Exploring Project-Based Learning Practices to Foster Students' Motivation:

Practices from Dubai-United Arab Emirates.

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Abstract

It could be argued that part of preparing students for employment includes facilitating their learning of the skills needed to apply subject knowledge to the real-world situations that they may encounter in the workforce. It has been claimed that a project-based learning (PjBL) approach can create deeper connections with the material by providing opportunities that allow students to strengthen their skills and prepare for the future. It is also claimed that PjBL, as do other forms of experiential learning, can enhance students' motivation to learn when compared to more didactic approaches to teaching. If teachers do not make effective use of this approach, students may not be motivated to learn or show the increased engagement that is anticipated. The current discourse in the literature on student retention indicates that student motivation and engagement are important factors for institutions to consider if they are seeking to improve student retention.

The purpose of this research was to gain a better understanding of the ways PjBL is used to foster students' motivation to learn, in the context of a college in Dubai, within the United Arab Emirates. The focus of the study was to explore the current teaching practices and strategies of a teaching faculty who use a PjBL approach. The study applied a social constructivist paradigm for research and a qualitative research methodology using phenomenological design. Six qualitative interviews were the key method of data collection, and a thematic analysis was conducted. The findings indicated that participants' experiences of using the PjBL approach were considered successful for motivating and enhancing learning. By describing their practices while implementing PjBL, participants offered new insights into fostering students' motivation and engagement to learn. Moreover, the findings revealed participants' perceptions about their role in PjBL when it comes to understanding student autonomy, enhancing collaboration among teaching faculty members, and relying on self-efficacy to enhance students' learning. The findings suggest several important recommendations for practice: 1) the need to improve motivational instructional practices while using PjBL, 2) the need to enhance teachers' collaboration for effective use of PjBL, 3) the need to consider cultural aspects in learning, 4) the need to promote inclusive practice to better accommodate students with learning disabilities and 5) the need to understand the influence of teachers' self-efficacy on the use and implementation of PjBL.

This study provides new insights for educators in the field of PjBL when incorporating this approach to foster student motivation and engagement. The study also makes a valuable contribution to the literature on the topic of PjBL, as it has been introduced in the United Arab Emirates relatively recently. Therefore, a study set in this context will be of interest to faculty teaching in the United Arab Emirates, in the Gulf region and in the Middle East more widely.

Keywords United Arab Emirates (U.A.E.), project-based learning (PjBL), student motivation.

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Chapter 1 - Introduction

1.1 Introduction

The last few decades have seen a dramatic change in education. This change can be described as the transition from the traditional teacher-centred learning approach to student-centred approach. This reform of teaching has focused on increasing students' interest and their understanding of disciplinary content. Project-based learning (PjBL) was found to address these two aspects through intrinsically motivating students and connecting them to the real world, which leads them to become more engaged in learning (Kwietniewski, 2017). PjBL can be considered as a method that would assist students to obtain critical skills such as communication skills and thinking skills in addition to using technology (Larmer, 2018), and it can be defined as a pedagogical approach that provides students with the ability to learn by doing to construct knowledge in a collaborative manner (S. Bell, 2010). This is the definition that I have used during this study, as PjBL caters to all the requirements of an approach.

In the context of higher education, students invest extensive time learning specific content, applying various skills, and adapting to new challenges to face future demands; therefore, it is imperative that they are actively involved and motivated to learn to develop these qualities during their studies at higher education institutions; however, this is not applicable in a traditional learning environment. White (2007) stated that in a traditional learning environment, undergraduate students lacked the ability to learn autonomously, and their level of motivation decreased. Moreover, Grolnick and Ryan (1987) noticed that students in a traditional learning environment did not have the choice of learning and displayed poor attitudes due to the strong role of the teacher. Wolters et al. (2005) stated that students' ability to influence their own motivation is important for learning. Therefore, the issue of students' motivation and engagement has gained importance in educational institutions to improve students' learning.

Students in PjBL are required to participate actively and take the initiative to explore ways to complete a specific task with the support of their teachers. I acknowledge that the term "teacher" is not universally utilised in higher education settings, but it is a term that resonates with local readers. For the purpose of this study, the term 'teacher' is used throughout this research. Teachers

need to utilise the features of PjBL in an effective manner in order to ensure that learning remains relevant to students' lives and to promote their engagement and motivation to learn.

As a practitioner-researcher and as an individual who believes in providing student-centred learning in education, I feel responsible for performing this research study to investigate PjBL practices in a higher education institute. My goal was to discover, understand and find means to improve the current teaching practices to foster students' motivation to learn.

1.2 Background of the Research

The United Arab Emirates (UAE) is a developing country focusing on the PjBL approach as a strategy for STEM education which refers to science, technology, engineering, and maths (Al Basha, 2018). According to Mitts (2016) and Mandeville and Stoner (2015), STEM can be conducted using the approach of PjBL, where students are able to engage in meaningful learning through systematic integration of knowledge. Furthermore, Ashgar et al. (2012) explained that understanding STEM concepts can be fostered through their application to real-world problems to help students identify and use different sources of knowledge to improve their skills. This approach is wrapped up with aspects of collaboration, authentic problem-solving skills, and higher order thinking skills (Ashton, 2014; Asunda & Mativo, 2016; Brown et al., 2011; Kennedy & Odell, 2014; Lesseig et al., 2016; Mandeville & Stoner, 2015; Osman et al., 2013; Shernoff et al., 2017). Mohammed (2017) explained that these aspects are supported by the Ministry of Education's strategic plan and national agenda in the UAE. This demonstrates that the UAE is strongly supporting higher education institutions to build the nation's human capital by focusing on the quality of education to provide future leaders with the support in order to meet public administration challenges across the UAE. STEM has been recognised in the UAE only since 2010; consequently, PjBL approach is considered new in the country and in the Middle East region in general. Therefore, this infers that there is limited research on PjBL and how it is used and perceived, particularly in the UAE (Ahmed, 2016). This research has studied teachers' use and perception of the PjBL approach in one of the foreign institutions that has implemented it in Dubai, UAE.

