

Nurturing, Cultivating and Sustaining Growth of Educational Coaches in Interdisciplinary, Project Based Learning in Higher Education

A qualitative pilot study including expert insights

Verena Langlotz Kondzic



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ABSTRACT

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The purpose of this qualitative study was to investigate the experiences and best practices of professionals who have used educational coaching in interdisciplinary, Project based Learning, in Higher Education. The study attempted to answer several research issues, including how educational coaching is now developed and applied at various universities, as well as to identify best practices for bringing coaching within the context of Project based Learning in Higher Education.

Four experts from various international institutions took part in structured interviews, which were analysed using reflective thematic analysis. The findings led to three nature-themed constructs: "The Growth Catalysts of Educational Coaching Roots", "Cultivating Growth: Factors of Implementing Coaching", and "Sustaining Growth: Consideration in Implementing Coaching".

Some of the key findings were that including behavioural learning theory and transformative learning, theory could be beneficial in promoting the mindset development of new coaches. Ideas for recognising educators' aptitude to become educational coaches are provided. Furthermore, five training opportunities for new coaches were described. The study also identified several coaching skills that could be useful to new universities, although the efficacy of such a list must be confirmed and defined further. Additionally, the study emphasised the importance of administrative support, appropriate policies and reward systems, adequate time and resources, and competent and enthusiastic coaches for successful coaching programmes. Ideas for measuring the impact of coaching in Project based learning in the Higher Educational context should be considered, and examples are outlined. Based on the findings, this study suggests several practical implications to help higher education institutions design their own instructional coaching programmes for a PjBL context. The study does, however, recognise the limits of exploratory research, such as a small sample size, and proposes additional research in comparing educators' readiness with Rogers's Development of Innovations theory to build an effective roadmap for new coaches.

Overall, this thesis presents useful insights that can encourage the implementation of good coaching practices in higher education, thereby benefiting students, teachers, and the greater educational community. The shift in viewpoint on coaching in educational contexts as a type of education in and of itself holds the potential of new insights and opportunities for the discipline, inviting us to investigate coaching as a transforming force for personal and professional development.

Keywords: Coaching, Higher Education, Interdisciplinary, Project based learning

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LIST OF ABBREVIATION

ELT	Experiential Learning Theory
ELC	Experiential Learning Cycle
ERP	Educator Role Profile
HE	Higher Education
IDE	Interdisciplinary Education
IER	Institut für Ergotherapie (Institute of Occupational Therapy)
IPE	Interprofessional Education
PBL	Problem based learning
PjBL	Project based learning
TL	Transformative Learning
TLT	Transformative Learning Theory
ZHAW	Zurich University of Applied Sciences

1 INTRODUCTION

Coaching has grown in popularity in Higher Education (HE) in recent years. It originated in athletics and has spread to many professions, including HE (Hunaiti, 2021). Educational coaching is a process in which trained professionals work with students to support their academic, personal, and professional development, with a focus on fostering self-awareness and self-management skills for students to become effective learners and successful individuals. One continuing challenge in educational coaching research is the lack of a clear identification of coaching methodology or approach in the literature (van Nieuwerburgh & Barr, 2016), as well as a scarcity of reliable evidence on the impact of coaching in higher education (Harding, Sofianos, & Box, 2018).

The need for Interdisciplinary Education (IDE) has been advocated by the OECD (1972) since the 1970s to support learning to enable students to be curious, adaptive, and open to new ideas, which promotes a lifelong learning mindset. It instils the mental abilities and habits necessary to continue learning and adapting in a fast-changing world for the rest of their lives (OECD, 1972). This is consistent with the concept of "learning how to learn" (Harlow, 1949), which is a necessary ability for success in the 21st century. Interdisciplinary learning, or learning that crosses traditional disciplinary lines, according to Jack Mezirow (2000), can widen learners' understanding, improve critical thinking skills, and generate transformative learning experiences.

Project-based Learning (PjBL) is an excellent option for furthering IDE in higher education (MacLeod & van der Veen, 2020). The method itself can be traced back to John Dewey's (1910) advocacy for a student-centred approach to education, involving problem-solving and inquiry-based learning, and is based on Experiential Learning Theory (Kolb & Kolb, 2017). Kolb et al. expanded on Dewey's work and developed, among other models, the "Experiential Reflective Practitioner" (Kolb, Kolb, Passarelli & Sharma, 2014) as an addition to the Experiential Learning Cycle (ELC). Kolb et al. define that one out of four roles of teachers in PjBL, is that of a coach. Teachers serve as coaches for students, guiding and supporting them as they navigate the challenges and uncertainties of the PjBL process. They inspire students to reflect on their experiences, create connections between their experiences and abstract concepts, and actively experiment with different problem-solving tactics. (Kolb et.al, 2014.)

The "Institut für Ergotherapie" (IER) at Zurich University of Applied Sciences (ZHAW), where the author works, has launched an initiative to create an interdisciplinary PjBL setting. The IER strives to improve students' educational experiences by incorporating these methodologies that allow them to engage in real-world problem-solving scenarios that reflect the complexities of contemporary practice. This has involved a shift in the roles of educators from being experts to becoming educational coaches in PjBL which can also be understood as a transformational experience as outlined by Mezirow (2020). This journey was inspired by successful initiatives such as the former Dev Lab at Oulu University of Applied Sciences (OAMK) in Finland and the 3IDLab at Artevelde University in Belgium. The future challenges are to strengthen the understanding of coaching with the educator body, measure the impact of coaching in new modules, onboard colleagues into coaching roles with the necessary skills and mindset, and advocate for resources to support ongoing training and development within management.

IDE and PjBL are increasingly popular teaching methods in higher education. However, there is still much to be understood about how these approaches can be most effectively implemented to enhance student learning outcomes (Larmer, Mergendoeller & Boss, 2017). In particular, the role of educational coaching in interdisciplinary PjBL remains under-researched, despite its importance in providing students with guidance and support as they work on projects (Heinrich, Louson, Blommel & Green 2021).

Therefore, there is a need for further research to explore the potential of educational coaching to improve teaching practices and enhance student learning outcomes in the context of interdisciplinary PjBL. This study makes a unique contribution by investigating these experiences made at universities in the USA, Canada, and the Netherlands providing an international perspective on the topic by interviewing four experts. Additional sub-research questions in the study bring the investigation into a more precise focus. They are as follows "What are the important factors in developing their own coaching understanding?" and "What are the concrete strategies to ensure a successful implementation of coaching?"

This qualitative study employed a hermeneutic phenomenology approach by wanting to understand how people interpreted their experiences. It is situated within a constructivist paradigm epistemology, which is based on the belief that people create their own knowledge, as well as a relativist ontology, which believes that there is no absolute truth. An interpretative paradigm axiology was applied, valuing, and understanding different perspectives and interpretations of the

information collected. The research addressed questions to gain insight into how educational coaching is currently being developed and applied at various universities. This thesis aims to advance the field of educational coaching in PjBL in HE and improve teaching practice student learning outcomes.

After concluding the introduction, the three main key concepts are explored: Interdisciplinary learning in higher education, Project based learning in higher education, and educational coaching in interdisciplinary Project based learning. The chapter will wrap up with the Transformative learning theory that supports situating some of the findings. The aims and objectives of the study are then presented, followed by a detailed methodology section that includes a description of the research design and the reflexive thematic analysis undertaken. The findings and conclusion sections are divided into three main themes, and a summary gives a conclusion. The discussion section includes practical implications, reflections on the study, and recommendations for future directions.

2 KEY CONCEPTS

The second chapter of this thesis focuses on key concepts in higher education linked to interdisciplinary education (IDE), Project based learning (PjBL), educational coaching, and transformational learning theory (TLT). The chapter begins with an overview of interdisciplinary learning in higher education (HE), emphasising the opportunities as well as recommendations for implementation. The debate then switches to PjBL in HE, addressing how it differs from other types of learning and educators' roles in enabling experiential learning. The chapter then dives into the concept of educational coaching in higher education, focusing on interdisciplinary, PjBL. This section discusses the significance of establishing coaching abilities for HE instructors. Finally, the chapter provides transformative learning theory as a theoretical framework for understanding the issues discussed. Each subchapter will discuss the research gaps related to the key concepts, highlighting the need for further investigation.

2.1 Interdisciplinary Learning in Higher Education

Given the numerous terminologies, notions, and distinctions associated with the subject of interdisciplinarity, the first step is to provide an overview to clarify the meanings and understandings associated with the term interdisciplinarity. At the base of interdisciplinarity lies the concept and nature of disciplinarity. There are many different interpretations, one among them; Squires (1992) provides three nuanced aspects for differentiating disciplines: “what they are about (object), their stance towards that object, in terms of their concern with knowing, doing, or being and the extent to which they operate in a normal reflexive or philosophical mode”.

In her review of interdisciplinary learning (IDL), Chettiparamb mentions that disciplines are not fixed wholes with consistent identity over time and location. They vary in space due to enterprise and in time due to fragmentation and recombination. She states that nonetheless, disciplines have and will continue to have traits that distinguish them as disciplines. (Chettiparamb, 2007.)

In more recent discussions, outlined in Darbellay (2019), involving an entire community of scholars, a handful of these ideas have come to be widely accepted in interdisciplinarity synthesis work: multidisciplinary, interdisciplinarity, and transdisciplinarity. Next, they will be outlined as noted by Darbellay (2019):

Multidisciplinarity refers to an approach from the perspectives of at least two disciplines towards an object of study, a theoretical subject, or a practical problem to be solved. This practice has the advantage of plurality, but it organises the various disciplinary approaches in an additive logic of succession, resulting in a juxtaposition of separate points of view with no integration between them. There is an openness to epistemological pluralism, but the practice fits into the disciplinary continuum insofar as it confirms institutional compartmentalization in disciplinary communities that are governed by their own academic paradigms, theories, and internal methods.

Interdisciplinarity refers to a collaborative and integrative effort that brings together thoughts from two or more disciplines around a jointly defined issue, going beyond the interdisciplinarity juxtaposition of multiple disciplinary points of view. Collaborative interaction and integration among disciplines can take many forms, including the transfer or borrowing of concepts or approaches, crossing or hybridization mechanisms, and even combining two or more disciplines to generate new areas of investigation. The generation of knowledge, as suggested by the prefix inter-, takes place among disciplines in what circulates among them at the interface, in their interstices. Collaborative and integrative endeavours are frequently institutionalised through the formation of interdisciplinarity institutions at the interface of many faculties within the university system.

Transdisciplinarity is a term that encompasses various and complementary perspectives. In one sense, transdisciplinarity refers to a process of knowledge production that extends beyond disciplines or transcends disciplinary boundaries, involving a reconfiguration of those boundaries from a systemic, global, and integrated perspective (Klein, 2014). Transdisciplinarity can be understood in a second, more pragmatic, participatory, and applied direction as a research approach that incorporates political, social, and economic participants as well as everyday people in the process of research itself, in a problem-solving dynamic (Klein, 2014). Platforms for interaction and dialogue between academia and society enable the establishment of this bridge between researchers and citizens through the use of transdisciplinary methodologies. Transdisciplinarity, in a third sense, refers to the investigation of intricate relationships woven into the transcultural conversation between academic cultures from the technical, life, and natural

sciences, social sciences, and humanities. Projects, structures, and technology at the intersection of various cultures enable mutual learning to occur.

As already indicated, the discussion and terminology development is ongoing. Another distinction is to be made with **Interprofessional Education (IPE)** which is a term used mostly in Health Care and Social Care Education (Parse, 2015). It is a type of education that prepares professionals for effective **Interprofessional Collaboration (IPC)** by providing them with joint learning experiences and opportunities to work in interdisciplinary teams. While interdisciplinary approaches are broader in scope and may be implemented across numerous fields of study, IPC is special to healthcare or other professional situations where collaboration among experts from other disciplines is essential. Interprofessional collaboration recognises that complex health or social challenges frequently necessitate a collaborative strategy that draws on the distinct experiences of several experts to obtain the best results. (Parse, 2015.)

At the base of this thesis, the term "IDE in HE" will be used in conjunction with Project based learning (PjBL), to emphasise its collaborative nature, where faculty and students from different disciplines like engineering, business, health care sciences, psychology, contribute their distinctive perspectives and knowledge towards a shared aim. After defining the term "interdisciplinary" as used in this thesis, the emphasis will shift to investigating recommendations for implementing IDE in HE. Next, the challenges that may arise in the process of integrating different disciplines to promote interdisciplinary approaches in education are addressed.

2.1.1 Implementing interdisciplinary learning in Higher Education

Nissani emphasises the importance of interdisciplinarity as follows; Interdisciplinary expertise is frequently essential for creativity and adding another viewpoint can contribute significantly. Disciplinarians are prone to making errors that are best detected by individuals who are familiar with two or more disciplines. Furthermore, new research subjects are sometimes found in the gaps between established disciplines. Interdisciplinary perspectives are required for many intellectual, social, and practical challenges. Interdisciplinary study and knowledge serve as reminders of the goal of knowledge unification. Interdisciplinary can help modern academia break down

communication obstacles, allowing it to employ its vast intellectual resources to improve social rationality and fairness. (Nissani, 1997.)

Further aspects of interdisciplinary teaching are outlined in the 1972 systematic cross-national OECD study and explained below. The report is still considered relevant today and is referred to throughout the thesis where appropriate.

The teacher-student relationship is commonly viewed as hierarchical and one-way, heavily influenced by disciplines. This is challenged in an interdisciplinary method, thus “cultivating sensitivity, the art of listening and seeing, and the creative and imaginative faculties should henceforth take a much more important place in teaching” (OECD, 1972, 228). Practical work is the key to achieving this.

Guidance is seen to have both a subjective and an objective component. In the case of the subjective dimension, it involves identifying students' preferences, abilities, and potentials and aiding them in the development of their **personality development**. Intuition, long-term personal interaction, and academic and practical expertise in differential psychology and characterology are required. The objective component comprises being aware of potential professional possibilities and, to the greatest extent possible, anticipating advancements in a rapidly evolving world. Workshop and classroom activities, as well as discourse seminars, could be used as instructional approaches. The sessions will provide opportunities for collaborative study of a variety of practical challenges. Classroom work needs to be reinforced with an opportunity for debate to aid students in contextualising the issues. The courses provide the conceptual tools for this. As a result, students are encouraged to take a comprehensive perspective on the topic. (OECD, 1972.)

