well-intentioned partnership initiatives.

The study therefore contributes to the literature by advancing understanding of intermediary practices, the processes and capabilities required to mediate between

fragmented institutional logics. In doing so, it aligns with and extends the work of Levy (1986), Engeström, Engeström and Kärkkäinen (1995), Johansson and Felten (2014), and Vefago, Trierweiller and de Paula (2020), who emphasise the importance of collaborative mediation in complex systems. It also supports Pfotenhauer and Jasanoff's (2017) critique of the Triple Helix, by showing that collaboration is not sustained by formal structures alone, but by actors capable of translating, negotiating, and brokering mutual understanding across boundaries.

The implications are clear: enhancing collaboration in logistics HE requires strengthening intermediary roles and practices, whether through empowered professional bodies, cross-sectoral committees, or institutional liaisons, that can connect disparate systems and facilitate collective problem solving. Building the capacity and legitimacy of these intermediaries represents a necessary condition for systemic alignment and, ultimately, for advancing graduate preparedness and sectoral innovation.

7.3.4 Contribution 4

Extending co-production beyond curriculum design towards translation, sustainable collaboration, and transformative change

Another major contribution of this research lies in demonstrating that co-production between academia and industry must move beyond the objects of curriculum design to address the deeper systemic and communicative conditions that sustain misalignment. As discussed in Section 2.1.3, much of the literature presents co-production as a matter of joint curriculum development or alignment of course content with employer needs (Wu, 2007; Gravier and Farris, 2008; Al Mahrooqi, 2020). While valuable, such approaches risk reducing collaboration to a transactional exercise and overlook the relational, discursive and systemic dimensions that shape the divide.

The findings indicate that sustained collaboration depends on mechanisms of translation and shared understanding between the distinct activity systems of academia, industry, and government. Participants revealed that much of the misalignment originated not only from structural barriers but from the absence of a common language through which to negotiate meanings, expectations, and priorities. This study, therefore, extends the notion of co-production to include translation as a

relational practice, a practice through which diverse actors learn to interpret, negotiate, and adapt each other's concepts, values, and logics.

By viewing translation as integral to co-production, this research adds an important communicative dimension to the literature. Rather than seeking to impose standardisation, effective collaboration requires ongoing dialogue that builds mutual intelligibility while respecting the heterogeneity of perspectives. This aligns with Pfotenhauer and Jasanoff's (2017) critique of idealised models and emphasises that transformation occurs not through structural designs alone, but through the slow, negotiated construction of shared meaning.

Empirically, the analysis revealed that participants envisioned co-production in broader and more transformative terms. Examples include the modelling of a tripartite framework linking academia, industry, and professional organisations (Section 6.5.1.2), the proposal of lecturer training programmes to sustain practice-oriented teaching (Section 6.5.1.2) and the concept of the "pracademic" role as a mechanism for embedding applied knowledge into academic teaching (Sections 6.5.1.3 and 6.5.1.4). These illustrate early steps towards creating translational spaces where mutual learning could occur. These findings directly address the limitations in the literature by showing that co-production is not confined to curriculum-level activities but extends to transformation of relationships, roles, and discourses that sustain collaboration.

The implications are substantial. Meaningful and lasting co-production requires sustained and reflexive translation practices that enable stakeholders to make sense of each other's goals and constraints, building trust and shared purpose. In this sense, co-production becomes not a single event, but a continuous process of translation, reflection and renewal. By embedding translation into co-production, this study demonstrates how co-production can be redefined as a foundation for mutual understanding, structural renewal, and the development of graduate capabilities aligned with the applied and evolving needs of the logistics sector.

7.3.5 Contribution 5

Demonstrating how dispersed stakeholders can be brought together meaningfully

Finally, this research contributes by demonstrating how dispersed stakeholders from academia, industry, professional organisations, and government, can be meaningfully convened within a structured and dialectic framework to begin addressing systemic misalignments. While the literature has emphasised the risks of co-production, such as power imbalances, conflicting incentives, and ethical tensions (Cherney, 2015; Bannister and Hardill, 2016; Williams *et al.*, 2020), it has paid comparatively less attention to the practical and methodological processes through which dispersed actors can engage productively in the first place. As argued in Section 2.1, examples of effective collaboration mechanisms remain underdeveloped, particularly in complex and undervalued fields such as logistics.