The chosen institution for this study was Rochester Institute of Technology (RIT), located in Dubai, UAE. The institution is keen on enhancing teaching faculty approaches and

methodologies for effective use of this approach. PjBL is found to be a promising teaching approach that is not limited to specific fields. Through PjBL practices, students' knowledge is built effectively rather than just learnt in a theoretical manner (Putter-Smits et al., 2013; Rahayu et al., 2011; Rose, 2012).

RIT's mission statement and educational objectives are in line with the vision of Mohammed Bin Rashid School of Government (MBRSG) to promote academic learning and innovation in classrooms. MBRSG was launched in 2005 and is considered the first centre and teaching institution focused on research, public policy, and governance in the Arab world through offering academic programs and training programs to support leaders to meet future challenges across the Middle East region. MBRSG was launched under the support of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, UAE Vice President, Prime Minister, and ruler of Dubai.

1.3 Introduction to Project-Based Learning

In order to understand what is occurring socially in the learning environment, PjBL is a pedagogical approach that allows students to learn by doing to construct knowledge in a collaborative manner (S. Bell, 2010). Moreover, PjBL places students in real-life scenarios to explore the world around them (Thomas, 2000). Educators have seen that PjBL is more than students just doing a project; students are more self-reliant to exercise choice while learning at their own pace (S. Bell, 2010), which reflects their willingness to have more control in the completion of the given task (Kwietniewski, 2017).

Walsh (2010) noted that through PjBL, students discover new sources of information to build knowledge. Ravitz et al. (2010) mentioned that skills such as communication, collaboration, critical thinking, problem-solving and self-direction are referred to as 21st century skills needed in today's society and are developed using PjBL as a means to redirect students to become more proficient and possess the aforementioned skills. Lui (2016) explained that PjBL is an approach that focuses on student-centred learning, which demands collaboration among students to accomplish a project. Blumenfeld et al. (1991) referred to PjBL as an inclusive approach which is designed to engage students in their examination of authentic problems. Researchers such as Gary (2015) defined PjBL as a process to learn where information is explored and analysed to reach solutions and answers that create more understanding to students' and improve their skills. Al-

Balushi and Al-Aamri (2014) explained that PjBL is an inquiry-based learning approach where the context provides authentic questions and problems for students within the real world.

It has been empirically shown that through PjBL, students are highly motivated. Stefanou et al. (2013) reported on a study in which 77 undergraduate students and two instructors from two private universities in North Eastern United States agreed to participate to understand students' behaviour and motivation. The study reported that in PjBL, students had the opportunity to nurture their level of motivation and had higher level of autonomy to think independently. Furthermore, Kember et al. (2008) conducted a study on 36 undergraduate students in three Hong Kong universities to understand the method of teaching and if the learning environment motivated or demotivated students. The results of the study showed that in a traditional leaning environment, students were demotivated because they could not see how the theory was applicable to a specific discipline or profession. Students were choosing specific professional programmes in the expectation that they were related to the real world to prepare them for upcoming careers.

In my local context, the United Arab Emirates, Engin and McKeown (2017) conducted a study on the motivation of males and females in higher education and showed that students become motivated when they improve their social interaction with their peers. Another study by Chowdhury (2015) investigated students in their first year of engineering at Al Ain University in the UAE who were taught in traditional lecture classrooms. Here, students demonstrated poor performance and professional frustration due to barriers preventing the university from potentially graduating excellent engineers. On the other hand, students who were introduced to the modern student-centred and active learning approach were able to make a variety of connections between different subjects (e.g., mathematics, information and communication, English, study skills) and connections to the real world.

1.4 Research Problem

Although it may appear that higher education institutions are planning to prepare future leaders and workers for the industry, it was noticed that higher education curricula in the UAE are predominantly taught using traditional learning and standardised educational systems that are not focused on enhancing the learning process. Therefore, there was a need to create a realistic scenario

that graduates would encounter in the field, specifically in the UAE, to develop in-house skills and motivate students through actual practices.

RIT took the initiative to implement PjBL to foster students' motivation through applied learning experience. However, at the moment, there is no information about how teachers have adopted this initiative and how exactly they have implemented it in their teaching practice. There are no suitable opportunities for teachers to share their experiences and arrive at a consensus about the best way to facilitate PjBL in order to optimise student engagement and motivation. Rogers, Cross, Gresalfi, Trauth-Nare, and Buck (2011) found that the way in which teachers utilised this pedagogic approach strongly influenced the level of student engagement and motivation. Therefore, an absence of information about the use of PjBL could mean that the expected benefits of promoting this approach are not being realised. Additionally, the absence of this information prevents the institution from identifying additional support and development that may be required to enhance teaching and learning through the experience of PjBL.