Future educators, as suggested by the OECD, need to take part in instructional activities because **teacher training** is not possible without practice. Tasks that teachers have historically struggled with or have been underprepared for include awakening and assisting the student's personality to fully develop, identifying their abilities, developing creative skills, and passing on awareness and practice discussion. This type of activity is impossible to complete without adequate interdisciplinary training. (OECD, 1972.)

This chapter examined goals and objectives for interdisciplinary education, including the necessity of giving students choice, integrating teaching and research, and building interdisciplinary knowledge. It also emphasises components of interdisciplinary teaching such as building sensitivity, guiding, and personality development, as well as the importance of teacher education. There are obstacles and constraints to interdisciplinary education as outlined in the above aspect, for example, effective teacher training. Further challenges are detailed in the following subchapter.

2.1.2 Challenges of interdisciplinary education

Chettiparamb (2007) cites the 1972 OECD report, that provides a comprehensive overview of the challenges faced when implementing interdisciplinary pedagogy. The challenges identified in the report can be classified into three categories: institutional issues, people issues, and facility issues. These challenges as summarized by Chettiparamb, will be discussed in detail below in the following three paragraphs.

Institutional problems originate from most countries' traditional university model, which is characterised by rigid institutional frameworks that do not correspond with the present state of knowledge. The recruitment process is frequently restricted to the middle class with a classical education, and society has a reasonably stable structure that requires specific sorts of well-catalogued knowledge for well-determined occupations. Some schools have developed into offering specific subjects with chairs and institutes that remain utterly unaware of one another. This leads to additional fragmentation, and it takes a long time to incorporate new information, based on societal demands, into education, resulting in a lack of clear aims and adaptation to societal needs.

In interdisciplinary pedagogy, **people's problems** originate from ways of thinking. Interdisciplinarity remains obscure, and as a result, it is opposed not solely by educators but also by students and society as a whole. Teachers who have worked for years lecturing in a specialised subject and conducting narrowly focused research may view interdisciplinary pedagogy as a futile or dilettantish effort. Furthermore, not all fields are formalised to the same extent, and not all practitioners are aware of this lack of formalisation. Disciplines have intrinsic constraints, and there is scepticism about how to properly incorporate interdisciplinary debates into teaching and

education. The study report identifies teacher training as a major issue, as interdisciplinarity necessitates a mindset that blends humility with open-mindedness and curiosity, as well as the ability to assimilate and synthesise, as well as a willingness to engage in discussion. However, resistance to change can also be seen among junior instructors who have ingrained habits and prefer to avoid upsetting their superiors and jeopardising their careers on what looks to be an insignificant adventure, thus maintaining the system perpetually. Students may also be weak proponents of interdisciplinarity due to established habits, a lack of information, structural rigidity, and being worried about the new, all of which cause them to accept the situation as it is. Ardent protestors may believe that society must change before the university can change, while others may believe that the university must change before society can change. They may also be unaware of advances in research, new requirements, and strategies to manage the work. Individuals responsible for jobs in society, such as commerce and trade, may not fully grasp the consequences of interdisciplinary pedagogy for vocational training, generating psychological barriers to its implementation.

Facilities problems are also evident in the challenges of interdisciplinary pedagogy. The most evident material issue is one of space, as disciplines are frequently dispersed, creating difficulties in undertaking an interdisciplinary programme within constrained timeframes. A shortage of small workspaces ideal for interdisciplinary work may also be present, as well as time constraints that prevent teaching staff from engaging in innovation and confine them to the bare minimum of their profession. (OECD, 1972 cited in Chettiparamb, 2007.)

Even though the OECD research was completed in 1972, these difficulties continue to define the contemporary position in many countries, including Switzerland and at the authors' workplace. One additional challenge was described by Klein (1996), which is: **what are the criteria used to assess interdisciplinary work?** This seems to be the most unclear and understudied component of interdisciplinarity. For one, this is because the topic has received little study attention, and secondly, the varied range of tasks involved in transdisciplinary work makes establishing a single standard for judgement difficult. (Klein, 1996.)

According to a study by Field & Stowe, five key challenges must **be addressed in interdisciplinary education assessment**. These include the difficulty of adapting traditional linear assessment methods to accommodate the complex, creative, and serendipitous outcomes sought in interdisciplinary programmes. Additionally, there is the challenge of defining measurable outcomes

without relying on unrealistic or idealistic language while also allowing for the allowing of unexpected outcomes. The third challenge is to identify the essential interdisciplinary concept of synthesising or integrating in a quantifiable and measurable manner. Fourthly, it is critical to find both traditional and novel assessment approaches for collecting data on interdisciplinary learning. Finally, assessment must remain focused on improving cognitive, affective, and developmental outcomes to improve interdisciplinary curricula and pedagogy. (Field & Stowe, 2002.)

Field & Stowe then propose an assessment environment as described:

1. The programme should be based on the belief that assessment is used to improve teaching and learning.
2. The assessment programme should be established locally and should reflect the teaching staff's increasing understanding of interdisciplinarity.
3. The assessment must include members of the teaching staff. (Field & Stowe, 2002.)

This chapter has discussed the difficulties associated with implementing interdisciplinary learning in higher education. These hurdles include institutional issues like rigid structures and limited recruiting, people issues like resistance from instructors, students, and society, and facility issues like space restrictions and time constraints. Despite being discussed for over half a century, these difficulties continue to exist in today's academic scene. The following chapter will look at the potential benefits and practical ways for implementing interdisciplinary Project based learning to solve the challenges raised in this chapter and foster a more interdisciplinary educational environment.

2.2 Project-based Learning in Higher Education

Project based learning (PjBL) has roots in the work of several influential educational theorists and practitioners, including, as already mentioned, John Dewey, Kurt Lewin, and David Kolb. John Dewey (1933) argued that education should be focused on experiential learning that connects theory to practice and helps students develop practical skills and knowledge.

David Kolb built on Lewin's work and developed further concepts and models, one of them is the Learning Style model, the second is the **Experiential Learning Cycle (ELC)** and a third will be

expanded on in the next chapter. Kolb's ELC model emphasises the importance of reflection and active experimentation in the learning process. According to Kolb (2020), learning happens through a cycle of “concrete experience, reflective observation, abstract conceptualization, and active experimentation”. As opposed to learners who only read about, hear about, talk about, or write about realities, experiential learning involves learners who are in direct contact with real life. Keeton & Tate (1978) stated that experiential learning (EL) is a process where learners are directly in touch with the subject matter, which can lead to deeper and more meaningful learning.

In Switzerland, PjBL is not yet embedded strongly in the education field; literature research on interdisciplinary, PjBL learning in Higher Education (HE) yielded no results. In health care, fieldwork of over 30 weeks are part of the education and can be counted as experiential learning. They are not yet viewed as such, but they mirror more closely the important apprenticeship track, which shapes much of the Swiss educational system after secondary school. While some experiential learning formats like Problem based learning (PBL), service learning, and High Impact Practises (HIPs) have found their way into HE in Switzerland, the teaching paradigm is still heavily reliant on expert teachers imparting their knowledge to students through lectures. This tendency seems to be changing slowly, according to the opinion of the author, through various discussions with colleagues from different universities within Switzerland. Yet the lack of research and study in this area also speaks for itself.

In the upcoming chapter, this discussion will delve into two key subchapters that shed light on the specifics of interdisciplinary PjBL. Firstly, PjBL will be compared to similar types of learning to distinguish them from each other, as they are often confused. Secondly, educators' roles in facilitating EL in interdisciplinary PjBL will be discussed. Kolb's Experiential Learning Cycle (ELC) and the Kolb Educator Role Profile (KERP) will be examined, emphasising educators' diverse responsibilities as facilitators, consultants, and coaches in interdisciplinary PjBL environments. The subchapter provides useful insights into the practical aspects of implementing interdisciplinary PjBL, as well as the critical role of educators in creating a successful interdisciplinary learning experience.

2.2.1 Differentiation to similar learning formats

There are many different Experiential learning (EL) formats (Kolb, 1984) as well as similar formats and frameworks like entrepreneurial learning which educators use that are not specifically linked to Experiential Learning Theory (ELT). This reality makes it difficult when trying to find evidence-based practice in a field that does not always adhere to the same language but at its core is very similar. The current chapter aims to outline the most important neighbouring EL practises to Project based learning (PjBL) to help situate PjBL further within EL.

High Impact Practices (HIPs) are educational practices that have been shown to significantly increase student engagement and success in college and university settings. Based on significant research and data, Kuh (2008), a notable higher education expert, identified these practices. HIPs cover a wide range of practices that are distinguished by their interactive, experiential, and engaging nature. So far, 11 practices have been identified, that show evidence-based deep learning. They are Capstone Courses and Projects, Collaborative Assignments and Projects, Common Intellectual Experiences, Diversity/Global Learning, ePortfolios, First-Year Seminars and Experiences, Internships, Learning Communities, Service Learning, Community-Based Learning, Undergraduate Research and Writing-Intensive Courses. These practices are intended to challenge students, stimulate active learning, enhance critical thinking abilities, and provide chances for meaningful knowledge application in real-world scenarios. We will look at the two practises that have close ties to project-based learning, these are outlined on the website of the American Association of Colleges and Universities (AAC&U, cited 01.05.2023):

*“**Collaborative learning** combines two key goals: learning to work and solve problems in the company of others and sharpening one’s understanding by listening seriously to the insights of others, especially those with different backgrounds and life experiences. Approaches range from study groups within a course, to team-based assignments and writing, to cooperative projects and research.”*

***Service Learning & Community-Based Learning** “In these programs, field-based “experiential learning” with community partners is an instructional strategy—and often a required part of the course. The idea is to give students direct experience with issues they are studying in the curriculum and with ongoing efforts to analyse and solve problems in the community. A key element in these programs is the opportunity students have to both apply*

what they are learning in real-world settings and reflect in a classroom setting on their service experiences. These programs model the idea that giving something back to the community is an important college outcome and that working with community partners is good preparation for citizenship, work, and life.”

These two practices when including projects as part of their learning, are seen as part of PjBL within the experiential learning umbrella, as will be explained at the end of this subchapter.

Problem-based learning (PBL) is another method that differs from PjBL. While the abbreviation PBL is sometimes used for Project based learning, the author purposefully chose to use PjBL as an abbreviation throughout the thesis to differentiate between the two types of experiential learning. In the following Table 1 the two closely related learning opportunities are compared.

TABLE 1. Project based learning vs. Problem based learning (Vaz, 2023)

Similarities	
<ul style="list-style-type: none"> • Focus on an open-ended question or problem • Provide authentic applications of content and skills • Emphasize student independence and inquiry • Are longer and more multifaceted than traditional assignments 	
Differences	
Project Based Learning	Problem Based Learning
Often multi-disciplinary	More often single subject
May be lengthy (weeks, months)	Tend to be shorter
Includes the creation of a product or performance for a relevant audience	The product may simply be a proposed solution, expressed in writing in an oral presentation
Often involves real-world, fully authentic tasks and settings	More often uses case studies or fictitious scenarios as ill-structured problems
May be almost entirely student-directed	Often includes pre-planned, staged instruction

The Buck Institute for Education (2023) has created a list of different sorts of "X-based learning" (X-BLs), such as project-based learning, problem-based learning, design-based learning, and others. They further describe PjBL as a broad category that can take various forms, such as developing and constructing a tangible product, solving real-world problems, or researching a topic

to generate an answer to an open-ended question. Larmer, one of the prominent researchers in this area, explains that some of the more recent "X-BLs," such as challenge-based and design-based learning, are updated variations of the same principle, and they all fall under the umbrella of inquiry-based learning. Other X-BLs are termed after a particular learning context, such as place-based or service-based learning and may or may not entail projects. Case studies and simulations have been used as "problems" in medical schools since the 1960s. Project based learning is still more common in the postsecondary sector. Completing any form of project involves the solution of a problem. (Larmer, 2023.)

This chapter shows that there is a fluidity in understanding PjBL and other related methods, and the distinction between the different types may be a matter of style and context. This thesis continues to focus on the definition of PjBL as defined in ELT. After elaborating on some of the distinctions between various formats of experiential learning, such as HIPS, PBL and PjBL, the subject in the following chapter shifts to a discussion of the roles that educators play.

2.2.2 The Role of Educators in experiential learning

This sub-chapter is dedicated to giving an outline of the Educator Role Profile (ERP) which is a Framework as well as an assessment that was developed for experiential learning. As coaching is specifically mentioned as one of the roles, it fits well with the thesis and the study. The information in this chapter stems mostly from Kolb et. al. (2014) foundational paper. They define that highly effective educators typically employ a dynamic matching model, which entails taking on diverse roles in response to the many modes of the learning cycle: experiencing, reflecting, thinking, and acting. The ERP (Figure 1, Kolb et al. 2014) defines four typical educational roles: facilitator, subject expert, standard-setter/evaluator, and coach.

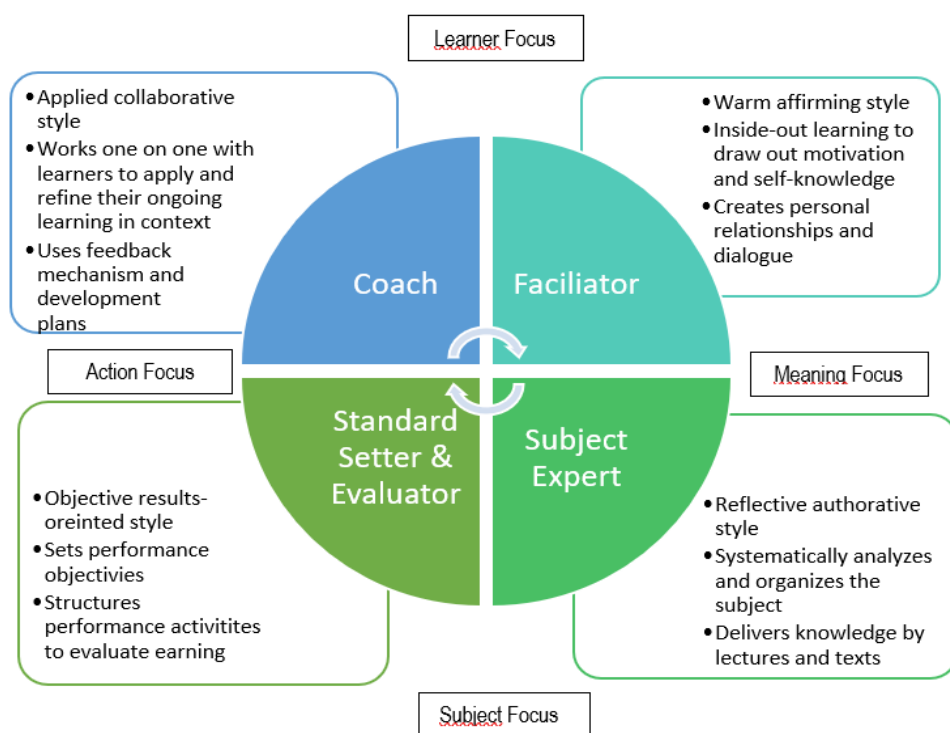


FIGURE 1. Educator Role Profile (Kolb et. al. 2014)

Depending on their educational philosophy, personal teaching style, and the demands of their educational institution, educators can take on a variety of roles. The ERP assessment instrument assists educators in being aware of their preferences and making deliberate decisions about the roles that function best in each setting. Educators can effectively support learners by understanding and utilising the many responsibilities in the ERP. There are Beliefs and Goals associated with each role, as portrayed in Table 2.