The findings of this study show why these challenges have been especially critical. For decades logistics was not recognised as either an academic discipline or a core business function. Participants noted governments largely ignored the sector, schools portrayed logistics as “lorries down the motorway”, and universities failed to regard it as a legitimate scientific discipline until relatively recently (Section 6.3.1.1) This historical neglect meant there was little incentive or infrastructure to support collaboration across academia, industry, and policy.

Against this background, the CL methodology provided a rare setting in which stakeholders could, despite significant structural and cultural barriers, be brought together to surface contradictions, critique existing practices, and collectively envision alternatives. For instance, discussions of siloed governance (Section 6.4.1.4) showed how governmental structures obstructed alignment, while proposals for professional organisations to act as bridging intermediaries demonstrated emerging, if fragile, capacities for translation and alignment.

Crucially, the collaborative research environment did not fully overcome these tensions, but it enabled participants to recognise and collectively articulate them, making a significant developmental step, even if practical implementation remained constrained. Through dialogue and reflective practice, participants were able to move

from isolated critique towards preliminary forms of joint modelling and problem framing. The study therefore indicates that, despite persistent limitations, participatory methodologies can create openings for dialogue and mutual learning.

The implications for collaboration are significant but must be understood as exploratory and developmental rather than conclusive. The process of bringing actors together was both revealing and difficult, highlighting the endurance of institutional silos but also showing that collaboration is possible when structured around shared reflection and mediated facilitation. Concepts such as boundary crossing and spanning, often idealised in the literature, were observed here as incipient and aspirational processes, underlining both the potential and the fragility of such efforts.

The implications for future practice are twofold. First, convening dispersed actors requires intentional facilitated spaces, that foreground dialogue, reflection and iterative learning. Second, the process highlights the need for sustained support and institutional commitment if these early forms of collaboration are to mature into systemic change. The re-evaluation of logistics during COVID-19 further underscores the timeliness of such collaborative efforts and points to the opportunity for sustained recognition of logistics as a vital academic and professional domain.

Ultimately, this study highlights the significance of relational processes and ecosystems thinking, arguing that such transformation cannot be obtained without open dialogue amongst all stakeholders. The findings also suggest that researchers in this area of literature need to be more aware of how relational and ecosystem-based approaches have been conceptualised and applied in related fields (Wojahn, Blicharz and Taylor, 2010; Kang, 2013; Permatasari, Dhewanto and Dellyana, 2021; Iakovleva *et al.*, 2022; Serrano *et al.*, 2023; Morelli, Civera and Murdock, 2024; Kader and Fahri, 2025; Nitter, Taarup-Esbensen and Kruke, 2025). Establishing stronger connections between these areas of research could enrich our understanding of how collaborative transformations unfold in complex, multi-stakeholder contexts.

This repositioning carries significant theoretical and methodological implications. It invites a re-reading of collaboration not as a transactional exchange of predefined interests, but as a socially co-constructed and communicative process. Concepts such as language, shared meaning, and boundary spanning actors emerge as central to bridging epistemological and institutional divides. The findings support the view that

co-production in education should move beyond a narrow curriculum design and instead foster sustained, reflexive, synergetic, and relational engagement. In this way the research contributes a new lens for understanding employability, partnership, and knowledge exchange in logistics HE.

7.4 Conclusion

In this chapter, I have answered my research questions and demonstrated how my findings contribute to the literature on industry-academia collaboration and logistics HE. The core contributions emphasise the importance of surfacing and navigating systemic contradictions through the ELC, the critical role of transformative agency in enabling stakeholders to reimagine their activity systems, and the significance of relational processes as a foundation for sustainable collaboration. I have also highlighted how structured dialogue, double stimulation, and mirror data empowered participants to transition from resistance to collective modelling, uncovering the need for shared language and boundary-spanning roles. These insights advance the understanding of co-production beyond curriculum design towards a more systemic, relational and transformative approach.

Chapter 8 Conclusion

8.0 Introduction

This chapter revisits the overarching research objective that guided this study and outlines how it has been addressed. It begins by reaffirming the purpose and rationale of the research within the broader context of logistics HE and industry collaboration (Section 8.1). A synthesis of the key findings follows, demonstrating how these address the research questions and contribute to understanding the systemic, relational, and structural factors shaping the current landscape (Section 8.2). The Chapter then critically reflects on the limitations of the study (Section 8.3), before outlining it contributions to knowledge (Section 8.4). Finally, the implications for policy, practice, and future research are discussed, identifying pathways for addressing the challenges and opportunities highlighted throughout the thesis (Sections 8.5 - 8.7).