1.5 Research Context

The United Arab Emirates (UAE) governmental higher education institutions provide degrees to undergraduate and postgraduate Emirati students free of charge. Most of the Emirati students study Arabic from kindergarten through age 12 and English as a second language. When Emirati students enter college, they learn Arabic, Islamic and national (Emirati) studies, which belong to their general education and is part of their bachelor's program carried out in English (Al Hussein & Gitsaki, 2017). It has been reported that university students in the UAE memorize and summarise their teachers' presentations, which is a less active method in improving their knowledge application and understanding when compared to other learning methods (Mohammed bin Rashid Al Maktoum Foundation (MBRF) & The United Nations Growth Program/ Regional Bureau for Arab States (UNDP/RBAS), 2014, p. 92).

Furthermore, towards the end of the 20th century and discovery of massive reserves of oil in the region, coupled with the increasing educational demand fuelled by natives and migrants in the region, foreign universities in the Gulf region (namely Kuwait, UAE, Qatar, Bahrain, Oman, KSA) opened up to western universities (Madichie & Kolo, 2013). The UAE is the largest Middle Eastern country to host international branches and campuses in the region, having over 40

providers by the end of 2009. According to Wilkins (2010), students in the UAE receive their education on premises owned and leased by foreign institutions, either solely or jointly affiliated with other local institutions. These foreign institutions provide complete programmes for undergraduate and postgraduate students in different courses. Students are awarded a degree upon completion of their studies from the foreign university.

I conducted my research at RIT which is an American institution and well known for delivering accredited programmes to students using projects. It is the only American institute in Dubai that offers American bachelor's and master's degrees in several disciplines as an attempt to support the needs of professional development and economic growth in Dubai. It is a satellite campus of Rochester Institute of Technology, New York, USA. The institute is located in the Dubai Silicon Oasis and opened for the public in the fall of 2008. Presently, RIT offers degree programmes for both undergraduates and graduates in engineering, business, science, and the liberal arts. It includes four academic departments: 1) business and management; 2) science and liberal arts; 3) electrical engineering and computing sciences; and 4) mechanical and industrial engineering.

1.6 The introduction of PjBL in the UAE Context

The UAE's goal is to empower the Emirati generation with various skills needed for future knowledge economy development. The government had a strong commitment towards education with specific set of strategies to enhance students' learning to meet the future requirements of the labour market. The higher education system was and continue to be in line with the UAE government policies to improve education as it attempts to lead a clearer understanding of the diversified economy requirements driven by government goals.

As a result, both the federal universities and foreign academic institutions in the UAE context strongly supported the government by focusing on building the nation capital with individuals to meet future challenges through designing a curriculum that fulfils different workforce environments. This reform in the educational system was due to different factors such as globalisation and internationalisation, which significantly impacted the direction of the UAE economy and education (Entwistle & Ramsden, 2015).

The educational transformation required new pedagogic approaches such as PjBL to enhance individuals thinking and skills to solve complex problems. The local context welcomed new pedagogic trends to provide more flexibility for active learning. As a result, academic institutions focused on STEM education using PjBL approach to contribute to the country's development towards innovation. Moreover, the need to graduate students using the PjBL approach was crucial for finding employment which was essential to the development of UAE vision of success and knowledge economy. It is important to acknowledge that the arrival of foreign academic institutions to the UAE has strongly promoted the adoption of the PjBL approach to improve the quality of learning (Moh'd Suliman, 2000).

1.7 Statement of Purpose

The aim of this research study is to uncover the current teaching practices in a higher education institution opting to use PjBL as an approach to foster students' motivation and improve teaching and learning experiences.

As little is known about PjBL in the UAE, research was needed to clarify teachers' implementation approaches and strategies within this particular context. Therefore, the purpose of this study was to gain a better understanding of how teachers use PjBL in their classrooms to foster students' motivation to learn. I focused on teaching faculty members who described their experience to explore their current teaching practices and methodologies at RIT.

1.8 Research Question

The central research question was as follows: How do teachers at Rochester Institute foster students' motivation while implementing project-based learning?

The sub-questions were as follows:

1- How is project-based learning used by teachers in this institute?
2- How do teachers use project-based learning specifically to motivate students' engagement and learning?
3- How do teachers perceive their role in project-based learning?

1.9 Theoretical Framework

In the early 1900s, John Dewey supported learning by doing; Dewey (1938) thought that real education and learning is related to application and experience. In the PjBL class, one can see much of John Dewey's instructional beliefs in action as an expression of a fundamental empirical process that is organised by an activity and the inquiry it raises, where students solve problems through being engaged in real-world tasks to construct knowledge (Dionne & Horth, 1994).

John Dewey's educational philosophy stressed the need for experiential learning where the learner plays an active role instead of being passive (Dewey, 1938). This gives students a greater opportunity to be engaged in the learning process and connect with the subject matter on a deeper level to create knowledge (Dionne & Horth, 1994). The problem method required learning by experience where students can solve real-world problems, which was seen as an alternative to teacher-centred traditional way of leaning. Al Basha (2018) noted that the Dewey method of learning was based on the belief of enhancing and maximising connections between learning objectives and classroom activities.