TABLE 2 ERP Beliefs and Goals of educator roles (adapted from Kolb, 2014)

Educator role	Beliefs:	Goals:
	"Learning occurs best when..."	"My students develop..."
Facilitator	It begins with the learner's experience	Empathy and understanding of others
Expert	New concepts are integrated into existing mental frameworks	Analytic and conceptual abilities
Evaluator	Clear standards and feedback are provided	Problem-solving skills
Coach	It takes place in a real-life context	Ability to work productively with others

The ERP defines "educator" broadly to include a variety of life roles that entail education other than traditional teaching in educational institutions. While educators are frequently linked with teachers and schools, education is a fundamental human activity that occurs in a variety of settings. Kolb et al. highlight in their publication that besides classical education for example parents can also be considered to be teaching their children for extended periods. Human beings in general build societies that pass on information and cultural values through interactions which can be understood as education. (Kolb et al.,2014.)

The ERP recognises that educational roles encompass responsibilities in organisations such as leaders, managers, and human resource specialists, as well as roles in personal life such as parents, spouses, and friends. Rather than explicitly matching the four learning modes, the ERP describes the educator role as bridging techniques between them. Educators can gain versatility in enacting the four teaching roles, just as students can develop competency in integrating numerous learning modes. The ERP self-report instrument defines educator responsibilities as including not just individual teaching styles, but also ideas about teaching and learning, educational process goals, and instructional practises.

Even though Kolb's model is one of the most cited, there are limitations. Morris (2019) proposes a refinement of the model as there seems to be a *"lack of clarity regarding what constitutes a concrete experience"*. It is proposed to use the following wording with the added wording in italics:

"Experiential learning consists of *contextually rich* concrete experience, *critical* reflective observation, *contextual-specific* abstract conceptualization, and *pragmatic* active experimentation"

Another consideration that needs to be taken into account as with every model or framework is the professional background of the developers. Kolb's theories were developed, within corporate training structures and therefore Kolb's four-stage cycle may not entirely apply to less structured learning modules, such as theory-based or practice-based learning. Billett & Choy (2013) argue that learning is a complex and multifaceted phenomenon that cannot be fully captured by any single theoretical framework. While Kolb's theory is a good place to start when trying to comprehend experiential learning, it may not fully capture the complexities of learning as a whole. Students may interact experientially in a variety of ways that are not necessarily consistent with Kolb's theory but can still be experiential and transforming. It is advisable to keep this context in mind while implementing or interpreting Kolb's theory.

2.3 Educational Coaching in interdisciplinary, Project based learning

This chapter examines the definition, purpose, and main areas of Educational Coaching in higher education (HE) before focusing on educational coaching in Project based learning (PjBL). It also compares other roles that are closely associated with coaching but are still distinct from it. Coaching in Higher Education is a process in which a trained professional, often referred to as an educational coach or academic coach, works with students to support their academic, personal, and professional development (Duggan, cited 01.05.2023). Educational coaches help students to identify their strengths and weaknesses, set goals, develop strategies, and overcome obstacles to achieve academic success.

Harding et. al (2018) mention that there is a confusion around the terminology of coaching and mentoring. Tutoring is also sometimes confused with coaching. All three roles are distinct but related approaches to learning and development. While there is some overlap between these three approaches, they each have unique characteristics and serve different purposes. For this research, the differentiation in terminology is important to guide further discussion and detect misconceptions and therefore these are displayed in Table 3 below.

TABLE 3. Coaching compared to mentoring and tutoring

Coaching	Mentoring	Tutoring
<p>“Coaching is a process in which the coach facilitates learning in the coachee. The coach need not be an expert in the coachee’s area of learning. The coach needs only have expertise in facilitating learning and performance enhancement.” (Grant, 2001.)</p> <p>Coaches establish a trusting relationship with the coached individual, with a specific goal in mind. Once the goal has been achieved, the coach usually withdraws (Irby, 2018).</p>	<p>Mentoring is a relationship-based approach in which a more experienced individual (the mentor) provides guidance, advice, and support to a less experienced individual (the mentee) to help them develop their skills and knowledge.</p> <p>According to Allen and Eby (2007), mentoring differs from coaching in its longer-term perspective, the depth of the relationship, and the focus on career development and socialization.</p>	<p>Tutoring is a form of one-on-one or small group teaching that is focused on helping students develop their understanding of a particular subject. Tutors provide academic support and assistance with homework, assignments, and test preparation. According to Irby (2018), “tutors work on short-term goals and tasks for specific improvement.”</p>

Cavanagh et. al (2010) mention that a variety of coaching models and approaches are being used in higher education, including solution-focused coaching, cognitive-behavioural coaching, and strengths-based coaching. The current studies suggest that coaching in higher education seems to be an effective way to support students' well-being and success, however, more research is needed to establish whether the specific coaching approaches and models used, are reliable. The literature shows a growing interest in the use of coaching in higher education.

While coaching is seen as a viable option in teaching, there are some factors to consider. One of these factors is the question; **how to develop these coaching skills for project-based learning?** A pilot study by Heinrich, Louson, Blommel & Green (2021) aptly named "Who coaches the coaches?" discusses the professional development needs and support preferences of early career teacher coaches. According to the authors, coaching is an important component of good experiential learning, but many coaches lack the essential skills and support to be effective in this role. The paper also discusses the development of a coaching framework to assist coaches in facilitating experiential learning among their students. The framework called GORP (Gravity, Ownership, Relationship, and Place) (Heinrich & Green, 2020) aims to guide course design, implementation, and assessment. Heinrich et al. created the GORP framework to assist teachers in implementing high-impact educational practises (HIPs). In their research, they discovered that coaches who received coaching based on this framework were better able to foster experiential learning among their students and that students who received coaching based on the framework reported higher levels of self-awareness and learning.

Both the Educator Role Profile (ERP) and the Global Educator Role Profile (GORP) are concerned with the educator's role in enabling learning in Experiential Learning (EL), and both emphasise the necessity of creating connections, facilitating reflection, and offering feedback. The ERP is a broader framework that defines the many functions that educators might play in the learning process. Each function need a unique set of talents and techniques. Heinrich et al.'s coaching framework, on the other hand, focuses largely on the function of the coach in the HIP format and provides a framework for coaches to build their abilities.

In summary, while the ERP and GORP have certain similarities in terms of their emphasis on the role of the educator in supporting learning, they differ in scope and level of specificity. The ERP framework is a broader and more well-known framework that describes several roles and abilities that educators may need to achieve, whereas the GORP framework is a more specific and

emerging framework created for coaches in the context of experiential learning. The research highlights the importance of coaching in experiential learning and provides a specific framework or model that may be employed in a variety of educational settings. The following chapter will concentrate on the transformative nature of EL.

2.4 Transformative Learning Theory

The Transformative Learning Theory (TLT) is included in the key concepts chapter, as transformational learning (TL) is a possible outcome of experiential learning (EL) as well as the transformation from an educator in HE to becoming an educational coach. Adults undertake transformative learning, according to Mezirow's transformative learning theory (1997), when they critically reflect on their assumptions, beliefs, and viewpoints and generate new meanings and perspectives that challenge and modify their present cognitive structures.

The process of transformation entails shifting from habitual modes of thought to more introspective and critical modes of thought, resulting in personal growth and transformation. Mezirow defined ten stages of perspective shift based on a national survey of women returning to college after a long absence. He deduced the following phases from the data (Mezirow, 1997):

1. A disorienting dilemma
2. Self-examination with feelings of guilt or shame
3. A critical assessment of assumptions
4. Recognition that one's discontent and process of transformation are shared and that others have negotiated a similar change
5. Exploration of options for new roles, relationships, and actions
6. Planning of a course of action
7. Acquisition of knowledge and skills for implementing one's plans
8. Provisionally trying out new roles
9. Building of competence and self-confidence in new roles and relationships
10. A reintegration into one's life on the basis of conditions dictated by one's new perspective

The study also emphasises the significance of contextual elements in the transformative learning process. It contends that the social, cultural, and institutional contexts in which people live determine their ideas, assumptions, and viewpoints, as well as their transformative learning experiences. Power dynamics, social norms, and cultural values can all have an impact on the transformative learning process and outcomes. (Mezirow, 1997.)

To summarise Mezirow's transformative learning theory, people go through a process of personal growth and transformation when they critically reflect on their assumptions, beliefs, and viewpoints, which leads to new meanings and perspectives that challenge their cognitive structures. As a result, transformative learning is a fundamental goal of project-based learning, as well as the transition from higher education professors to Educational Coaches, supporting personal growth and transformation via critical reflection and viewpoint change. The next chapter will give an overview of the so far mentioned theories and will put them in context with the study.

2.5 Summary of the Theories and Relation to the Study

This chapter summarizes the previously mentioned theories and sets them in relation to the study at hand. **Interdisciplinary teaching and learning (IDE)** involve integrating knowledge and perspectives from multiple disciplines to address complex problems and challenges. It is not simply a matter of merging different subjects or topics but necessitates a deep understanding of how different disciplines approach problems and how they might be combined to provide new insights and answers.

Project based learning (PjBL) is a teaching method that focuses on hands-on, experiential learning and is frequently utilised in interdisciplinary settings. However not all PjBL are interdisciplinary or have the focus on integrating multiple viewpoints, therefore these two concepts cannot be automatically equated to each other.

Educational Coaching in interdisciplinary, PjBL is the focal area of interest for this research. Coaching as part of the different educator roles in PjBL is a necessary puzzle piece as it entails providing students with guidance and support as they work on projects. Its role and effectiveness in PjBL are not yet well understood and there is little best practice on how to develop into the role

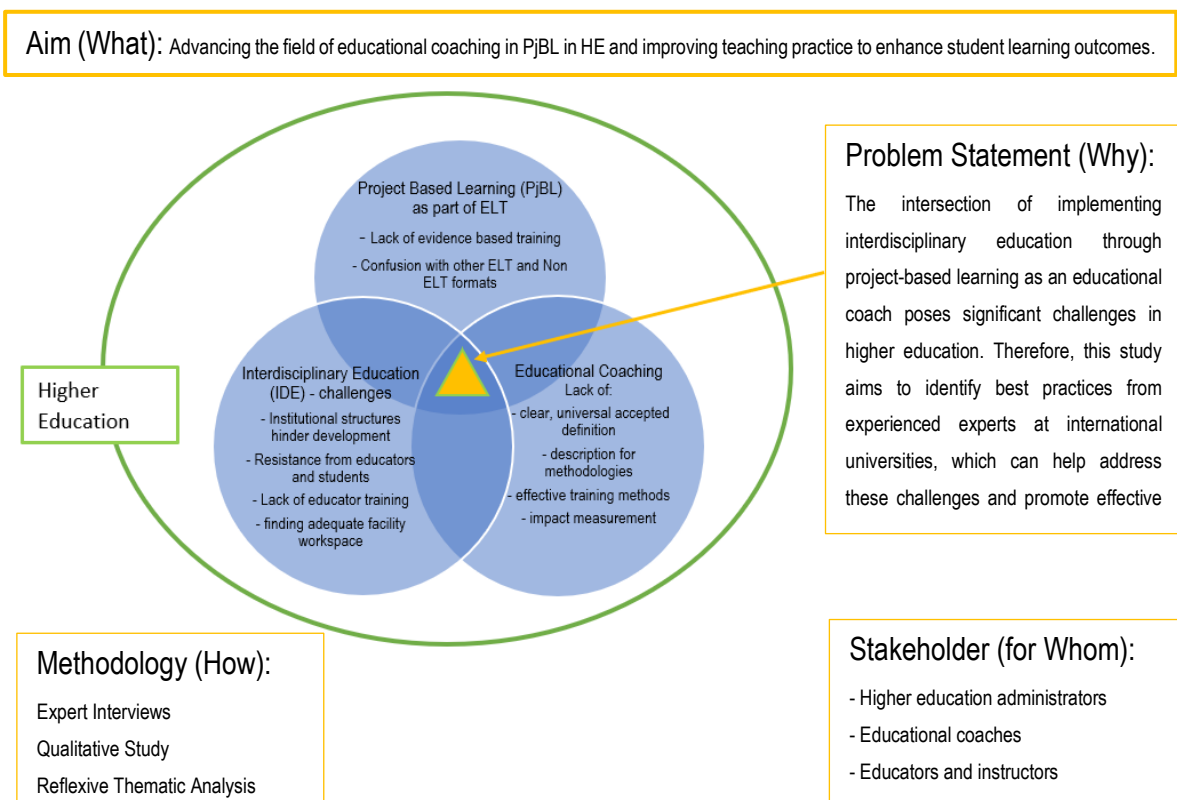
of an Educational Coach. The way PjBL is implemented and its effectiveness in enhancing student learning are both influenced by these realities.

The objective of this research is to contribute to the development of Educational Coaching in PjBL in higher education, with the ultimate aim of improving teaching practices and enhancing student learning outcomes. The next chapter will provide further details about the research objectives and aims.

3 AIMS AND OBJECTIVES

This chapter outlines the problem statement (why), the aims (what), the stakeholders (for whom) as well as the methodology (how), of the study. Implementing interdisciplinary education (IDE) in Higher Education (HE), through Project based learning (PjBL), utilizing educational coaching. PjBL faces significant challenges as outlined in the previous chapter. These include institutional structures that impede development, resistance from educators and students, a lack of educator training and finding adequate facility workspace. Further, the absence of a clear and universally accepted definition and description for Educational Coaching methodologies, as well as the absence of effective training are described. By addressing the following research topics, this study intends to investigate the convergence of these three domains (Figure 2) and suggest best practices that can assist HE institutions in overcoming these challenges. The problem statement outlines the current need for this study. The study aims to advance the field of educational coaching in PjBL in HE improving teaching practice to enhance student learning outcomes.