8.1 Research Objective

This research set out to contribute to the literature on industry-university collaboration by examining the challenges inherent in the interaction between industry and academia. As outlined in Chapter 1 and critically reviewed in Chapter 2, existing research in this area has often been unidimensional, normative, and disengaged, often focusing on dualistic interpretations that reinforce a “blame game” between the different actors. In addition, many proposed solutions are insufficiently grounded in empirically supported findings.

In response, this study sought to contribute new knowledge on the sociocultural dynamics underpinning collaboration by adopting an empirical, historical and systemic perspective grounded in the actual experiences of stakeholders. The intention was not only to identify challenges, but to understand how these emerge, persist, and may be transformed through practice.

Aligned with the study’s ontological and epistemological position (Chapter 3), a hybrid intervention, grounded in AT and expansive learning was designed to facilitate collaboration among actors from academia, industry and professional organisations. This approach enabled participants to critically reflect on the structural frictions

shaping their practices and to collaboratively reimagine a more integrated activity system. The intervention is detailed in Chapter 5, with findings presented in Chapter 6 and contributions to knowledge discussed in Chapter 7.

This research was guided by two central questions:

RQ1: *How can a collaborative research approach empower participants to advance transformation efforts and foster alignment between industry and academia through co-production, thereby enhancing graduate capabilities?*

RQ2: *What factors contribute to the communication and collaboration gaps between logistics higher education and the logistics industry, and how do the dynamics and power relationships between these two actors influence these gaps?*

These questions shift the focus beyond technical beyond technical or skills-based explanations toward systemic, relational, and cultural dimensions of collaboration. This focus provides the foundation for the discussion in Section 8.2, which returns to these questions to consider how the findings address them in depth.

8.2 Research Findings

The section synthesises how the findings address the research questions and reflect on how the study met its overall objectives.

The findings demonstrate that collaboration between logistics HE and industry is shaped by three interrelated dimensions:

1. Systemic, historical, and relational factors underpinning communication and collaboration gaps;

2. Contradictions embedded within the practices of different stakeholders, and;

3. The way in which these contradictions are surfaced, negotiated, and reconfigured through collaborative processes.

Unlike previous research that often sought “quick fixes” (Section 2.1) this research focused on understanding how a collaborative research approach could generate insights to redesigning the activity system, embedding a more inclusive and sustainable framework for bridging the gap between logistics industry and academia.

Through a structured, mediated process, stakeholders collaboratively examined the existing gaps and proposed practical pathways for change.

For RQ1, the findings show that even a hybrid and limited application of interventionist principles, informed by the structure of the CL and the ELC, can support stakeholders in engaging with contradictions and supporting the emergence of transformative agency, albeit in an emergent and constrained form.

Through structured dialogue, double stimulation, and mirror data, participants were able to surface contradictions within their practices and reflect on the conditions shaping collaboration between logistics HE and industry. This supported the emergence of transformative agency, allowing disperse actors to move beyond problem identification toward the co-articulation of potential pathways to change.

However, the findings also highlight that deeper transformation would likely require more sustained, iterative, and collectively structured engagement than was possible within the scope of this study.

Importantly, this engagement led to the identification of operationalisable outcomes within a broader ecosystem-oriented perspective, demonstrating how even limited interventionist approaches can generate actionable pathways for change.

For RQ2, the findings show that communication and collaboration gaps cannot be reduced to simple skills mismatches. Instead, they reflect historically embedded and institutionally reinforced contradictions between the activity systems of academia and industry.

These contradictions arise from different institutional logics, evaluative systems, and temporal orientations, contributing to persistent misalignment and mutual perceptions of disconnect. The findings indicate that these gaps are sustained by both structural conditions and everyday practices, including leadership priorities and historically rooted perceptions of logistics as a discipline.

Importantly, these gaps are also shaped by asymmetrical power relations and institutional dynamics. Within academia, authority is strongly influenced by external evaluation and accreditation bodies, which prioritise research outputs and formal metrics, thereby shaping academic practices. In contrast, industry is driven by

performance outcomes and operational results, placing greater emphasis on application over theoretical development.