Many educators who believe in students being the centre of learning have supported Dewey's philosophy (Schiro, 2013). In learner-centred classrooms, a social entity of students is created, forming a community to solve a problem together. Students are found busy constructing knowledge rather than adhering to a teacher-centred approach whereby teachers direct students' activities. The educational experience, according to Dewey, should be seen as intellectual, emotional, and social, considering curriculum objectives with an emphasis on project learning. In the field of education, John Dewey's work is very inspirational to educators and remains fundamental in many departments of education (Theobald, 2009). Dewey's theoretical framework was helpful to guide and influence my research. The theoretical framework provided unique perspectives to understand participants' experiences and their perceptions that act as practical answers for applying Dewey's philosophy of learning in the form of using projects to reach desired learning outcomes.

1.10 Research Methodology

In this qualitative research, I adopted a qualitative methodology using phenomenology as research design to explore and understand the teachers' views and perspectives of implementing

PjBL in their teaching practice. For my study, I chose a specific type of design under phenomenology known as descriptive phenomenology. Descriptive phenomenology focuses on describing and highlighting participants' lived experiences of a phenomenon that provides access to the psychological experiences and seeks to describe the structure that grounds this experience (Lin, 2013). The assumption is that researchers will become aware of their own biases and past knowledge when looking for causality in the data, and of personal experience while dealing with descriptions of the participants' experiences in the present (Ashworth, 1999; Bevan, 2014; Giorgi, 1997, 2009).

Descriptive phenomenology is considered different from other qualitative approaches (Wertz et al., 2011). To explain further, while descriptive phenomenology is designed to describe individual experience, qualitative methods move past description to generate a specific theory or to fulfil positivist assumptions. In this study, descriptive phenomenology may not only enhance the literature on PjBL but also the ability of the researcher to better understand the world in which the participants live.

Interview is used in phenomenological research as the main tool for collecting data (Dale, 1996). Following this understanding, my interviews for this research were semi-structured and primarily included open-ended, non-leading, unstructured and follow-up questions. These questions were related to the phenomenon under investigation and were based on the description provided by the interviewed participants. In this study, semi-structured interview method employed to gain better understanding to the current teaching practices when using PjBL to foster students' motivation.

My sample of participants in the descriptive phenomenological interviews included six teaching faculty members in both Department of Business and Management and Department of Science and Liberal Arts at RIT, that is, those teachers who use PjBL approach for their respective classes. Purposive sampling was utilised in this study to select participants who have experience with the phenomenon from the start of the data collection process. In this study, the sample only included teachers who agreed to participate and share their experience with using PjBL in their classrooms.

To analyse the data collected from the semi-structured interviews, I used thematic analysis focused on participants' lived experiences. As a researcher, I set pre-understandings to the data collected from each participant that was focused on repetitive patterns and themes for all participants to interpret the meaning regarding questions under investigation (Merriam, 2002).

1.11 Research Significance

The scope was to reflect on a particular stance through reporting what has been heard from the teachers to explore their current teaching practices while implementing PjBL. This research study sought to understand participants' experiences with PjBL to develop a meaning of their experiences and their view of the approach. In this study, I tried to understand how teachers at RIT describe their experiences with their teaching practices in a PjBL classroom. My proposed area of research provided careful treatment of PjBL by deeply understanding the current teaching practices and strategies that could motivate students to learn. This resulted with recommendations to improve the current practices being implemented by the teachers and overall practices of the university.

This study is significant for teachers at RIT and in other similar universities to improve students' learning and enhance their motivation. Educators and faculty at RIT are directly affected by this research study and can benefit from its outcomes to improve their practices. The study supports the participants with better clarity and understanding of PjBL approach by enhancing the quality of their teaching and whether changes should be made to implement it effectively to foster students' motivation.

Therefore, research undertaken in this field may improve the quality of teaching practices by assisting to provide practical guidance to teachers to solve the problem of students' reduced motivation. Furthermore, results from the research study will certainly provide RIT with appropriate feedback on the current teaching practices that can be leveraged to eliminate any obstacles and barriers preventing the university from achieving its goals and mission. It will certainly help to influence and improve the university's current policies, procedures, and organisational objectives in line with their mission to transform society through education, research, and innovation through promoting student-centred programs for personal and professional development.

1.12 Researcher Positionality

I acknowledge my position as an outsider researcher in the study as I was not a member of this institute. I reflected on my knowledge as an educator teaching PjBL courses and from my past experiences and cultural understandings of the Gulf region over the years, all of which have contributed to my research study. My interest in this study includes contributing to the research to improve the quality of education in the UAE and specifically that the topic of PjBL remains limited in the context with relation to the resources, information, and teachers' perspectives and points of view on the use of this approach. Today, PjBL is becoming more relevant in UAE's higher education system to achieve central objectives (Byat & Sultan, 2014). PjBL is seen as a newly introduced approach that is taking place from a government perspective to prepare the nation for the future. There is an opportunity for educators and decision-makers in other institutions to benefit from this research outcomes, which can generate a local theory that can offer practical applications and guidelines to utilise this approach to foster students' motivation.

As a researcher, the study is more contextualised in the UAE to discuss PjBL use and implementation in a western institute comprised of foreign faculty members who experienced this approach in the local context. Taking this into consideration provided a foundational base for my research focus through discovering individuals' opinions using semi-structured qualitative interviews.

1.13 Role of the Researcher

The first point to note is that I used to be a faculty member in an academic institution in the state of Kuwait. Kuwait is a country in the Arabian Gulf. I taught business and marketing courses using PjBL approach as part of the university's direction to enhance students' learning. Throughout my teaching experience, I was concerned with motivating my students and engaging them through hands-on activities to enhance their skills. I arrived in the UAE six years ago. Both Kuwait and the UAE share similar values, customs, and traditions, which gave me the opportunity to develop a greater understanding of the UAE's local society and the culture in general.