FIGURE 2. Outlining Aims and Objectives



Due to the extensive time required to answer all the outlined research questions, an exploratory study was selected instead. It set out to investigate the experiences and interpretive knowledge of experts who have extensive experience in applying educational coaching and supporting other educators in their learning journey. The following main research topic and sub-questions led the research process:

RQ: What are the experiences of experts who have applied educational coaching in interdisciplinary, project-based, and experiential learning opportunities in higher education?

Sub RQs:

1. What are the important factors in developing their own coaching understanding?
2. What are the concrete strategies to ensure a successful implementation of coaching?

Findings from this research propose to assist higher education institutions, specifically higher education administrators, educational coaches as well as educators and instructors, in developing their educational coaching programs for interdisciplinary, project-based, and experiential learning. The next chapter will outline the applied methodology in-depth.

4 METHODOLOGY

This chapter presents the methodology employed in the study, which aims to capture the individual, lived experiences of experts in the field. The study utilises a hermeneutic phenomenological approach that is guided by van Manen's (1997) idea of recognising the experience of phenomena in the context of a full experience and the researcher's participation in the research process. Next, details will be outlined, such as the specific context in which the research was conducted, the geographic location of the study, and the language of communication used during data collection.

The study was developed as part of a Master's thesis at Oulu University of Applied Sciences (OAMK) in Finland, and at the same time, the author was employed at the Zurich University of Applied Sciences (ZHAW) in Switzerland as a lecturer of Occupational Therapy. The research adhered to the ethical guidelines of both universities without any special considerations required beyond obtaining participant consent. The study's overall context involved recruiting individuals from countries that utilize Project based Learning (PjBL) to capture a diverse range of backgrounds and experiences. To ensure effective communication and data collection, English was chosen as the language of communication as well as for conducting interviews. These factors influenced the study's findings. Table 4 provides a summary of the building blocks before delving into the specifics of the study.

TABLE 4 Building blocks of the study

Building blocks of the study	
Hermeneutic Phenomenology	The study is focused on capturing the individual, lived experiences of experts in the field. Hermeneutic phenomenology lets the context of the phenomenon itself guide the analysis.
Steps of data collection	<ul style="list-style-type: none">• Creation of inclusion criteria based on research questions• Review literature and search for experts• Develop Interview Guidelines• Obtain consent• Structured interviews with four participants

Reflexive Thematic Analysis (Braun & Clarke, 2019, 2020) 6 Phases: 1. Familiarization, 2. Generating initial codes, 3. Constructing themes, 4. Revising themes, 5. Naming themes, 6. Write report

Underlying theoretical framework

- Epistemology: Constructivist paradigm
- Ontology: Relativism
- Axiology: Interpretative paradigm
- Experiential orientation
- Inductive analysis approach
- Semantic and latent coding

4.1 Research design

Phenomenology is a theoretical perspective that emphasizes the study of individual experiences, arguing that human behaviour is shaped by subjective experiences rather than an objective, externally described reality (Cohen et al., 2007). Van Manen's hermeneutic phenomenology was chosen over Heidegger or Husserl's because of its emphasis on experiential orientation, inductive approach, and contextual fit in capturing individuals' lived experiences within their environment (Van Manen, 1990). Furthermore, Van Manen's approach coincides with the study question and objectives of examining the meanings and interpretations of field specialists without imposing predetermined frameworks, which is desirable in qualitative research (Braun & Clarke, 2019, 2020). As this study explores the experience of experts in interdisciplinary, project-based, educational coaching, phenomenology offers the most appropriate philosophy and methodology. Hermeneutic phenomenology provides a suitable approach for capturing and expressing these experiences (Creswell, 2007).

Qualitative methodologies, such as phenomenology, prioritize the subjective and experiential aspects of human life and aim to describe these experiences in detail (Patton, 2002). The outcome of such studies is often a collection of qualitative data sets constituting descriptions that highlight the meanings individuals attribute to their lived experiences (Creswell, 2007). Hermeneutic phenomenology involves analysing text to identify meaningful themes and insights and is a human science that focuses on understanding individuals and their experiences (van Manen, 1997).

In general, an experiential approach to data comprehension emphasises the exploration of how a given phenomenon might be encountered by the participant (Byrne, 2021). It entails investigating the meaning assigned to the event by the responder, as well as the significance of the phenomena to the respondent. Despite the fact, that these thoughts, feelings, and experiences are (re)produced subjectively and intersubjectively, the researcher would subject to the participant's meaning and meaningfulness (Braun & Clarke, 2014). The authors state that adopting an experiential approach necessitates an understanding that participants' thoughts, feelings, and experiences reflect personal states held inwardly by the participant.

Structured interviews were used in this study to acquire an understanding of the unique experiences of educators with expertise. Expertise and specifically educational expertise can be defined in a variety of ways. The criteria for the selection of the experts were informed by a systematic review (van Dijk, van Tartwijk, van der Schaaf, & Kluijtmans, 2020) on "What makes an expert university teacher?" and helped this study to frame expertise for educators. As per the author's perspective, the Dreyfus Model of Expertise's (2004) notion that "experts provide an almost perfect performance" fails to capture the essence of experiential learning rooted in a constructivist paradigm. Failing or making mistakes is part of learning which applies to students and educators in this learning context. This study frames an expert mainly as being more experienced than others, with more in-depth criteria in which area they should be more experienced.

The following criteria were developed to choose participants; these criteria have been adapted but lean on the findings of van Dijk et. al (2020).

The participant:

- Is or has been teaching and supporting learning in Higher Education
- Has been involved in the design of interdisciplinary PjBL in Higher Education (HIPS, modules, courses, semesters)
- Has been involved in assessment and feedback of such design
- currently has, or has had an educational leadership and/or management role in this learning environment
- Has more experience in this setting than others at his institution
- Has used coaching as an important part of their learning setting as a means of supporting students in their learning journey
- Has supported other colleagues to become coaches in this setting

The author's enrolment in an educational coaching program, facilitated by OAMK, led to an additional exclusion criterion in which existing networks were deliberately omitted to seek out new contacts. This was done to challenge the author's socialization as an educational coach in a developing field. An extensive literature search resulted in limited studies meeting the inclusion criteria, and the first participant was recruited by contacting the authors of one such study. Further recommendations led to two more participants, and a fourth was identified during a visit to an international university (Table 5). The interview guide was developed based on research questions and reviewed by the thesis supervisor, and the questions were organized into five sections which are outlined in Appendix 1.

TABLE 5 Interview participants

Gender	Place of work	Country of work experience
Female	James Madison University	USA
Male	McMaster University	Canada
Male	Hoogeschool van Amsterdam	Netherlands
Male	Educational Consultancy Firm	Canada
	Previous: Michigan State University	USA

Informed consent was obtained and orally re-affirmed once before the interview and again after the interview, allowing the participants to retreat from the study. The interviews were automatically transcribed by MS Teams and then the rough transcript of 100 pages was cleaned up by the author. Unnecessary or redundant content, such as "um," "ah," or repetitive phrases were removed. Paraphrasing to clarify unclear statements, while preserving the original meaning, was administered in a few places. Formatting concluded the process and 50 pages of condensed text was ready for analysis.

As this is a preliminary study, the arguments for the small sample size are the following:

- In qualitative research, small sample size can be appropriate as the focus is on understanding the experiences and perspectives of individuals rather than generalizing findings to a larger population (Patton, 2002)
- The study is exploratory in nature and is intended to generate hypotheses or ideas for further research (Creswell, 2014)

4.2 Detailed description of the Reflexive thematic analysis (RTA) undertaken

The write-up of the detailed description of the RTA undertaken is modelled after a student example of good practice (Student Examples of Good Practice, 2023). The researcher employed RTA to analyse the data, following the guidelines provided by Braun, Clarke, Hayfield, and Terry (2019). RTA is a way for investigating and expanding knowledge of patterned meaning across a dataset, to provide a cohesive and compelling interpretation of the data, that is based on the data itself (Braun et al., 2019). As the study was aligned with qualitative research, choosing to use Braun and colleagues' reflexive method for thematic analysis (TA) instead of alternative models of TA made the most sense. The researcher did not choose a coding reliability method because it is based on (post)positivist assumptions and processes, which are inappropriate for the constructivist epistemology and experiential orientation that underpins this study. RTA, on the other hand, is a qualitative method that constructs patterns of meaning from data and emphasizes "researcher subjectivity as not just valid but a resource" (Braun et al., 2019, p. 848). Given that this thesis values the experience and meaning-making of experts in coaching in PjBL, where context, subjectivity, and reflexivity are critical processes, RTA was the most suitable technique for this analysis. As part of reflexivity, the researcher examined themselves and noted personal values, beliefs, and socialization that could affect the data collection and interpretation throughout the process (Palaganas, Sanchez, Molintas, & Dupan Caricativo, 2017).

Braun et al.'s (2019) RTA method consists of six stages: familiarization with the data, generating codes, constructing themes, revising, and defining themes, and producing the analysis report. The researcher outlined their approach to each of these stages below:

Phase 1, familiarization. The researcher engaged with the data by watching and listening repeatedly to the recorded videos, while simultaneously correcting the automated MS Teams transcript. While listening and reading through the transcript, the researcher journaled initial thoughts in a research diary and wrote down potential points of interest for the analysis. Braun & Clarke (2012, 61) recommend questions to explore throughout the process of familiarization, including "How does this person make sense of their experiences? What assumptions do they make in interpreting their experience? What kind of world do their accounts reveal?".

The researcher also noted down their feelings during the familiarization process. For example, surprise or annoyance at the diverse answers or noticing judgment when hearing some of the

answers. This made the researcher realize that their view needed uncovering further by journaling and realizing how these views were developed and then repeating to listen to the recording. The researcher noticed that the interview questions were interpreted very differently, and this conclusion made it clear, which question could have been formulated more concisely for the next time.

Phase 2, generating initial codes. The researcher used a Microsoft Word Document to code the 50 pages of interviews using the "comment" feature and highlighting the relevant text. The first interview was coded according to the research question, but this led to the codes becoming too generic. Therefore, there was a need to restart again to capture the meaning of the quotes. An inductive "bottom-up" approach was used due to the need for exploratory research, which is also more in line with the reflexivity of the RTA. The researcher used a mix of semantic coding, where codes are capturing explicit meaning, as well as latent coding, where codes focus on a deeper meaning. Reflections that came to mind were noted during coding into the diary as well as comments in the Word document. Initially, there were approximately 600 comments in the comment section that were later transferred to a virtual Miro Board as sticky notes. After the transfer, the codes were condensed in an iterative cycle to approximately 50 and taken to the next phase.

Phase 3, Constructing themes. Upon clustering the codes for themes, domain themes such as "challenges of developing coaching skills" and "successful factors of developing coaching skills" were created. However, Braun and colleagues (2020) suggest that researchers should focus on underlying meanings rather than domain themes. This mind shift was reinforced by reading articles that used RTA as a best practice example, like Byrnes (2021). In a series of steps, the themes and codes were refined until three larger themes were established.

Phases 4 and 5, Revising and Defining the themes. Recursive questions by Braun et al. (2019), such as "Are the data too diverse and wide-ranging?" and "Does it tell me something useful about the data set and my research questions?" were employed to develop reasoning for the themes and subthemes. The three main themes and 13 subthemes were exported to an Excel file, and the research question and sub-questions were refined as they were initially too broad. Naming the themes without appearing like domain themes, was challenging, and feedback was sought from a colleague. The discourse improved the alignment of the subthemes with the overall themes. To support the reasoning, an Excel table defining each theme and its relevance to the study as well as its connection to the research question was developed.

Phase 6, Writing the report. The first version of the analysis resulted in a deeper understanding of how the themes fit together. The themes were reconstructed one final time, and the theory section was rewritten while engaging with more literature, which improved the structure of the result and discussion section. At this point, the three main themes were satisfactory and supported a storyline that would make it easy for readers and stakeholders to envision a user journey. The three final themes are:

1. Growth catalysts: Educational coaching roots
2. Cultivating growth: Factors of implementing coaching in PjBL
3. Sustaining growth: Consideration in implementing coaching

4.3 Reflexivity on my meaning-making

The process of knowledge production in research is an active endeavour undertaken by the researcher, commonly referred to as the researcher's reflexivity. Rather than themes being uncovered or emerging on their own, it is the creation of patterns by the researcher that allows for their identification (Braun et. al, 2020). In the context of data analysis, the researcher's individual perspective plays a critical role in shaping their findings. In this study, the researcher reflected on their own socialization throughout the analysis, identifying key areas that influenced the interpretation of the own lived experiences and engagement with the world. These areas include gender identity, Swiss citizenship, experience as a student, training as an Occupational Therapist, exposure to pedagogical paradigms, family socialization, study and work experiences abroad, interculturalist training, Service Design experience, personal coaching experience and being a novice at doing a phenomenological study. More factors have shaped the author and therefore may be hidden or had an impact on this study design and the way the results were interpreted. To provide a more detailed illustration, one key area will be further elaborated, written in the first form, to closer mirror the journaling.

Having grown up and gone to school in Switzerland until age 16 has shaped my understanding of the pedagogical paradigm I was immersed in, which was steeped in expert knowledge being passed on and little to no experience in knowledge creation through experience. This experience led me to see this pedagogical paradigm as “the norm” and every other experience from then on was recognized as “something different”. I noticed that I excelled better at assignments where

applied learning, reflection and experience were involved and had more challenges in rote learning. After the age of 16, I went to study for A-levels at a Jesuit College in the UK. Without being aware at the time, I was exposed to the Ignatian pedagogical paradigm, which was developed from the spiritual exercises of Ignatius of Loyola, the founder of the Jesuit order. I could sense that there was a shift in how the experience differed from my education before and it took me a year to accommodate to this shift. Since I was immersed in this way of learning during two critical years of my late teens, I would say this has shaped me in becoming more of a critical thinker and trying to understand the meaning behind the evident meaning and becoming more of a reflective learner.