These differing forms of authority contribute to a relational dynamic in which industry often perceives academia as distant, siloed, and difficult to engage with and understand, while academics may view industry as overly short-term and insufficiently attentive to the role of theory. As a result, misaligned incentives, expectations, and accountabilities reinforce fragmentation and limit the development of sustained and meaningful collaboration.

By engaging stakeholders as co-analysts of their own activity systems, the study enabled participants to critically examine how their assumptions examine how their assumptions and institutional constraints contribute to these gaps.

More specifically, the findings point to multi-level systemic contradictions, including KPI-driven evaluation cultures, limited industry exposure within academic structures, short term industry orientations, and siloed governance. These highlight the need for operationalisable responses, such as reforming evaluation frameworks, embedding applied experience in academic practice, and strengthening intermediary mechanisms to support alignment.

By situating these findings within Engeström's structure of activity systems and through the CL approach, the study facilitated expansive learning actions including questioning, analysis, modelling and examining, allowing stakeholders to iteratively refine the activity system based on immediate feedback and emergent insights. These actions were mapped and discussed in Table 7.1 (Section 7.2.1) and reflected throughout Chapter 6, illustrating how participants progressed from early phases of questioning and critique toward more advanced forms of modelling and examining collaborative solutions. Academics, industry representatives, and professional organisations each brought distinct yet complementary insights to the collaborative process. For example, as shown in Section 6.4.1.4, discussion of siloed governance exposed how policy hierarchies obstructed collaboration, while professional organisations were identified as potential translators of a shared language.

Rather than being treated as barriers, these contradictions functioned as drivers or reflection and learning. This process contributed to understanding the gap as a

dynamic and evolving phenomenon, rather than a static problem requiring technical solutions.

Overall, the findings from RQ1 and RQ2 highlight both the systemic nature of the gap and the potential for its transformation through structured, collaborative engagement. While the study demonstrates the potential of participatory and ecosystem-oriented approaches, it also highlights the challenges of implementing such models within constrained conditions. These include coordinating diverse actors across contexts, managing competing priorities, and sustaining engagement over time.

At the same time, the use of reflective tools, such as mirror-data, proved effective in stimulating dialogue and surfacing tensions, although it also introduced sensitivities that required careful facilitation. Taken together the findings underscore that meaningful collaboration depends not only on structural alignment but on the continuous negotiation of relationships, shared understanding, and sustained commitment across stakeholders.

8.3 Limitations

After consolidating the findings of this study, this section focuses on the numerous limitations and broader considerations that shaped both the research process and its outcomes. While some of these points represent conventional research limitations, such as constraints on data collection and methodological scope, others are more reflective in nature, concerning the practical, conceptual, and relational challenges of conducting collaborative, cross-sector research through the CL methodology. The intention here is therefore, to acknowledge the factors that may have influenced the knowledge produced, but also to offer a critical reflection on what these experiences reveal about the possibilities and constraints of applying participatory, activity-based approaches in real-world educational and industry contexts.

Practical limitations: A key challenge concerned the implementation of the Change Laboratory, the methodological application of Activity Theory across multiple sessions involving participants from different countries and time zones. Although a powerful tool for facilitating expansive learning the CL relies on sustained collective engagement, continuity and timeliness were crucial. However, coordinating workshops across diverse schedules proved difficult, leading at times to uneven representation, limited

stakeholder representation, and occasional delays in data collection. These challenges stemmed from competing commitments between the participants which sometimes restricted consistent attendance and the depth of dialogue required for expansive learning. Such difficulties are not unique to this study but are likely to affect any project that seeks to foster genuine collaboration between HE and industry, where participants operate under markedly different institutional rhythms and priorities.

Moreover, the workshops were conducted virtually due to the cross-border conditions. While online delivery enabled broader participation, it may have limited the richness of interaction compared to in-person sessions, where collective reflection and tool mediation typically unfold more dynamically. These constraints underline the importance of institutional support and scheduling flexibility in future applications of the CL methodology, and mean findings should be interpreted as reflecting partial rather than fully realised collaborative transformation.