I found that my professional experience as a faculty member positively affected my interest in the topic of PjBL to foster students' motivation and improve their learning. As a practitioner-researcher, I reflected on my personal experience within PjBL and on my own values and personal

beliefs. I was able to improve self-awareness and understanding, which facilitates decision-making through the use of descriptive phenomenological investigation (Wall et al., 2004).

In this study, I discussed teachers' experience with the PjBL approach. I relied on establishing rapport to be more flexible and feel more comfortable while conducting interviews to build mutual understanding and cooperation. My role was to schedule a meeting with the teaching faculty members and ask questions related to their use of PjBL and their practices and approaches in their classrooms. I focused on an entire culture-sharing group, which was presented in a small group of teachers to describe shared and learned patterns, beliefs, and behaviours. As a qualitative researcher, I relied on the theoretical framework to address the problem of my research, to guide my practice and to develop an understanding of the discipline, which facilitated my role as a researcher in defining concepts and understanding the results of the research and allowed for the clarification of assumptions and frames of reference (Rocco & Plakhotnik, 2009).

The collection of data focused on individuals in the natural setting where participants experience the issue or the problem and talk directly and behave within their context. I acted as a key instrument in this research to collect data and observe participant behaviours. I relied on participants' views and reported their verbatim quotes to describe the groups and themes related to the theoretical concepts in the study, and to learn much more about individuals to develop a new understanding. Interpersonal skills were employed to enhance the ability to reflect on and explore one's feelings towards the study (Tufford & Newman, 2012). I double-checked answers and read them repeatedly to become more familiar with the gathered data and gain an impression on certain components and important points.

1.14 Researcher Assumption

From the start of my research, I assumed that PjBL is a pedagogical approach that gives students' the chance to improve their learning. This is due to my experience in the education field and as a teacher, I noticed how PjBL approach promoted student engagement, specifically with projects relevant to the students' local context. My objective was to improve students' learning and develop skills to achieve desired learning outcomes. I strongly believe that PjBL is a potential approach for teachers to perceive and apply in their classrooms to motivate their students through their practice of self-autonomy and decision-making.

1.15 Defining Key Terminology

Project-based learning (PjBL): A pedagogical approach based around projects that are challenging in order to engage learners in a meaningful, authentic way. Projects are realised through real-life presentations or products (Thomas, 2000).

Student motivation: In learning, motivation refers to a desire to invest time and effort in a specific activity even if it poses difficultly, high costs or possible failure (Ryan & Deci, 2000b). In this study, student motivation was defined as students becoming more self-determined when autonomy, competence and relatedness needs are satisfied, which form the basis for the emergence of student motivation.

Student Engagement: In terms of learning, student engagement is defined as the level of students' interest, desire and commitment required to demonstrate students' learning, which motivates them to learn (Olson & Peterson, 2015). This is the definition that was used during this study.

1.16 Organisation of the Dissertation

The dissertation consists of five chapters, which are briefly described as follows: In chapter one, I provided an outline for the entire research, including the background of the research, the research's aims and objectives, research significance and a brief overview of the research method. In chapter two, I deeply investigate PjBL in the literature to understand teachers' implementation of this approach. The exploration includes PjBL's origin and background, elements and characteristics, motivation in PjBL, and teachers' understanding of their role and practices when implementing PjBL, along with the challenges. In chapter three, I rigorously describe the methodology used in this study and my data collection technique; the chapter also discusses ethical considerations. In chapter four, I show the findings, that is, teachers sharing their experience, points of view, opinions, and perceptions on their implementation of PjBL and how it enhances students' motivation. In chapter five, I look more deeply into teachers' perspectives when implementing the PjBL approach and I put it in discussion with my discoveries from the literature review. I include recommendations for future practice, and future studies in addition to describing the study limitations.

Chapter 2 - Literature Review

2.1 Introduction

Several teaching and learning methods have been practised over the years by lecturers in higher education; consequently, a number of them have been tested, practised, and modified extensively. These teaching methods can be grouped into lecture-based teaching held in rooms where the seating is typically configured in rows, with the lecturer's desk in front, and where students primarily watch and ensure their compliance with the rules (Nepal & Jenkins, 2011). This method involves a direct flow of information from lecturer to students. Chowdhury (2015) referred to other teaching approaches, which include project-and problem-based learning and integrated learning approaches.

There has been a primary shift to PjBL, which focuses on students' interest. However, English and Kitsantas (2013) pointed out that PjBL success is linked to teachers' practices and their proper implementation of this approach in their classroom to enhance students' motivation. Therefore, Cervantes et al. (2015) suggested that it is essential for teachers to redesign instructions and implement PjBL applications to prepare students for the real world. Students gain experience through practical, related activities to find a solution. PjBL, done well, is perceived as a method that can support students shift from teacher-centred teaching towards student-centred teaching (Boss & Larmer, 2018). Gary (2015) explained that PjBL is a true approach because students acquire key skills such as responsibility, independence, and critical thinking to make a connection between knowledge and practice. This research study explored the practices and implementation of PjBL approach through understanding individuals' practices and experiences to foster students' motivation to learn.