For the past two years, I have been immersed in experiential learning pedagogy through my Master of Education Entrepreneurship as well as capacity training at work. This has caused many disorienting dilemmas, trying to make meaning and shifting away from the teacher as an expert and towards the student, in taking the own learning journey into the own hand. During my studies for the Master's Programme, this meant, that I was the one deciding where I wanted to develop and to which depth, within a certain frame of competencies. Although this way of self-directed studying and learning feels more aligned with who I am as a learner, it also takes more time and decision-making skills. As this was also the topic of this thesis, I was engaged in a dual process of reflection: My meta-level of constructing and meaning-making was trying to understand and analyse the interviews of the experts, their process as coaches (constructing meaning) and their journey as well as fostering this learning with their students and colleagues (supporting constructing meaning and change on two different levels). I needed to be mindful to differentiate these levels during the analysis process.

This reflection concludes the methodology chapter where the research approach and methods have been described in detail. The next chapter presents the findings and conclusions drawn from the data collected through the methodology illustrated in this chapter.

5 FINDINGS AND CONCLUSION

Before presenting the findings in this chapter, it is crucial to note a variation from the standard framework of presenting results and discussion. When writing up an analysis, RTA researchers are expected to contextualise and synthesise data supplied in the findings section (Braun and Clarke 2013; Terry et al. 2017). This is a substantial deviation from the standard thesis reporting conventions proposed by most universities (Byrne, 2021). The author chose to prioritise the RTA reporting style and permission was obtained from the thesis supervisor; thus, the findings and discussion are in the same chapter.

Three main key themes were constructed out of the data (Table 6) and were framed resembling a nature and tree-based analogy. The first theme is called **Growth Catalysts: Educational coaching roots**. This theme consists of 4 subthemes that can be understood as starting elements in a journey towards becoming an effective educational coach. It starts with the experience and own motivational triggers of the experts which was named “Roots of the coaching journey”. The next subtheme pinpoints how to identify the aptitude of educators to become educational coaches. Further nurturing a coaching mindset is the third sub-theme and the last sub-theme focuses on what coaching skills should be acquired, to become an effective coach.

The second theme was named **Cultivating Growth: Factors of implementing coaching in PjBL** to mirror the ongoing work needed. This theme includes 3 subthemes that focus on the practical aspects of how to support or nurture the development of new educational coaches. The three subthemes consist of exploring the training opportunity for coaches, the variability of coaching formats and coaching techniques that can be applied as well as the helpful role that scaffolding can play in preparing coaches.

The third main theme called **Sustaining growth: Considerations in implementing coaching** includes 4 subthemes that are more diverse in content than the two first main themes. The first subtheme was constructed from a large data set and gives clear and helpful implications as to how structural factors play an important role in cementing PjBL and coaching in the University sustainably. The second subtheme gives importance to the human factors to be considered. Then defining and framing the coaching role in the learning context was another subtheme that was part of a large data set as well as measuring the impact of student’s competencies in PjBL which was

seen as a very important factor by all experts and therefore was constructed as the last subtheme. In Figure 3 the themes, subthemes and codes are illustrated to give the reader an overview of the findings.

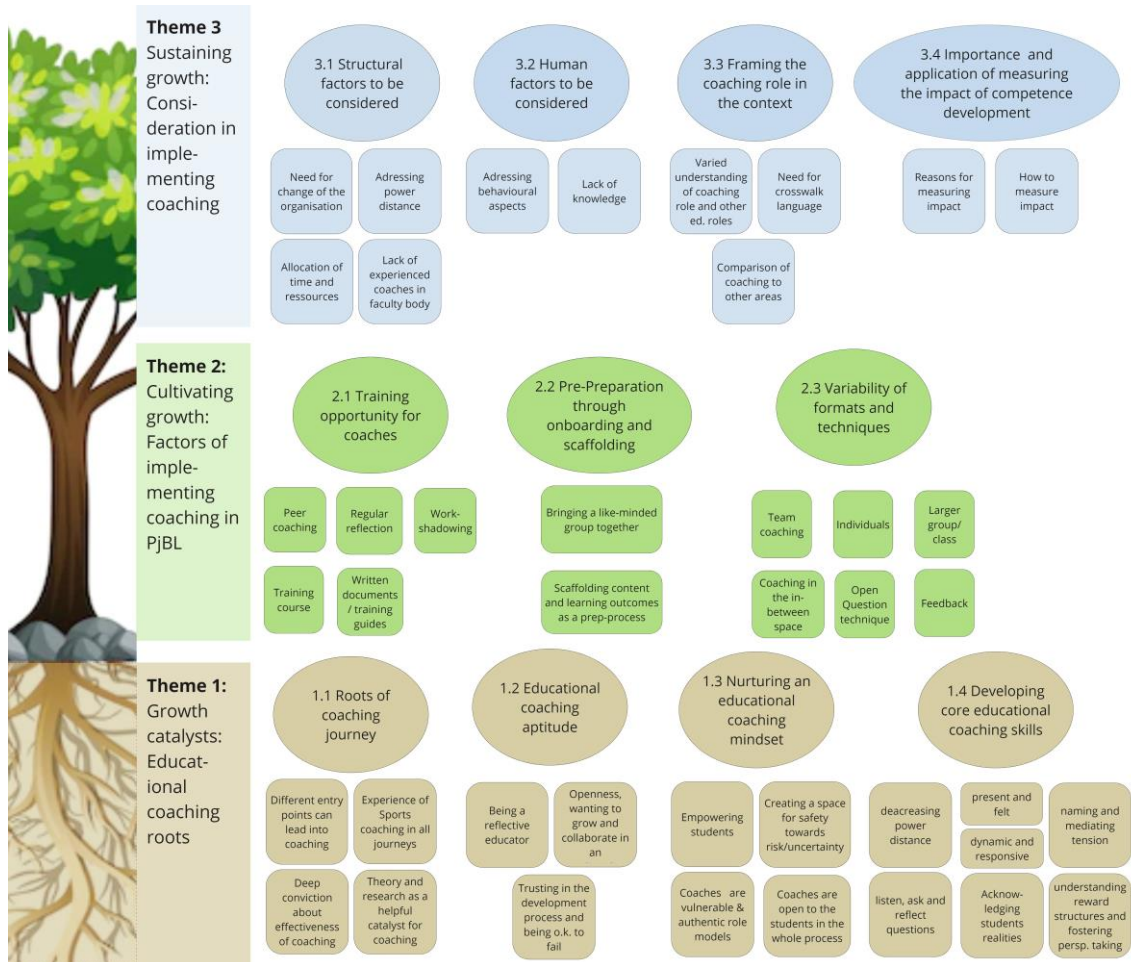


Figure 3. Overview themes, sub-themes and codes

To safeguard the personal experiences shared during the interview, none of the quotes referenced in the text is attributed directly to the experts and no pseudonyms are attributed to further anonymize the participants. The definition of themes and their related sub-themes in the subsequent sub-chapters seeks to equip individuals, notably educators and university key decision makers, with a beneficial compass to navigate the complexities of resolving the overall research issues. These sub-chapters conclude with a review of the main conclusions and limitations, which serve as the discourse's conclusion.

5.1 Theme 1 - Growth Catalysts: educational coaching roots

This first main theme was named growth catalysts as in the interviews the passion and emotion of the interviewees were very much present, and the themes and subthemes seemed elemental in building a foundation for coaching development. The subthemes start with the development of the expert's own journey, the roots for their development and lays the foundation for the underlying mindset and skills, that the experts mention, should be developed.

5.1.1 Roots of the coaching journey

This subtheme shows that each coaching journey was ignited and fostered by different factors. There are also some common triggers and catalysts that were found which will be outlined in this chapter. The data shows that different entry points can lead into coaching and that previous experience in sports coaching in all journeys was present. There was also a deep conviction about the effectiveness of coaching in Project based Learning (PjBL) as well as the area of how theory and research can be helpful catalysts for coaching development. The sub-themes are outlined in Table 6 with the codes.

TABLE 6. Subtheme 1.1 with codes

Subtheme 1.1	Codes			
Roots of the coaching journey	Different entry points can lead into coaching	Experience in Sports coaching in all journeys present	Deep conviction about the effectiveness of coaching	Theory and research as a helpful catalyst for coaching development

Two experts were immersed at universities, where coaching or experiential learning as a concept/method had a long-standing tradition. According to these two participants, academic coaching has been around for over 25 years in Northern America as part of the faculty improvement literature. One of them remarked:

"Then when I got this job (...) I worked with a number of people who were curriculum coaches and pedagogy coaches and theory coaches and curriculum theorist. So, a lot of people who are serving in a coaching role to others, from an academic training standpoint to other faculty or other researchers or academics. It was in those spaces where I got a more robust exposure to how coaching operates."

Another expert had a negative experience as a student with coaching and was unhappy how coaching was performed when working as a faculty and wanted to change it. And yet another expert stated it as a part of the own professional development journey, to work in a team:

“I think I tend toward coaching because I needed coaching. And once I realized that I needed coaching, I was like, I'd better figure out how to do this and so I ended up trying to be the person that I needed when I was younger (...)”

This expert went on to intuitively adapt their own teaching style towards experiential learning and coaching before understanding that there was a theory of experiential learning. Out of the four experts, three seemed to have a more intuitive approach but all had a **deep-rooted conviction** that **experiential learning and coaching** was the **optimal way to support students** in their journey. This was interpreted in the way they emphasized this point and by their mimic and expression when this topic came up in the interviews. The experts all shared the conviction that this way of engaging with students was the most effective way.

All experts used High Impact Practices (HIPs) as outlined by Kuh (2008) to frame their formats. While Kolb's Experiential Learning Cycle (2014) and related literature were loosely associated with their approaches, they were deemed helpful yet limited in terms of their comprehensiveness. One expert was highly annoyed by Kolb not because there was a disagreement with the theoretical construct but of it being misquoted and misunderstood by colleagues and therefore this made it necessary to opt for other references. Overall, the experts drew from a variety of literature and theories, some of which originated from their own countries and were only available for example in Dutch. Others originated in the areas of expertise of each interviewee and focused on topics such as student learning, organisational psychology, and facilitating applied research in natural sciences.

Interestingly, it appeared that theory and the Experiential Learning Literature were not equally important to the participants in developing their understanding. Instead, engaging in research around Experiential Learning by measuring the impact of their programs or collaborating with others to write about it deepened their comprehension. The discourse served as a supporting factor in their learning process.

A common denominator was that all experts had previous experience in sports coaching and training people. A hypothesis could be, that previous experience in sports coaching could be a helpful catalyst to get into the coaching journey by having an experience or understanding of oneself in the role of a coach in another field.

There is one hypothesis that the experts, who were all spearheading innovative new learning formats at their Institutions, could be part of the innovator's group, as framed in Rogers's (1962) "Diffusion of Innovation Theory" (DOI). The theory explains how new ideas, products, and technologies are adopted and spread through a population over time. The theory categorizes individuals into different groups based on their adoption behaviours, including innovators, early adopters, early majority, late majority, and laggards. Innovators are venturesome and interested in new ideas, they are prepared to take risks and are frequently the first to explore fresh ideas. Therefore, these pioneering educators could be equated to the innovators and perhaps the next group of colleagues that are onboarded in a coaching team are early adopters or even further on the DOI continuum. Their needs for coaching development might be different as they could feel more worried about doing things "wrong", this is an observation that correlates with the author's own experience being part of two training coaching groups.

In summary, the **growth catalysts** identified in this chapter highlight the diverse and individualized paths that experts took to embark on their coaching journeys, with various triggers and motivations such as previous experiences, intuitive adaptations, and personal convictions as well as theory and research that supported their learning. To know that a variety of journeys can lead into becoming a coach could be helpful for new coaches to hear. There does not seem to be "the" trigger that leads into this role. The hypothesis of the DOI would be interesting to study further, to find out if there are differences in behaviours in educator groups about the DOI and to find out how that could be best bridged. The finding that sports coaching could be a helpful catalyst would need to be verified by a larger cohort of educational coaches, it could also just have been a coincidence.

5.1.2 Educational Coaching Aptitude

How to choose and onboard new coaches is a question that was an integral part of this study and not only was it interesting to the researchers but most of the interviewees talked about this during the interview themselves before being prompted to answer it. This theme will share their beliefs

and experiences and can be helpful to use as criteria for developing universities to choose suitable candidates. This theme was something that the participants were passionate about. They had clear ideas of what prerequisites they themselves would look for. The criteria for the aptitude were aligned with the four coaches. Four codes frame the three main aptitudes that were mentioned, they are illustrated in table 7.

TABLE 7. Subtheme 1.2 with codes

Subtheme 1.2	Codes		
Educational Coaching aptitude	Being a reflective educator	Openness, wanting to grow and collaborate in an interdisciplinary team	Trusting in the development process and being o.k. to fail

Being a **reflective educator** was mentioned throughout the interviews. Reflection as a foundation of supporting students as illustrated by this example by a participant:

"It's just about looking for what are your strengths and what are your possibilities, and you need an openness for being a reflective teacher and a reflective professional. And if you're open about these things and you can live with that, then you're more than happy to be part of the team because we always need everyone. "

This finding is less surprising as the literature and theories on reflective educators/teachers suggest that ongoing reflection and inquiry can lead to improved practice and growth. Brookfield (1995), suggests in his critical reflection theory, for educators to critically examine their assumptions and beliefs about teaching and learning. Engaging in active learning experiences, and seeking out diverse perspectives and feedback, educators can become more effective and reflective practitioners. Schön & De Sanctis (1986) state the importance of reflection for professionals which emphasizes that educators can improve their practice by actively engaging in experiential learning opportunities, and by reflecting on these experiences to gain new insights and understanding.

There was agreement among all experts on what an ideal team member would bring as aptitude. Someone prepared to take risks and attempt new ways, as well as a willingness to **collaborate in an interdisciplinary team and be open to new ideas**, seemed to be a significant requirement.

Another code encapsulated the comments made on making mistakes as a natural element of experiential learning. It was therefore unsurprising that it was also mentioned as a prerequisite for becoming a coach. Being okay with the experiential learning cycle and **trusting the process**, seeing **"failures" as opportunities for learning and growth** is far from being right or wrong.

Some of the findings resonate with the previous chapters in that perhaps innovator coaches are looking for further colleagues who are also okay with taking risks and being happy to work in a space of uncertainty. This viewpoint however was not stressed, and a more open formulation was made that the basic starting mindset should just be openness, wanting to grow and being o.k. to fail. Therefore, it seems that the experts had a lower threshold to include new colleagues as they themselves perhaps felt confident to support them in the additional process.

Overall, the findings resonate with the literature as outlined by the OECD (1972) as cited in Chettiparamb (2007) on the mindset of an interdisciplinary teacher. It is described that a teacher should have a blend of open-mindedness, curiosity, and a willingness to engage in discussion as well as humility and be able to assimilate and synthesise learning. The last three attributes were not specifically mentioned by the experts but the given practical examples by the participants can very well be interpreted to be fully aligned with the findings in the literature.