Methodological limitations: Methodologically, this study drew on two primary data sources, CL workshops and semi-structured interviews, supported by mirror data to prompt reflection. While these tools proved valuable for eliciting rich insights, their effectiveness depended on the relevance and framing of the mirror data selected. The chosen materials may have guided discussion towards particular themes, potentially constraining the breadth of perspectives explored. As a result, the findings may overrepresent certain areas of shared concern (such as curriculum relevance or practical training) while giving less visibility to other issues that might have emerged had different stimuli been used. This reflects an inherent challenge in mirror data-driven research, where the researcher's framing choices inevitably shape the interpretive direction of the dialogue.

A second limitation relates to the balance between synchronous and asynchronous participation. Although the original research design prioritised collective engagement through workshops, practical constraints made it necessary to rely more heavily on semi-structured interviews to sustain involvement. This adaptation ensured continuity but reduced opportunities for real-time interaction and collaborative meaning making elements central to the CL methodology. Consequently, while the interviews provided deeper individual reflection, with many participants expressing more personal or emotionally grounded views than in workshops, the process captured a more

fragmented, less collectively negotiate picture of expansive learning. Future applications could mitigate this by integrating hybrid formats that allow both synchronous collaboration and reflective follow-up interviews to balance depth and co-construction.

Conceptual limitations: Conceptually, while AT provided a robust framework for analysing systemic contradictions within logistics HE, its use also presented certain challenges. AT's emphasis on collective activity systems and structural frictions necessarily focuses on systemic patterns over individual-level experiences. Within the logistics HE context, however, collaboration is often sustained through the personal efforts and informal networks of academics who act as intermediaries between universities and industry. Several participants noted that these individual initiatives, such as developing company partnerships, coordinating student placements, or maintaining practitioner relationships, are rarely acknowledged or rewarded within institutional performance frameworks that privilege research output and accreditation metrics. As such the researcher's task involved mediating between these two distinct logics, AT's systemic, collective focus and the realities of an academic environment where collaboration often depends on individual agency and goodwill rather than institutionalised mechanisms. This mediation revealed that while personal relationships play a critical role in keeping collaboration alive, lasting change requires structural solutions that embed such efforts within the wider system. Consequently, while the study offers a strong systemic account of the contradictions shaping collaboration, it is less able to capture the personal labour, emotion, and motivation invested by individuals who sustain these fragile interconnections.

Future research could build on this study by combining AT with complementary frameworks or hybrid methodological strategies capable of capturing both systemic and personal dimensions of collaboration. Doing so would support a more holistic understanding of how motivations, emotions, and relational dynamics evolve within collective change processes.

Despite these limitations the study remains a meaningful reflection of the possibilities and challenges of applying participatory, activity-based approaches in logistics HE. The constraints encountered do not diminish the contribution of the research; rather,

they emphasise the need for adaptable, context sensitive designs that can balance methodological rigour with the realities of cross-sector collaboration.

Finally, some researchers may view this study as limited in terms of generalisability as it solely focuses on the logistics sector. While the project's direct applicability to other disciplines may be limited, it offers valuable insights into understanding how different activity systems operate within their own contexts. The collaborative, mediated process offers a framework that is transferable across settings, even though specific conditions will vary in other disciplines. The emphasis on logistics does not undermine the broader relevance of the findings; instead, it reinforces the importance of adaptive and sector specific collaborative models that can be shaped by the communities they serve.

8.4 Implications for Policy

As argued in Chapter 1, Section 1.3, while global and national policy frameworks increasingly highlight the importance of aligning HE and industry needs, their effectiveness in logistics HE remains limited by a lack of context sensitivity. This research reinforces that critique by demonstrating that meaningful collaboration requires policies attuned to the systemic, relational, and practice-based realities of the logistics sector. Rather than solely improving the implementation of existing frameworks, the findings designate that some of those frameworks themselves need rethinking, particularly the reliance on top-down, standardised approaches that fail to account for the complex and situated nature of cross sector collaboration.

A key insight from this study is that generic "industry-engagement" or employability policies often overlook the discipline-specific challenges that shape collaboration in logistics HE. For instance, participants highlighted structural misalignments between academic evaluation systems and industry practices, limited recognition of applied research, and the absence of intermediaries capable of translating between academic and professional languages. While some of these tensions are common across disciplines, they manifest acutely in logistics because of the field's applied, cross sector, and practice-driven nature. The complexity of logistics as both an academic subject and an operational domain makes collaboration particularly dependent on mutual translation and contextual understanding.