To increase understanding of PjBL, this chapter provides an overview of the existing literature, organised around the following sections: PjBL definitions, historical background of PjBL, elements and characteristics of PjBL, PjBL learning environment, PjBL goals, potential benefits of PjBL, PjBL implementation and challenges, the role of teachers in PjBL, the effectiveness of PjBL in higher education, PjBL in the UAE and the state of research on PjBL, and student motivation. The chapter concludes by relating the literature review to the current study.

2.2 Definition of Project-Based Learning

S. Bell (2010) defines PjBL as a learning approach driven by teachers and facilitated by students to obtain knowledge. Liu (2016) described PjBL as a comprehensive learning approach that requires cooperation among students to accomplish a project. Gary (2015) labelled PjBL as a social activity where students construct knowledge with their peers and actively utilise what they learn to explore, analyse, and find solutions through shifting learning from teachers to students. Theoretically, PjBL has its deep roots in constructivist pedagogy, which is focused on learning by experience and social interaction (Park & Hiver, 2017). Lee (2015) mentioned that PjBL places great emphasis on experiential, hands-on, student-directed learning. This can be done via field trips, investigation in laboratory and other interdisciplinary activities that extend the curriculum beyond the classroom. Moreover, PjBL takes a more student-centred approach to learning than traditional learning (Lee, 2015). The projects themselves are focused on a specific question or a problem that drives students to address basic concepts as well as principles of discipline. Maida (2011) explained that students' in PjBL obtain skills through an extended learning process focused on complex and authentic questions to come up with a design for a product and a specific task.

Kalyoncu and Tepecik (2010) defined PjBL as a method that includes in-depth research for certain topics where students have the ability to establish relationships and also connect information. Ergül and Kargın (2014) considered PjBL one of the student-centred learning approaches that has been extensively made use of worldwide. This is in line with Holm (2011), who described the PjBL approach as "student centred where instruction occurs over an extended time period, during which students select, plan, investigate and produce a product, presentation or performance that answers a real-world question or responds to an authentic challenge" (Holm, 2011, p. 1).

Larmer and Mergendoller (2010) noted that PjBL is an active approach that is increasingly promoted by educators to create meaningful projects as a base for learning in their classroom. A project is considered meaningful when it fulfils two important criteria for students. First, students must consider the work personally meaningful as a task that they want to do well. Second, the project fulfils an educational goal through being well designed, well implemented and exposed to authentic skills. According to Dewey (1916), meaningful learning shows the ability to gain understanding of information due to learner's experience. Hakkarainen (2011) examined the

importance of PjBL in supporting meaningful projects in a course that built on a combination of problem solving in a small group of students and practical hands-on project design.

Karaman and Celik (2008) described PjBL as a research tool that helps students structure the project using research questions to discover new knowledge and solutions. The research question drives other questions on which students can build the foundation for their knowledge. Kaldi et al. (2011) mentioned that PjBL is an approach that supports students in exploring, discovering, and building knowledge through experiential learning instead of memorising from textbooks. Welskop (2014) stated that through PjBL practices, students are able to demonstrate what they learned, work in groups and learn better from each other's experiences. The literature on PjBL explained that it is considered a teaching and a learning strategy. Krajcik and Czerniak (2007) explained that PjBL is connected to students' real-life experiences since it is designed to help students find more relevance in their educational institutions and can use PjBL to develop solutions and solve problems in their existing community.

Project-based learning has connections with other pedagogical approaches, such as problem-based learning (Helle et al., 2006). As described in the literature, both project-and problem-based learning can be used to develop 21st century skills and problem-solving skills, materials, and self-organisation (Kauchak & Eggen, 2012). According to Donnelly and Fitzmaurice (2005), PjBL describes an activity done by students over a certain period, resulting in a presentation or performance. Problem-based learning is both a curriculum and a process. The curriculum incorporates designed problems that demand learner acquisition of critical knowledge, problem-solving proficiency, and self-directed learning strategies.

As defined in the literature, project-based learning and problem-based learning share several characteristics since both are instructional strategies that are intended to engage students in real-world authentic problems and tasks to enhance learning. Both learning approaches are student-centred and view the teacher's role as that of a facilitator. In both learning approaches, students are engaged in the learning process and are encouraged to seek out the needed information with an emphasis on authentic, performance-based assessment (Donnelly & Fitzmaurice, 2005). Despite the similarities between project- and problem-based learning, they are not identical. Project-based learning is associated with engineering and science instruction. Problem-based

learning is used in these disciplines as well as in the health sciences, where both approaches originated (Ryan et al., 1994). However, Han et al. (2016) noted that project-based learning is currently used in STEM education. Therefore, it is likely that both approaches will be used in combination and play a complementary role, which means the line between project- and problem-based learning is likely to be frequently blurred.

To explain further, problem-based learning had emerged as a practical teaching approach more than half a century ago. Problem-based learning was used in medicine, engineering, economics, and other disciplines. While students learned how to solve pre-defined problems to reach and discover answers, to the contrary, PjBL was focused on addressing content through hands-on learning. Moreover, the projects appeared to be related to giving students more choices to demonstrate knowledge, making this approach open-ended compared to problem-based learning (Boss, 2011).

Many trends contributed to the adoption of PjBL, which was seen as the 21st century strategy in the field of education. Moreover, cognitive scientists created a clear understanding of how this approach develops individual thinking and enhances expertise while considering the culture, context, and nature of social learning (Boss, 2011).