5.1.3 Nurturing an educational coaching mindset

A further subtheme that was developed from the data was, that the experts deemed it important for new coaches to create a mindset for coaching. This sub-theme differs from the previous theme, in that this is something that the coaches should develop after they have started the development journey. According to the online Cambridge Dictionary (2023); *"A mindset means "a person's way of thinking and their opinions"*. The mindset should lay at the foundation of coaches' actions, to create a positive learning environment that fosters growth and development. The data showed three main topics within this subtheme: Empowering students, creating a space for trust and safety towards risk and uncertainty as well as coaches being vulnerable & authentic role models as illustrated in Table 8.

Table 8. Subtheme 1.3 with codes

Sub Theme	Codes			
Nurturing an educational coaching mindset	Empowering students	Creating a space for trust/safety towards risk/uncertainty	Coaches are open to the students during the whole process	Coaches are vulnerable & authentic role models

The interviewees all highlighted that successful learning required students to take ownership of the project and not rely solely on the faculty for answers. Coaching was designed to **empower students** to "really own a problem" and work collaboratively with others. According to the participants, the students' view on this was concurrent and they mentioned that this was motivating for them and that they indeed felt empowered. Overall, the interviewee's experience suggests that empowering students and giving them ownership over their work is a key factor in achieving successful outcomes.

To build a strong relationship with students, coaches and educators must establish **trust and rapport** as one of the first steps. This involves engaging with students in a meaningful way and elevating them to a higher level. Developing relationships based on mutual respect, trust, and understanding is crucial in creating a positive and supportive learning environment. One expert referred to this environment as the "arena of learning," and another interviewee mentioned that having fun and being silly is one way to create a safe space. The participants provided various examples of how to develop a **safe space**, but they all agreed that educators must actively create **an environment that** promotes learning by **encouraging students to take risks** and venture into **uncertainty**.

The experts all emphasized that building relationships is an action which requires time and effort to develop. To be an effective coach they all indicated that it is essential to be willing to be **vulnerable with your team members** and students. This means being open and honest about your strengths and weaknesses and creating a space where individuals feel comfortable sharing their vulnerabilities.

"Personally, I think you have to be willing to be vulnerable with your teams in order to be a good coach. Because that's one of the first steps in building trust and a relationship like a rapport. If you're not willing to be in that kind of relationship with students and elevate them,

you know to the level that you're going to engage with them that way, then I don't think a person would enjoy or want to become a coach"

This **authenticity** also comes from role modelling, be it with your own group of educators by having effective and time-efficient meetings, to letting go of too much control and **trust in the development process**. It requires authenticity, vulnerability, and rapport. The experts mentioned that as a coach or teacher, it's crucial to be present as a person, rather than simply instructing students on what they need to do better or differently.

In conclusion, it seems important that by modelling positive behaviours and understanding team dynamics, coaches can help individuals leverage their strengths and reach their full potential. This understanding is similar to the one that Kolb et al. (2014) mention in the Educator Role Profile for coaches. According to Bluckert (2005), the three fundamental coaching qualities are unconditional positive regard, empathic understanding, and congruence or genuineness. These qualities are described as crucial in establishing a successful coaching relationship, as they facilitate openness, acceptance, respect, and effective communication with empathic understanding. The findings of the data mirror the mindset described in the literature.

Acquiring a new mindset seems closely related with two theories. On the one hand, there are behavioural change theories that attempt to explain how and why people change their behaviour. One such theory is the Transtheoretical Model (TTM) developed by Prochaska and DiClemente (1983). This model suggests that change occurs in stages, and individuals move through these stages in a non-linear fashion. The stages include pre-contemplation, contemplation, preparation, action, maintenance, and termination. And on the other hand, there is Mezirow's Transformational Learning Theory (TLT). This focuses on how individuals transform their perspectives, beliefs, and values through critical reflection on their experiences (Mezirow, 1991). Transformative learning involves a process of becoming critically aware of one's assumptions and biases, questioning them, and re-evaluating them based on new information or experiences. Stepping consciously into the coaching shoes and walking with them is a life-long learning process that can lead to transformative understandings of oneself in the world and break-down previous assumptions that one had.

Including these theories, while supporting new educators in their mindset development could be important. While behavioural change theories emphasize the importance of stages and incremental change, Mezirow's TLT highlights the importance of critical reflection and cognitive restructuring in

transformational learning. Both theories are valid guidelines to practically support individuals to change their behaviour or perspectives.

5.1.4 Developing core educational coaching skills

The experts had ideas of what they considered to be effective coaching skills; this became the last sub-theme of theme 1. There were multiple skills (Table 9) that were constructed from the data, these skills mentioned reoccurred throughout the interviews and can be understood as important further catalysts in becoming an effective coach.

Table 9. Subtheme 1.4 with codes

Sub-theme	Codes						
Developing core educational coaching skills	Coaches are dynamic and responsive	Coaches are present and felt	Coaches acknowledge, name and mediate tensions	Coaches understand reward structures and foster perspective taking	Coaches listen, ask and reflect questions	Coaches actively decrease power distance	Coaches acknowledge students realities

Not all skills were mentioned or emphasized by the interviewees the same. To give an overall impression these are mentioned here and illustrated with a few poignant quotes.

Coaches are...

- **Dynamic and responsive:** *"the learning experience can be everywhere and as a learning coach...so if somebody pops up with a question, that is the moment where it's happening and you can't say, well, o.k., that's a good question but put it back into the course I'm giving to you in one or two weeks, because then that moment of learning is gone, and it never comes back"*
- **Present and felt:** *"Like everybody, a student wants to be seen, heard and felt in a way..., a sense of belonging and that the teacher is aware of that student being there."*
- **Acknowledge name and mediate tensions:** *"listening for moments of that tension in order to surface it, note it, try to hold it, hold it without being too attached to it emotionally"*

- **Understanding reward structures and foster perspective taking:** "*... unpack people's motivation and willingness to be in a space in the first place and knowing enough about that or anticipating those needs has been a big part of my theoretical approach*"
- **Listen, ask and reflect questions**
- **Actively decrease power distance**
- **Acknowledge students' realities:** "*(...) I cannot be focusing on teaching if somebody is ...emotional about a loss....., feels not safe and happy about taking risks (...)*"

These findings are a start for building a body of helpful skills as there is little specific literature on coaching skills in interdisciplinary, Project-based learning (PjBL). Kolbs Educator Role Profile (ERP) does not specifically outline these necessary skills. Heinrich et al. (2021) mention the following three skills: relationship building, enabling reflection and delivering feedback.

In summary, a set of defined coaching skills in PjBL can be beneficial to universities starting out. However, the efficacy of such a list is premature and could be validated further for example through an extended Delphi study including a larger pool of experts.

5.2 Theme 2 - Factors of implementing coaching in PjBL

This theme offers practical steps for successful implementation, based on the experts' own experiences and recommendations. Starting with the subtheme of training opportunities, going on to the act of pre-preparation through scaffolding the learning process and bringing new colleagues together and ending with the subtheme of a variety of formats and techniques that can be applied.

5.2.1 Training Opportunity for Coaches

There are many ways that coaches could be trained and supported in their development which is at the core of this study (Table 10). The content of this subchapter will be helpful for new programs to design their learning journey for new coaches. There were five training opportunities mentioned in the interviews: Peer coaching, regular reflections, work shadowing, training course and written documents/ training guides.

TABLE 10. Subtheme 2.1 with codes

Subtheme	Code				
Effective training opportunities for coaches	Peer coaching	Regular reflection	Work shadowing	Training course	Written documents/ training guides

Three quotes (Table 11) are used to illustrate and give insights into the interpretation of the different formats and to give a clearer picture for transfer into practice.

TABLE 11. Training opportunities for coaches

Examples given	Identified formats
"We also coach each other and that's more maybe coaching through philosophical questions or how do we want to proceed with a particular event or how might we see if somebody hears me interacting with a team and they're like, I don't think I would have done it that way. We're coaching each other in how to respond in the moments."	Peer coaching, Regular Peer Reflection, Training
"(...) if you have a group of people that are either practising it formally, practising it informally, or curious about it, then having them be in a network and have access to each other to talk about their own best practices. What they're finding, but also putting them in rooms to teach together."	Work shadowing through Co-Teaching, Peer Reflection
"And in order to do that they need to develop their portfolios and they have a constant syncing process about: What am I learning? What am I doing? How is this beneficial for my personal	Training, Regular Reflections through portfolio work

<i>growth and my personal development? This is constantly assessed by the learning coaches and given feedback on and that's how they start to develop their thinking also about am I on the right way?</i>	
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According to the experts, it is important to consider the structures surrounding coaching when planning the training. To develop these skills, coaching can be utilized as a tool. One participant suggested that creating a network of individuals who are formally or informally practising coaching and providing them with opportunities to teach together can lead to the sharing of best practices and personal growth. Additionally, the use of learning coaches to provide constant feedback and assessment can aid in developing one's coaching skills. One participant remarked that they believed that if “the Willing”; those who are ready and want to embark on this journey, in a university are found and collaboration among them is facilitated, then this would be a cost-effective way to promote coaching practices.

Overall, the findings imply that a combination of formal and informal training opportunities might help promote coaches' development, with a focus on peer learning and collaboration among coaches. The study's findings are consistent with existing literature on fostering coaching as well as in the interdisciplinary and project-based learning literature. For instance, Bachkirova, Jackson, and Clutterbuck (2011) contend that peer learning can foster coaches' reflective practice and promote their professional development. Within the interdisciplinary and Project based Learning literature, Heinrich et al.'s (2021) paper include a case study that highlights the effectiveness of the GORP model in facilitating faculty reflection on their actions and their impact on student learning. The findings of the study indicate that the faculty members' reflective practice led to modifications in their courses as they took proactive measures based on their self-awareness.

However, some of the five learning opportunities mentioned in the study lack specificity, such as the content of training courses or written materials. In contrast, peer coaching, regular reflection, and work shadowing are more self-explanatory. As this was an explorative study not specifically focused on training opportunities, the findings may give programs an indication of how to develop new training opportunities to embark on a personal journey within their university or program, consistent with the Experiential Learning Theory, where learning occurs through action and reflection. Further research could expand and provide more detailed content for these learning opportunities.

5.2.2 Pre-preparation through scaffolding

The following sub-theme includes two codes that are about the pre-preparation (Table 12). Bringing a like-minded group together as well as scaffolding the content and learning outcome was named as a supportive activity to understand better the structure and the moments where coaching takes place. Therefore, this sub-theme is the linking piece between acquiring effective skills and training for coaching. As scaffolding is more of a practical action it was included in this second theme.

Table 12. Subtheme 2.2 with codes

Sub-theme	Codes	
Pre-preparation through scaffolding the learning process and content	Bringing a likeminded group together	Scaffolding the content and learning outcomes as a prep-process

During the interviews, it was consistently mentioned by all participants that the initial step in preparation for innovation involves finding a group of individuals who are willing to take part. This finding is in line with the Development of Innovation Theory (DOI) proposed by Everett Rogers (1962) and outlined in sub-theme 1.1. According to the DOI, innovators generally collaborate with early adopters or people who are quick to accept new ideas and are willing to take risks to test out new ways. Working with this group of early adopters allows innovators to get input and support for their ideas. The word scaffolding is used in education to describe the assistance given to students while working on tasks or projects that are just beyond their current level of ability. This assistance can take numerous forms, including feedback, direction, modelling, and resource provision (Wood, Bruner & Ross, 1976). Bruner states in his landmark work "The Process of Education," that any subject can be taught to any child at any developmental stage (Bruner, 1960). He continues by arguing that this can be accomplished by providing learners with "scaffolds" - tools and support, that assist them in reaching a level of comprehension, that they would not be able to achieve on their own.

All participants in the study described scaffolding as a form of support. For instance, the learning process for students should be scaffolded, and involving new coaches in the design process was seen as a supportive measure. The scaffolding of coaching should follow shortly after, with pre-preparational activities for coaches. According to one expert, scaffolding throughout a program can also help to clarify the roles of coaches, with a transition from a more hands-on approach at the

beginning to a more hands-off approach by the third year. However, the act of over-structuring or pre-structuring can both help and hinder the coaching development process. It is important to have enough time and space to adapt flexibly to support student learning in the moment, rather than strictly adhering to a pre-prepared plan. One expert gained a better understanding of the coaching process and role of a coach after rigorously structuring the program initially, only to realize that this was not helpful.

Several studies have highlighted the strong connection between scaffolding and PBL. For example, in a recent study by Heinrich et al. (2021), it was found that coaching development was assisted by spending time conceptualizing experiential learning during the planning process and through weekly coaching. The authors argue that the process of scaffolding can be highly effective in helping coaches to understand the structure and moments where coaching takes place in PBL contexts. The paper by Blumenfeld, Soloway, Marx, Krajcik, Guzdial & Palincsar (1991) explores how project-based learning can be used to motivate and engage students in their learning and provides insights into the importance of scaffolding in this process.

In summary, the second sub-theme of theme 2 focuses on the pre-preparation stage of coaching for innovation. The importance of scaffolding the learning process and content was mentioned, as well as bringing a group of like-minded individuals together as support activities. Scaffolding was described as a practical action and a form of support, which can clarify the roles of coaches and assist in understanding the structure and moments where coaching takes place. Scaffolding is closely linked with project-based learning, and several studies have highlighted the importance of scaffolding in motivating and engaging students in their learning. Overall, adopting scaffolding as an approach in universities setting out to use project-based learning can provide numerous benefits for both students and faculty. It can help to create a more supportive and effective learning environment, while also promoting deeper learning and critical thinking skills on all levels.

5.2.3 Variability of Formats and Techniques

This sub-theme captures the variability of formats and techniques (Table 13) of coaching utilized by the experts throughout the examples they gave. Each of them illustrated their unique style and

preferred techniques, which were tailored to their specific context. Another noticeable difference was the number of students they worked with regularly in their programs, with some handling cohorts of 35 students while others dealt with larger groups of over 100 students.