At the national level, workforce development and education policies often emphasise graduate employability and industry readiness but seldom address the institutional barriers that limit sustained collaboration. This study identified a persistent shortfall between the aspirational goals of such policies and the day-to-day realities of educators and practitioners in logistics. Participants consistently argued that meaningful engagement must move beyond short-term projects or accreditation exercises and instead be embedded in long-term, iterative partnerships between universities, industry bodies, and professional organisations. However, representatives of professional organisations also reported that their ability to play a stronger intermediary role is constrained by limited funding and low visibility at ministerial level. This lack of institutional support reduces their capacity to facilitate cross-sector collaboration and weakens the implementation of policies designed to connect industry and academia.

By contrast, collaborative efforts in the United Kingdom offer a valuable reference point. The Chartered Institute of Logistics and Transport (CILT UK) has successfully positioned itself as an intermediary between academia, industry, and government through structured internship programmes, professional accreditation, and continuous professional development initiatives. These efforts are supported by national frameworks, such as the Knowledge Exchange Framework (KEF), the Teaching Excellence Framework (TEF), and the Research Excellence Framework (REF), which collectively incentivise applied research, industry engagement and teaching relevance. Together, these mechanisms demonstrate, even though still early in their application, how coherent policy alignment, sustained funding, and formal recognition of knowledge exchange can strengthen professional organisations' capacity to foster ecosystem collaboration in logistics and related sectors.

Policy, therefore, should incentivise structured, multi-year collaboration agreements and provide resources for continuous professional learning, industry-based teaching, and pracademic roles that bridge both domains. This recommendation stems from the study's findings (Section 6.4.2 and 6.5.1.3), where participants identified the lack of sustained collaboration mechanisms and highlighted the role of pracademics and lecturer upskilling programmes as practical bridges between academic theory and industrial practice. Embedding such structures within policy would not only strengthen

continuity and trust between partners but also ensure that collaboration moves beyond short-term projects toward long-term, systemic integration.

Institutionally, many HE policies prioritise metrics of research productivity, accreditation, and international ranking over collaboration and co-production. As the findings demonstrate, these evaluative systems often discourage engagement with industry or undervalue practice-based knowledge. For example, academic participants noted that collaboration and teaching innovation were rarely discussed in annual appraisal meetings (Section 6.4.1.1) and several expressed frustrations that research outputs dominated performance metrics to the extent that "…*teaching comes as a third or fourth priority*" (Section 6.4.2). From the industry side, participants described parallel constraints, emphasising the time pressures and operational demands often left little room to engage with universities (Section 6.4.1.3), while representatives from POs admitted that despite their willingness to collaborate, limited budgets and staffing made sustained involvement difficult (Section 6.4.1.4).

To achieve systemic alignment, institutions should develop policy frameworks that recognise and reward collaborative outputs, including joint research, co-designed curricula, and applied learning initiatives, as legitimate forms of academic contribution. This would not only foster alignment between HE and industry but also enhance the relevance and responsiveness of logistics programmes to evolving market needs.

Across all levels of policy, a recurring challenge is the preference for scalable, standardised interventions that promise efficiency but rarely adapt to the contextual realities of different disciplines and sectors. Rather than prescriptive models, this research calls for policies that are grounded in localisation, ecological fit, and stakeholder agency, recognising that effective collaboration depends on contextually embedded practice. As discussed in Section 6.3.2, where a participant noted, "*What is, I think, understood is that collaboration needs to be there between industry and between academia, but logistics operations in Greece are totally different to the ones in the UK, to Romania, to Japan or to China in the Far East.*" Policy frameworks should empower academics, industry professionals, and professional organisations to co-create context-sensitive initiatives that reflect the specific challenges and opportunities of their sectors. The findings show that when stakeholders are engaged through participatory processes, such as the CL, they are more likely to identify sustainable,

locally relevant solutions and feel genuine ownership of reform efforts. While the CL workshops initiated collective reflection on systemic gaps, many of the more concrete ideas, such as the introduction of lecturer training and pracademic roles to bridge theory and practice, emerged during the subsequent semi-structured interviews (Section 6.5.1.3). These discussions allowed participants to elaborate on locally relevant ways of embedding applied industry practices into teaching, demonstrating how the combined use of participatory and reflective methods can generate context-sensitive and co-owned reform initiatives.