At RIT, PjBL can be defined as a method that enables students to demonstrate their learning through working in groups, where students are interactively collaborating with each other through solving problems and relating to the local context. PjBL has been viewed at RIT as a supplement to traditional lecturing that can be used to build students' knowledge and foster their motivation and engagement with learning. For the purpose of this study, I will define PjBL as an instructional approach that promotes students' skills, engagement and motivation through practical activities and social interaction to achieve meaningful learning.

2.3 Historical Background of Project-Based Learning

According to Hamurcu (2003), the basis of PjBL can be traced to the early 20th century. William Heard Kilpatrick (1918), the pioneer of problem-based learning, used the PjBL model and defined the project's purpose as acquiring a degree of skill or knowledge to gain experience by helping students become proficient at conducting inquiry activities. Knoll (2010) noted that critics of Kilpatrick's project method pointed out that his definition of the project was not a method.

Kilpatrick redefined the project from being a more independent constructive activity to a wholeheartedly purposeful activity that is concerned with the idea of a student-determined project. Pecore (2015) stated that Dewey and his wife in addition to many other teachers, developed the approach of PjBL over a period (1896–1903) at his laboratory school at the University of Chicago, which challenged the current view that knowledge was a fixed notion waiting to be discovered.

Sikandar (2016) described John Dewey as one of the pioneering American educationists of the 20th century. Westbrook (1991) explained that John Dewey's philosophy called for the integration of "theory and practice", which depends on many ideas with effective practices within a social aim to create and develop individuals in the society, who have the right to share in human invention. Westbrook (1991) added that John Dewey believed in learning-through-doing activities related to the real life surrounding the students. Dewey (1934) described Kilpatrick and his supporters as confusing the aim of PjBL by failing to realise that students' thinking was achieved through the leadership of the teacher, who promotes students' ability to think, and not just by providing students with the freedom to self-direct.

2.4 Elements and Characteristics of Project-Based Learning

Larmer and Mergendoller (2010) developed seven elements for PjBL and explained that the project should start with a driving question where students' link to core knowledge and have a voice and choice on topic selection, and how do they present their findings. In addition, projects should help students develop the 21st century skills needed, such as collaboration, critical thinking, communication as well as the use of technology. Buck Institute for Education is considered the leading research organisation for PjBL, and it developed the "Essential Project Design Elements", which include the following: 1) key knowledge; 2) understanding and success skills; 3) a challenging problem or question; 4) sustained inquiry; 5) authenticity; 6) student voice and choice; 7) evaluation and revision; and 8) public product. These elements are beneficial for gaining a clear understanding of PjBL, and they are explained in the following paragraphs.

Key knowledge refers to the extent to which projects are effective in supporting students in learning and achieving their goals. Projects should be related to essential real-life scenarios that stimulate critical thinking and problem-solving skills, collaboration, and autonomy. Additionally, a challenging problem or question should be the driving question of the project, providing the

structure to perform the project and making sure that the problem is meaningful. Sustained inquiry describes the process in which students ask questions, collect resources, and apply relevant information. Authenticity is related to how the project is connected to the community inside and outside the institution to present students' lived experiences, issues, and interests. Student voice and choice give the students the opportunity to make decisions about the topic of the project and develop the project in its various phases. Reflection in PjBL occurs when teachers and students evaluate the quality of their work and the challenges they face. Finally, evaluation and revision refer to providing and receiving feedback on students' projects and providing recommendations.

In order to capture the exclusivity and uniqueness of this approach, Thomas (2000) provided essential characteristics of PjBL. The criteria do not constitute a definition of PjBL but rather are designed to answer the question, "What must a project have in order to be considered an instance of PjBL?" They are summarised and explained in the following paragraphs.

1. Projects are central. Projects are considered the curriculum, which is the centre of teaching, because they support learning goals that work to support the goals of the projects according to required educational standards. In PjBL, students learn the central concepts of the discipline via the project.
2. Projects focus on questions or problems that drive students to encounter the central concepts and principles of a content area. Therefore, projects require a driving question, which is essential for driving students towards achieving their project goal, which is focused mainly on finding an answer to the proposed question. A good question is at the heart of the project (Larmer & Mergendoller, 2010). Moreover, for this approach to be effective in a classroom, the project goal or problem should be linked to the curriculum covered in the course (Hallock & Smoot, 2018).
3. Projects involve students in a constructive investigation that details the activities and processes involved in PjBL. The project should include active investigation, which requires students to use skills that were not known previously; this way, students are challenged to acquire and look for new knowledge during their project.
4. Projects are driven by students. Autonomy is one of the features required in PjBL, in which students drive projects. This contrasts with the traditional lecture-based approach in which

teachers play the role of transmitters of knowledge. Teachers who employ PjBL play the role of facilitators.

5. Projects are realistic and should be based in the real world where real-life challenges and queries occur. This helps students develop their skills to deal with life outside the classroom. Since projects are authentic and based on real-life experience, students are likely to have persistence and interest in working and completing their projects. Reality can be included in the project topic, that is, tasks and the roles students play and the context where the project is carried out.