Table 13. Subtheme 2.3 with codes

Sub-theme	Codes					
	Formats			Techniques		
Coaching can be applied in various formats and techniques	team coaching	individuals	larger group/class	coaching in the in-between space	Open Question technique	Feedback

Most coaching took place within a team setting but coaching was also used when working with individuals or the whole cohort. One participant outlined:

“There is a fluidity with how I will talk to a group versus how I’ll talk to Individuals measure them, coach them. Both of those formats require being open and not judgmental. And sometimes you just don’t want to point out an individual, so you talk to the class, you talk to the team: I’ve heard some issues. but then it also takes experience, to just call the student in, or at least a couple of students and talk to them. “

The most used techniques mentioned were “Team coaching”, “Open Question technique”, “Feedback” and something that was referred to as “Coaching in the in-between space”. To give a more in-depth idea, of how this could look in real life, a table in Appendix 2 gives an overview with direct quotes from coaches. Based on the diverse range of coaching techniques highlighted by just four participants, it can be inferred that possessing an arsenal of coaching strategies is a crucial aspect of being an effective coach. These findings suggest that there is no one-size-fits-all approach to coaching, and coaches need to tailor their techniques to their specific context. The study’s limited sample size makes it challenging to generalize these findings to a broader audience. Therefore, further research is necessary to validate these conclusions.

5.3 Theme 3 - Sustaining growth: Consideration in implementing coaching

This theme encompasses four critical but heterogenous sub-themes (Figure 4). They were grouped together as they showed important considerations, how growth and development could be sustained. Two of the sub-themes are **structural factors** as well as **human factors**, that have an impact on the success of coaching within PjBL. Another sub-theme was constructed to give voice to the importance and applicability of monitoring the **impact of PjBL and coaching**. The fourth sub-theme addresses the issues around **defining and framing coaching in its context**.

5.3.1 Structural Factors to be Considered

This sub-theme focuses on the structural factors that should be considered to foster a successful environment for coaching in interdisciplinary PjBL. The codes that emerged from the data are the need for a change in the organization, addressing power distance, allocating sufficient time and resources, and addressing the lack of experienced coaches in the faculty body. These themes are further outlined in Table 14 and will be discussed in the following sections.

TABLE 14. Subtheme 3.1 with codes

Sub-theme	Codes			
Structural Challenges to overcome	Need for change of the organization	Allocation of time and resources	Adressing power distance	Lack of experienced coaches in faculty body

All participants were adamant, that structural change was needed at different levels of the university system. As one expert pointed out,

"If you're going to take it on as an institution, it's not just like, do we have the right people? It is a talent question, like we need the right people, but we also have to have systems in place."

All experts shared that it is critical that there needs to be a willingness to try new approaches at all levels of the institution. It seemed that all programs they coached in, had this support. The youngest program was still breaking down some barriers but had full support from the top management. One of the most difficult problems for establishing a coaching paradigm mentioned was the necessity

for organisational change. Given that the workload is sufficiently different from traditional teaching approaches, this includes a new set of policies and reward mechanisms to make coaching sustainable, as an expert observed. There was **disagreement as to whether coaching** required more **time** and **resources** than another course, which did not. It seems that this is managed very differently at the different Institutions. Some Universities allow for smaller class sizes for PjBL and thus the coaching is more intensive. The longer programs that ran over a year seem to be able to make up the time resources by coaching more at the beginning and less as time goes on. Therefore, the length of the program seems to be important when deciding how to allocate resources.

Another issue mentioned is a **shortage of experienced and interested coaches** among the faculty. According to one expert, they were only reaching 1 - 2% of colleagues at their large university who were interested in joining the programme as a coach. The expert advised that institutions may need to engage in training and development programmes for faculty members interested in coaching to address this. According to another study participant, universities could promote coaching through rewarding systems like promotion and tenure decisions to facilitate its implementation.

In general, these findings resonate with the challenges outlined in Interdisciplinary Education (chapter 3.1.2 Challenges of Interdisciplinary Education), where challenges can be traced back to institutional, people, and facilities issues. As OECD (1972, 1982) mentions these problems arise from the traditional university model, lack of teacher training, and limited space and time. Addressing structural variables, such as administrative support, policies, time, and resources. Identifying successful program structures can also facilitate interdisciplinary pedagogy's implementation.

In essence, it is vital to consider the organizational factors that could impact the effectiveness of a coaching program during its development. Institutions need to ensure that they have administrative backing, suitable policies and reward systems, sufficient time, and resources, as well as proficient and enthusiastic coaches. Selecting the program's duration is a crucial decision, as shorter programs may be more expensive than longer ones, but as the program progresses, students become more independent. By addressing these issues, institutions can encourage the utilization of coaching and its advantages for both students and teachers in PjBL and other formats. Further

exploration of the programs' structures and identification of the success factors would be fascinating.

5.3.2 Human Factors to be Considered

This sub-theme was created to capture all the human factors that should be considered to foster a successful environment for coaching in interdisciplinary Project based Learning. Two codes were constructed out of the data, one was coined addressing behavioural aspects and the other: Lack of knowledge (Table 15). These two aspects can adhere to all areas. They could apply to university management, the educators who are coaches or are becoming coaches or the students. These aspects will be compared against existing literature.

Table 15. Subtheme 3.2 with codes

Sub-theme	Codes	
Human factors to be considered	Adressing behavioral aspects	Lack of Knowledge

Participants emphasised the energy and dedication required to be an excellent coach. One expert remarked:

"If there are any educators who are not going to put the time in with the teams and with the students, then you're not going to be a very good coach,"

This perspective was expressed often throughout the interviews, emphasising the significance of commitment and adaptation in the coaching process, creating space and time for learning with the students but also amongst the coaching team. Coaching also does not seem to be always the answer. Switching from coaching to a more direct style and the necessity of adapting to individual needs seems to be necessary. Coaching can be helpful when students respond well, but if not, a more directive approach may be required to obtain desired results. A difficulty that was mentioned, was when professionals made the switch to become educators at the university. There seemed to be a change of mind:

"(...) as soon as professionals starts teaching with us, they actually feel like, ok, but now I'm the expert, I can no longer be afraid that I don't know, or I forget things. I need to be the expert here now and an expert doesn't show any form of unknowing".

This mindset would need to be unravelled again when training to become a coach. This may well have to do with cultural aspects of how an educator should behave. The OECD (1972) Report on Interdisciplinary Education (IDE) notes that resistance to change in teaching style does not only come from seasoned educators but from junior staff who have fixed habits and prefer not to upset their superiors. A more recent publication (Gunawardena, Weber & Agosto, 2010) indicates that pressures on faculty seeking career advancement could refrain them from participating in IDE formats.

Participants in the study also highlighted the significance of learning to be congruent in coaching. One interviewee described a circumstance in which a colleague's desire for structure conflicted with the values that had been set up to empower the students to act independently. And this very small act of wanting more structure from one coach led to the students reverting their behaviour of working independently to going back to asking the educator's permission for every step. One moment of unaligned behaviour from a coach changed the student's behaviour in a split second. These findings resonate with what Heinrich et al. (2021) described in their paper, that students lost trust quickly because of one decision made to make them have an additional presentation and not feeling that their needs were met.

Overall, these challenges can be contributed to the behavioural change theories as outlined by Prochaska & DiClemente (1983). The suggestion that people do not change in a linear fashion is in concurrence with the above-mentioned example. Also, Mezirow's (1991) Transformational Learning Theory illustrates how individuals transform their perspectives, beliefs, and values through critical reflection on their experiences. Another interpretation could be that differences among disciplinary practitioners could be described as cultural (Bauer, 1990) and therefore would need to be addressed appropriately.

This means that leading a PjBL program and coaching within such a format is a challenging endeavour. Not only does each coach have to be always aware of their actions, but also be aligned within a coaching team. This is something that will take time to develop and where a mindset of failing forward is helpful. In both described cases, the situation was a moment that turned out to be

a teachable moment for the coaching team, spurring discussion and helping the team to become more aligned and aware of their impact in the learning arena.

5.3.3 Defining and Framing the coaching role

In this subchapter, the following four sub-themes are explored. The analysis revealed four codes: fluid understanding of coaching role and other educator roles, need for crosswalk language, and comparison of coaching to other areas. These codes are illustrated in Table 16. Understanding the nuances of these codes is critical in sustaining an effective coaching environment in PjBL

Table 16. Subtheme 3.3 with codes

Sub-theme	Codes		
Fluidity in the understanding of how coaching is interpreted and applied	Fluid understanding of coaching role and other educator roles	Need for crosswalk language	Comparison of coaching to other areas

For some experts, coaching was a very clearly defined role and for others, there was more variety and fluidity. This could be seen throughout the interviews when concrete examples were given. Some examples portrayed many different educator roles and the experts themselves also said, that fluidity and shifting between different roles for example; expert, consultant or facilitator, is something that happens. The varied application how they applied coaching in their examples, was an important finding and is an indicator for more research.

According to one respondent when discussing tutoring and coaching "*There's a **fluidity** between those two advising philosophies*". This emphasises the need of defining coaching and its unique value in the educational setting. Another set of data related to participants' remarks that **crosswalk language** is needed, is a translation guide that enables educators, researchers, and key decision-makers to communicate effectively with each other. The same expert remarked that it was difficult to find related research as there are different terminologies used as already highlighted in chapter 3.2.1 "Differentiation to similar learning formats". Having these different terminologies and histories of development within experiential learning makes it more challenging to compare them to each other.

All of the interviewees **compared coaching to other areas** of learning for example parenting. This aligns well with Kolb et al. (2014) understanding, that coaching can be learned in many different settings. They also observed that teaching necessitates instructors wearing multiple hats, including coaching, mentoring, and directing. Several philosophical views can be beneficial, but it is critical to recognise the unique value of coaching in a PjBL situation.

In summary, the study found that there are diverse perceptions and applications of coaching in project-based learning (PjBL), highlighting the need for further research in this area. Despite the different interpretations of the coaching role, the study suggests that there are many possible ways to interpret the role of a coach in PjBL and still be effective. The recommendation for future PjBL programs is, to invest enough time to reach an agreed understanding of the coaching role within their specific context, to ensure the success of the programme.

5.3.4 Measuring the Impact

This subtheme (Table 17) was created to give voice to the importance all the experts gave to measuring students' development process and indirectly the impact of coaching within PjBL. Two codes were identified: Reasons for measuring impact (Why) and "How" to measure impact. There was originally an additional subtheme capturing the outcome and impact (What) the experts had collected and measured. Even though it was interesting what the different experts counted as impact, this subtheme was dismissed as it was beyond the scope of this study.

TABLE 17. Subtheme 3.4 with codes

Sub-themes	Codes	
Importance and application of measuring impact	Reasons for measuring impact	How to measure the impact

All study participants agreed that while designing a PjBL program, the **impact measurement** for the student's learning is important. Measuring the impact shows the success of the program (Why) and therefore solidifies the use of resources including coaching which may be more cost-intensive – though this view is not shared by all experts. One expert framed the need like this:

"Otherwise, it just ends up being a really great anecdotal experience and people feel good about it. But at some point, people stopped feeling good about it, especially faculty, when their dean says: where is your evidence? "

None of the experts specifically measured the impact of coaching within PjBL, which concurs with the findings that this is an important gap in the literature as outlined by Harding et al. (2018).

The present paragraph describes the actual approaches employed by different institutions to measure the impact of Project-based Learning (PjBL) and coaching within it or ideas how to develop these. One expert, who specializes in assessments on experiential learning, suggested that a process-oriented approach could be employed in new programs, which entails assigning multiple deliverables and reflections during the program. These can be examined to gauge progress and determine the impact of the coaching experience. The expert further recommended constructing a robust assessment of experiential learning using qualitative approaches and subsequently quantifying or structuring findings into a rubric or index for future use.

One of the experts highlighted the significance of student involvement in developing impact measurement, especially when it pertains to assessing the impact of coaching on their learning. This notion resonates with Brookfield's (1995) "Becoming a Critically Reflective Teacher", which advocates for educators to cultivate a habit of self-reflection through diverse practices, including seeking feedback on their instructional strategies. Therefore, incorporating student perspectives in evaluating the effectiveness of coaching aligns with the principles of reflective teaching and could enhance the quality of the assessment. Involving students in assessing teachers' performance, is an important consideration, although the effectiveness and appropriateness of this practice may vary depending on the context and the specific methods used.

Pedagogical research studies can be conducted to determine the long-term success of a PjBL program. One example given by the expert is that his university conducted a 10-year longitudinal study to measure the success of their program by collecting survey data from students, with a focus on teaching approaches, student engagement, and student-perceived learning processes. This study follows up with students many years past their graduation.

In conclusion, the experts concur that measuring the impact of PjBL is essential. The role of coaches within it is a neglected research topic. Therefore, it was valuable to include it in the findings

to comprehend why and how impact measurement was applied in various institutions or could be in the future. The options presented in this regard will offer inspiration to universities initiating PjBL to create their impact measures fitting their context. However, further research is needed to focus on the role that coaching has in PjBL.

5.4 Summary of Conclusion and Limitations

This chapter will start by discussing some of the limitations that have an impact on the findings and then move on to outlining the summary of all the different conclusions of each sub-theme.

A **limiting factor** in coding and creating the themes was, that the experiential Project based learning (PjBL) format could not always be differentiated or extracted from the coaching experience in the quotes. For example, one expert mentioned:

"I think the other reason I lean toward coaching is because I get something out of it too. I'm not an altruist, I'm also learning from and with my students and my colleagues, and that to me, the experience of learning together and becoming better at whatever, we're doing together is incredible"

The underlined part of this quote could allude to coaching but also the learning in the whole PjBL context. This is only one of many examples where coaching and the PjBL learning context are mentioned intertwined. However as both concepts clearly influence each other and are some of the key elements of a successful implementation, the differentiation was made where possible or otherwise interpreted by the researcher. Guest, Bunce & Johnson (2006) argue that overly broad questions can lead to data that is difficult to analyse and interpret and suggest that interview questions should be as specific as possible to elicit detailed responses. As this was an exploratory study, the questions were intentionally more open. In a next study, these two concepts should be more clearly separated. Developing a semi-structured interview guideline that allows in-depth follow-up questions and options to tease out experts' specific understanding, would be suggested.

Although this study provides valuable insights into the experiences and best practices of experts who have applied educational coaching in interdisciplinary, project-based, and experiential learning opportunities in higher education, it acknowledges the limitations of exploratory research, including

a small sample size. Consequently, further research is needed to build upon the findings of this study, provide a more comprehensive understanding of the topic, and offer a platform for future investigations. In Table 18 the **conclusions of each sub-theme** are outlined.