Finally, the participatory nature of this research itself offers an important lesson for policy development. The CL process demonstrated that collective reflection and dialogue can reveal systemic contradictions that remain invisible in conventional policy approaches. Embedding such participatory mechanisms into policy development could help bridge the gap between strategy and practice, not by enforcing uniform compliance, but by cultivating spaces for collaborative experimentation and innovation that support adaptive, inclusive HE systems.

8.5 Implications for Practice

This study offers several implications for how collaboration between logistics HE and industry can be more effectively designed and sustained in practice. Building on the gaps identified in Chapter 1 and the findings detailed in Chapter 6, this study demonstrates the value of long-term, context-sensitive, and co-designed interventions that move beyond transactional engagements towards genuine partnerships.

A key implication emerging from this work is the importance of sustained and embedded collaboration mechanisms rather than isolated or short-term projects. The CL intervention showed that continuity across multiple sessions enables participants to progressively analyse and refine their practice. However, maintaining this continuity proved demanding in practice, as participants balanced competing institutional commitments and different organisational rhythms. Progress was therefore often incremental rather than transformative, yet even these modest shifts proved significant in creating shared spaces for reflection and trust-building. As illustrated in Sections 6.4.2 and 6.5.1.3, participants used these iterative engagements to identify practical entry points for reform, such as introducing lecturer training and pracademic roles to

bridge the gap between theoretical and applied knowledge, and developing ecosystem-oriented partnerships linking universities, professional bodies, and employers. These findings indicate that future collaboration efforts in logistics HE should be designed as ongoing developmental partnerships, where reflection and feedback are integral to practice rather than peripheral to it.

It is also worth noting that several of the pedagogical approaches that emerged from participant's discussion are not yet standardised features of logistics HE curricula. As the literature confirms, the sector has remained largely reliant on conventional lecture-based delivery, with active and applied pedagogical formats representing exceptions rather than norms (Gravier and Farris, 2008). The proposals surfacing from this study therefore carry additional significance: they are not merely restatements of good general HE practices, but constitute specific interventions that are, at present, largely absent from logistics HE. Their adoption would represent a meaningful departure from the prevailing pedagogical culture of the field.

The research also highlights the need for institutional responsiveness and flexibility to support co-productive collaboration. As discussed in Section 6.4.1.1 and 6.4.2, participants noted that academic evaluation systems and rigid governance structures often hinder innovation and engagement with industry. Practically, this means that HEIs must adopt policies that recognise and reward collaborative activities, such as joint curriculum design, applied research, and industry placements, as legitimate academic outputs. Aligning institutional performance frameworks with partnership-oriented practices could help embed collaboration within the culture of logistics HE, rather than treating it as an external requirement.

As discussed in section 8.4, professional organisations can play a critical intermediary role as translators of a shared language between academia, industry and government.

The study also underscores the importance of cultivating trust and relational capital across partners. As seen throughout the collaborative workshops and the semi-structured interviews (Sections 6.4.1.4 and 6.5.1.3) participants came to value the relational dimensions of collaboration as much as structural reform. Building trust requires continuity of engagement, openness in communication, and recognition of the different priorities and constraints each sector faces. Practical actions such as joint

reflections workshops, co-teaching arrangements, and cross-sector mentorship can help foster these conditions, making collaboration more sustainable in the long term.

Finally, the participatory and mediated process demonstrated in this research offers a transferable model for practice beyond logistics. The CL methodology provided a structured, reflective framework that enabled stakeholders to jointly analyse problems and design context-appropriate solutions (Section 6.5.1.4). This approach can be adapted for other professional and educational sectors seeking to align theory and practice through collective learning. The emphasis on ecosystem thinking, viewing academia, industry, and professional organisations as interdependent parts of a learning system, reinforces the idea that sustainable improvement depends on shared responsibility and locally grounded collaboration. The policy mechanisms discussed in 8.4, including the UK's KEF, TEF, and REF and Germany's Ausbilder framework, illustrate how these principles can be operationalised in practice.

In summary, this research highlights the practical value of embedded, participatory, and ecosystem-oriented approaches to collaboration in logistics HE. By creating spaces for dialogue, reflection, and co-production, HEIs and industry partners can jointly shape educational practices that are both academically rigorous and practically relevant. These findings resonate with broader international research on university-industry partnerships as sites of expansive learning, where systemic change emerges through collaborative, co-configured practices across professional and educational boundaries.

8.6 Implications for Future Research

As detailed in Section 7.3, the five contributions to knowledge inform the following research agenda:

- *Broadening the focus from a skills gap towards a need for relational process (ecosystems thinking)*.
- *Identifying historical and structural challenges that contribute to the divide.*
- *The role of intermediaries in bridging systemic divides across industry, academia, and government*.
- *Extending co-production beyond curriculum design towards, translation, sustainable collaboration, and transformative change*.

- *Demonstrating how dispersed stakeholders can be brought together meaningfully*.

These contributions were discussed in depth in Section 7.3 and Table 7.3 and together inform the following implications for future research which identify areas that warrant deeper exploration and comparative analysis:

Expanding understanding of collaboration through longitudinal analysis: While the study captured how collaboration unfolded during the CL process, future research could extend this by examining the long-term effects of collaborative intervention. Longitudinal studies could track whether the changes envisaged during the CL sessions, such as enhanced training, the development of pracademic roles or the adoption of ecosystem-oriented partnerships, such as those that include tripartite partners from academia, industry, and professional organisations, translate into sustained institutional transformation and improved graduate outcomes. Such work would provide critical insights into how temporary interventions evolve into enduring practices across HE and industry systems.

Exploring comparative and cross-sectoral applications: Although this project focused on logistics HE, its methodological and conceptual framework can inform similar research in other disciplines. Future studies could adopt a comparative design to explore how systemic contradictions manifest across different professional domains, such as engineering, healthcare, or education, and how context-specific factors influence collaboration. Comparative analysis would help determine whether the contradictions identified here are unique to logistics or symptomatic of wider structural patterns in vocational and applied HE.

Several countries, such as the UK, the Netherlands and Germany provide valuable points of reference for such comparative inquiry. In these varied contexts, professional organisations and other intermediary roles occupy different but significant roles in bridging academia, industry, and government and national policy mechanisms, that encourage structured collaboration. As discussed in Section 8.4, some national systems have developed coordinated mechanisms to incentivise applied research, teaching quality, and cross-sector engagement. Future research could examine how these models operate in practice and assess their transferability to other national or

disciplinary contexts, particularly in regions where intermediary organisations remain under-resourced or under-recognised.

Examining the micro-dynamics of agency and identity: While AT provided a robust lens for identifying systemic contradictions, future research could complement this perspective with approaches that capture individual and interpersonal dimensions of change. Studies could investigate how participants' professional identities, emotions, and motivations evolve throughout collaborative interventions, and how these personal transformations influence collective learning and practice. This focus on micro-level agency would enrich understanding of how individuals enact and sustain change within broader institutional systems.

Investigating the role of intermediaries and boundary-spanning practices: The findings underscored the potential role of professional organisations and hybrid actors as intermediaries capable of translating between academic and industry logics. Future research could explore how these intermediaries function in practice, what forms of legitimacy they acquire, and how boundary spanning practices develop over time. Mapping these dynamics could inform the creation of formal structures to support knowledge translation and shared accountability in collaborative ecosystems.

Applying and refining participatory methodologies: This study demonstrated that participatory and mediated research methods can provide a powerful framework for co-analysis and collective problem-solving. However, it also revealed practical challenges in sustaining engagement with hybrid models that blend virtual and time-constrained participants. Future research could experiment with hybrid models that blend virtual and in-person formats or integrate digital collaboration tools that extend the reflective and dialogic functions of the CL approach. Investigating these adaptations could help refine participatory methods for use in translational or multi-institutional settings.

Evaluating policy impact and ecosystem development: Finally, future studies could examine how collaborative research interventions influence policy and practice at institutional and national levels. Investigating how ecosystem-oriented frameworks evolve when adopted by universities, professional bodies, or government agencies would provide valuable insights into the mechanisms that support or constrain systemic change. Such research could also explore how participatory approaches can

inform policy design, ensuring that future frameworks are more responsive to sector-specific and contextual realities.

In summary, this thesis contributes a theoretically grounded and empirically informed understanding of collaboration between logistics HE and industry. It also opens up new avenues for inquiry into how participatory, ecosystem-oriented, and expansive learning approaches can be sustained, adapted, and scaled across diverse educational and professional contexts. By integrating systemic analysis with attention to identity, agency, and institutional transformation, future research can contribute to deepen our understanding of how HE and industry can co-evolve in response to complex and changing global demands.

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