TABLE 18. Summary of Findings and Conclusions

Nr	Themes	Findings, Conclusions and further research ideas
1		Growth catalysts: Educational coaching roots
1.1	Roots of the coaching journey	Various triggers and motivations led experts to embark on their coaching journeys. Previous experience in sports coaching as well as engaging in theory and research can be supporting factors in deepening the coaching understanding. All experts showed a deep conviction about the effectiveness of coaching. The hypothesis that initials coaches are innovators as per the “Development of Innovation” theory (DOI) may help identify new colleagues on the DOI continuum, to cater to their different needs. All of the findings mentioned would need further study.
1.2	Educational coaching aptitude	Aptitudes for onboarding new colleagues were identified: being a reflective educator, openness, wanting to grow and collaborate as well as trusting in the development process and being o.k. to fail. The findings align with the literature on the aptitude of an interdisciplinary teacher. They may also be connected to the DOI theory and the early adopters on the continuum, further research is needed to verify this hypothesis.
1.3	Nurturing an educational coaching mindset	Supporting the development of the coaching mindset was framed with four aspects: empowering students, creating a space for safety towards uncertainty and risk, being vulnerable and authentic role models as well as openness to students. The inclusion of behavioral learning theory and transformative learning theory could be important elements taken from literature, in supporting new educators' mindset development.
1.4	Developing core educational coaching skills	A clearly defined set of necessary coaching skills specifically for PjBL could be beneficial to universities starting out. The efficacy of the current list which includes “dynamic & responsive, present & felt, acknowledging, name & mediate tensions, understanding reward structures & foster perspective taking, listen, ask & reflecting questions, actively decrease power distance, acknowledging students' realities”, would need to be validated and expanded further.
2		Cultivating growth: Factors of implementing coaching in PjBL
2.1	Training opportunities for coaches	Five learning opportunities were mentioned in the study: peer coaching, regular reflection, work shadowing, training courses and written documents/training guides. These are a starting point for planning training, some opportunities like training courses and written documents lack specificity, and further research could provide more detailed content for these learning opportunities.

2.2	Pre-preparation through onboarding and scaffolding	As pre-preparation two actions are identified. First finding the educators within the university that are interested to begin their coaching journey and secondly adopting a scaffolding approach. Scaffolding can assist project-based learning within universities with numerous benefits for both students and faculty. For one it helps clarify the roles of coaches and assist in understanding the structure and moments where coaching takes place. Scaffolding is closely linked with project-based learning, and several studies have highlighted the importance of scaffolding in motivating and engaging students in their learning.
2.3	Variability of formats and techniques	Three formats: team coaching, individual coaching and larger group/class coaching were named by the experts. As techniques three were identified in the data: feedback, open question technique, and coaching in the in-between spaces. Based on the diverse range of coaching techniques highlighted by just four participants, it can be inferred that possessing an arsenal of coaching strategies is a crucial aspect of being an effective coach. These findings suggest that there is no one-size-fits-all approach to coaching, and coaches need to tailor their techniques to their specific context. The study's limited sample size makes it challenging to generalize these findings to a broader audience. Therefore, further research is necessary to validate these conclusions.
3		Sustaining growth: Consideration in implementing coaching
3.1	Structural factors to be considered	The data showed that programs need to ensure to have supportive structures in place to overcome challenges. This may lead to change within the organization, allocation of time and resources, addressing power distance between educators and students and support finding coaches in the faculty body. By addressing these issues, institutions can encourage the utilization of coaching and its advantages for both students and teachers in PjBL and other formats. A more in-depth study about how these structural factors are set up at experienced universities might reveal common success factors.
3.2	Human factors to be considered	Human behavior impacts the success of all PjBL programmes. These include all levels within a university. Be it students, who are new to PjBL, open or sceptic educators to educational coaching, or the strategic and administrative employees at the University. Each stakeholder group will need a different approach with the goal of a successful implementation. A further study could outline how to best support the human factors within the organizational change to implement educational coaching.
3.3	Framing the Coaching Role in the Context	There were three findings in this theme: A fluid understanding of coaching role/other educator roles, a need for crosswalk language and a comparison of coaching to other areas of life. Despite the different interpretations of the coaching role, the study suggests that there are many possible ways to interpret the role of a coach in PjBL and still be effective. Investing time in reflecting on a shared understanding within a program could help drive more effective implementation in future programs.
3.4	Importance and application	The experts as well as the literature concur that measuring the impact of PjBL is essential. Ideas on how to develop these measures are outlined as well as real-life examples including longitudinal studies. More research is needed to specifically measure

<p>of measuring the impact of competence development</p>	<p>the impact of coaching within PjBL. Identifying the success factors and structures of coaching programs is necessary for future research.</p>
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The chapter on findings and conclusion is the culmination of the study's research, which aimed to explore the experiences and best practices of experts who have applied educational coaching in interdisciplinary, Project-based (PjBL), and Experiential Learning (EL) opportunities in Higher Education (HE). While this research has shed light on important themes and findings, it is important to acknowledge the limitations of exploratory research, such as a small sample size. As such, further research in this area is recommended to provide a more robust foundation for future investigations.

The next chapter will focus on the discussion highlighting practical implications and future recommendations, to assist higher education institutions in developing their own educational coaching programs for a PjBL environment, while also acknowledging the need for continued research and development in this field.

6 DISCUSSION

This final chapter reflects on the exploratory study of the experiences of experts who have applied educational coaching in interdisciplinary, Project based and experiential learning (PjBL) opportunities in higher education (HE). While the findings are not definitive, they provide a valuable starting point for further exploration and development of coaching practices in higher education. The chapter outlines the major findings and offers reflections on the study process, as well as recommendations for future research directions. Ultimately, the goal is to use these insights to benefit students, faculty, and the larger educational community by improving the overall quality of higher education through enhanced educational coaching practices.

6.1 Contribution to the Field of Study

This research has shed light on the existing environment of coaching in higher education and the potential for transformational change. While the findings are not definitive, they provide a valuable starting point for further exploration and development of coaching practices in interdisciplinary PjBL. The results point towards the need for both personal and organizational transformation to effectively support educational coaches and students as well as build a sustainable fundament for educational coaching within an interdisciplinary, PjBL environment. The key findings will be further outlined below in relation to the research questions (RQ).

The experiences of experts who have applied educational coaching in interdisciplinary, project-based, and experiential learning opportunities in higher education (Main RQ) have shown a broad variety of findings as can be expected in an explorative study. The key themes can be considered as steppingstones in starting the educational coaching roots, building opportunities how to cultivate this growth, by applying supportive factors, and then implementing on how to sustain the growth of educational coaching.

To provide a more detailed overview, this study further investigated sub-research questions 1 and 2. The findings suggest that there are several **factors in developing the coach's own coaching understanding**, including previous experience in sports coaching, engaging in theory and research, and possessing a "coaching aptitude" characterized by reflective thinking, openness, a

desire to grow, and an ability to collaborate in an interdisciplinary team. These factors suggest that the interviewed experts can be classified as part of a pioneering group or "Innovators" in Rogers' theory (1962) of the Development of Innovation (DOI). As a result, new coaches may have different needs and could be categorized as "Early Adopters" or in a later stage on the DOI continuum. Furthermore, this study highlights the importance of incorporating behavioral learning theory and transformative learning theory to support the coaching development of new educators. The findings further suggest **concrete strategies to ensure the successful implementation of coaching in PjBL** which are outlined according to the different stakeholders addressed.

Strategic and administrative management needs to overall support the program, especially the decision makers of the university to establish programs sustainably. This includes separate elements that require administrative backing, such as room bookings and allocation of resources, implementation of suitable policies and reward systems. For instance, these elements may involve including coaching as part of a tenure package, ensuring sufficient time and resources for development and training, and providing support, along with incentives, for finding proficient and enthusiastic coaches

For champions of the PjBL format/pioneer coaches, the selection of new colleagues should be based on coaching aptitude and a focus on nurturing their coaching mindset. Ideally, new coaches are included in the scaffolding process of the program design and trained through a mix of opportunities outlined in the findings. Different coaching formats and techniques can be applied and tested, and ongoing reflections on coaching should be led to ensure the ongoing development of the understanding of coaching in the team.

For **educators interested in becoming coaches**, preparing the aptitude to become a coach, nurturing a coaching mindset, and developing core skills through experiential learning using a mix of the five training opportunities outlined in the findings are recommended. Experimenting with different coaching techniques and engaging in reflections on their own understanding as part of a life-long learning process are further helpful catalysts.

The goal is to use these insights to benefit students, faculty, and the larger educational community because enhanced coaching practices have the potential to improve the overall quality of higher education. While much work remains to be done, these findings offer a promising foundation for ongoing research and practice in the field of coaching in higher education.

6.2 Reflections on the study process

This subchapter outlines the authors' personal reflections on the study process. The literature review proved to be a challenging task due to the broad scope of three distinct fields of study, characterized by conflicting terminology, varying interpretations, and a dearth of high-quality studies, including meta-analyses. It is worth noting that most of the literature on PjBL focuses on students before higher education, which made finding literature at the intersection of these three fields feel like searching for a needle in a haystack. However, this challenge was expected, as this study aimed to address this particular research gap.

The research design was well-suited to the field, though in retrospect, mirroring the results back to experts for feedback and reactions could have deepened the analysis further. Although time constraints limited the ability to source experts for interviews, one well-published expert was instrumental in opening doors to other colleagues. It is worth noting that even though two experts who had previously worked together on a chapter contributed unique perspectives during interviews despite sharing a similar mindset about coaching. Being a novice at qualitative research, the Reflexive Thematic Analysis (RTA) was a new experience for the author, and discussions with experienced colleagues helped to deepen her understanding through many iterative sessions. Miro Board and concept maps (Appendix 3) were used to guide findings and conclusions.

The reflexive analysis required developing the mindset to look beyond the obvious for hidden themes. While it was enriching, holding the vast body of the study with three large areas of knowledge was challenging. It was occasionally difficult to maintain reflexivity and review personal biases towards all aspects of the study. This study and thesis served as an experiential high-impact practice (HIP) that the author wholeheartedly engaged in, leading to a profound sense of transformation and growth as a researcher.

6.3 Recommendations and future directions

In this exploratory study, the conclusion summary in Chapter 6 highlighted numerous aspects that are worthy of further exploration. Two possible areas of interest include a pragmatic approach to identifying specific skills used by educational coaches in interdisciplinary project-based learning, which could be accomplished through a Delphi study. Alternatively, investigating the connection

between Rogers's "Development of Innovations" Theory and the development of educational coaching within universities could shed light on how to onboard new colleagues more effectively.

Future research in this area could broaden the scope of educational coaching in project-based learning, expand the sample size, and compare findings across institutions or regions. By continuing to explore educational coaching, it is possible to promote the adoption of effective coaching practices in higher education and gain a deeper understanding.

In closing, building upon van Nieuwerburgh & Oades' (2017) suggestion, it may be beneficial to shift the perspective on coaching in educational contexts to consider coaching as a form of education in itself. This shift could broaden the understanding of its potential as a theory and practice of adult learning, leading to new insights and possibilities for the field, and encouraging further exploration of coaching as a transformative force for personal and professional growth.

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APPENDICES

Interview Guideline Appendix 1

Coaching Techniques and formats used Appendix 2

Concept Map – Match of Themes and theory Appendix 3

Prelude
A. Laying the Foundation / Context
A1 Please tell me a little bit about yourself, who you are, where you work and what your current role is?
A2 When did you first get in contact with coaching and coaching in higher education?
A3 Could you explain to me where and for which experiential learning format you use/used coaching in (program/modul/course)?
B. Theory and understanding
Intro: To understand better what you are basing your understanding on, my next group of questions are about your assumptions/ foundation on learning
B1 Could you describe in your own words what "coaching students" in Higher Education is to you?
B2 Are you using specific theories and or frameworks in your teaching format?
B2 1 Follow-up if not mentioned: how does coaching fit into that?
B3 There are many roles educators can take in higher education which are described in adult learning literature for example Kolb, that are sometimes used synonymously with coaching. One of them is the role of a mentor /mentoring. Do you see a difference between mentoring and coaching and if yes, how would you describe it?
B4 Do you have different formats you use coaching for example: drop in team coaching vs. individual coaching, if yes please specify
B5 Could you describe to me one or two examples how a coaching session would go?
B6 Would you say coaching people in educational and non-educational settings is the same and could you elaborate on your reason?
C. Impact of coaching The next four questions are centred around the impact of coaching
C1 What do you think coaching students offers compared to other ways of supporting student learning?
C2 Is there a way that you evaluate the impact of coaching on students?
C3 In your experience does coaching students take more time and resources compared to other teaching styles/methods?
C4 What in your opinion are the factors of student coachees having a positive learning experience?
D. Advice for Development
D1 How did you/your team develop your own understanding/practice/ experience of coaching in Higher Education?
D2 How do you/did you choose the coaches which are part of your team and would you say every educator can become a coach?
D3 From your experience, is there something that you would share with Universities that are looking to support educators to develop understanding and practice for coaching students in experiential learning?
D4 How can we best engage and manage expectations for coaching with both individual coachees and with the organisation?
E. Wrapping up
E1 Is there anything that you find relevant that I have not asked about yet?

Formats	Examples given
Team Coaching	"But there is a fluidity with how I will talk to a group versus how I'll talk to Individuals measure them, coach them. Both of those formats require. If you build a good cop, bad cop tactic at times, so you, you know, like being a good collaborator. It means, you know, being open and not judgmental. And sometimes you just don't want to point out an individual. So. you talk to the class, you talk to the team. You know, I've heard some issues. But then it also takes experience to, you know, it's time to just call the student in, or at least couple students in and talk to them".
Larger group/class	"And we let students explain their questions or their results on the White Board so we can follow their line of reasoning, what they point out, and by writing it down, they have to be more explicit about their thinking. And we all discuss these things and then I add stuff and move around stuff (...)"
Coaching in the in-between space	"But mostly I'm coaching groups of humans and trying to be responsive to what's going on in an immediate situation or setting them up for what I know is coming, project learning or it could even be within just a regular lecture classroom (...)"
Open Question technique	"And let's say that they just gave me their practice presentation. A coaching session with them might look like this: How did you think it went? What do you think about the audience spaces? What do you think about what are areas that were very strong for you? What are areas that you might want to change? How might you make those changes? How did you have that discussion? How are you going to decide where you're going land? Is it going to be majority rules, or do you have to have a unanimous vote? "
Feedback	"It's not all just you did a great job, but I also constantly reminding them that I care deeply about their success. And the things I'm about to say are coming from a place of moving you toward the most successful version of yourself, your team and your project. And so I'm going to be the one to say hard things to you. So that when you're in front of other people, those hard things are already handled and now you're just going to shine and talk about your amazing project."