2.5 Project-Based Learning Environment

The term "learning environment" was used to distinguish PjBL from other approaches since it is based primarily on a sequence of related activities through which students seek answers and provide solutions. The learning environment of PjBL is focused on problem-solving solutions and specific criteria to assist the learners in their required tasks (Larmer & Mergendoller, 2010). Larmer and Mergendoller (2010) claimed that the learning environment differentiates PjBL from other learning environments since it builds 21st century skills and exposes students to authentic skills to create meaningful work as a main goal. The teacher in the PjBL environment teaches and assesses students' skills, and the teacher's role is crucial in providing frequent opportunities for students to assess themselves. Habók and Nagy (2016) explained that the PjBL environment enhances working cooperatively in order to improve problem-solving skills, motivation, and creativity so that students are using the available resources to expand their learning beyond the classroom. Students are able to promote creativity in the PjBL learning environment because they work with their colleagues, build on each other's ideas, and share their work. Moreover, the PjBL environment encourages students to develop their skills.

De La Paz and Hernandez-Ramos (2009) compared a PjBL environment with a traditional learning environment. The quasi-experimental study found that the PjBL environment supported students' interaction during projects. Thomas (2000), English and Kitsantas (2013), and Boss and Krauss (2014) explained that what makes the learning environment of PjBL an opportunity; is its ability to support students to work independently and freely over a specific period through engaging them in realistic products or presentations. Chiang and Lee (2016) explained that the learning environment in PjBL stimulates students' motivation through formal and informal group

discussions and meetings conducted with supervisors, which facilitated students' learning achievement and motivation. Dimmitt (2017) explained that PjBL requires students to engage in learning knowledge and skills through delving deep into the problem of investigation to solve challenging authentic projects that require resources prepared by students. In addition, in a PjBL learning environment, students take more responsibility for learning from others, and their social interaction and collaboration drive the learning process (Roessingh & Chambers, 2011; Scheer et al., 2012; Skinner et al., 2016). According to Elliott (2020), students engaged in PjBL will take ownership of their learning to negotiate the projects in depth with their teacher.

2.6 Project-Based Learning Goals

Many studies have supported PjBL and maintained that the goal of this approach is to prepare students for 21st century skills, specifically those who are interested in STEM education, as is the case with the local UAE context. This is in line with the UAE's Vision 2021 for achieving national goals (Al Murshidi, 2020). However, the value of the PjBL approach should not be limited to STEM curricula. There is a general recognition that the skills of individuals need to be developed to build a sustainable workforce that will be able to compete globally and provide solutions for the UAE, and these skills can be imparted through the implementation of PjBL. Moreover, it is worth mentioning that PjBL can be used in classes such as history, English literature, and cultural studies in addition to many other courses.

A limited number of researchers have focused on project-based learning goal in improving students' understanding of other subjects; for example, Krajcik and Czerniak (2007) explained that teachers can use PjBL to increase students' understanding of other content such as science and engineering practices. Kolmos et al. (2004) added that project work turned out to be an excellent method for developing students' competencies such as project management and cooperation. Learning by doing and experiential learning have been the main principles dominating the development of this particular approach. At the same time, great potential was seen for the use of project work in the social sciences as a possible factor for contributing to change in society, particularly in North European countries such as Denmark, Germany, and the Netherlands.

The PjBL approach encourages social interaction through linking the theory with application. This assists to decrease gaps in knowledge and any issues that are usually found when

students entre into the workplace. However, Zhao (2015) stated that one strength of "practitioners" relies on their appreciation of how to relate theory to practical applications. According to Sudjimat (2019), projects give students' the opportunity to develop their skills through collaborative work and provide them with the capability to utilise the strength of each member to produce the best product possible. This is in line with Arias (2004), who explained that projects used collaboratively, provide better opportunities for students to do more work similar to what they will encounter in the workplace, which encourages active participation to perform well on the required activity.

2.7 Potential Benefits of Project-Based Learning

Recent research supports the benefits of PjBL in classroom, and there are many claims about the positive impact of this approach in education. However, the advantages of PjBL approach need to be empirically explored in different contexts. Therefore, it is important to consider the benefits of PjBL to gain a full understanding of this approach (Barron & Darling-Hammond, 2008; Grant, 2009; Kiraly, 2012; Lee & Lim, 2012; Motschnig-Pitrik & Holzinger, 2002). Supporters of PjBL argue that the pedagogy engages students and encourages them to develop learning habits that last for a lifetime to improve their 21st century skills and motivation to learn. Wagner and Dintersmith (2015) explained that the industrial world has entered a new phase of innovation that requires students to develop their skills, which are essential for success. Additionally, Kivunja (2015) mentioned that all the features of students' high order thinking skills can be found when students engage in constructivist learning, such as PjBL. The supporters claim that PjBL is more effective than traditional methods. However, critics argue that the problem with PjBL is that it threatens the traditional methods held by many educators in how they perceive the project.

Erdogan and Senemoglu (2017) stated that PjBL continues to have a significant impact on all education levels across different disciplines. When relating to higher education contexts, a number of studies revealed that PjBL is more effective for students' learning than traditional methods. Pazur, Anicic and Mekovec (2016) reported that students develop positive attitudes towards learning in PjBL, which is beneficial for their future career. Moreover, Wood (2016) explained that students are able to develop employability skills needed for their career through PjBL. Bobbitt et al. (2000) mentioned that other professions, such as business management,

supported the use of PjBL since it offers students' the opportunity to meet industry requirements. Wekesa and Ongunya (2016) and Thomas (2000) explained that the PjBL approach encourages students to improve their learning skills and academic performance. This is in line with a study by Imafuku et al. (2014), who explained that PjBL demonstrates gains related to cooperative working skills whereby students are able to communicate effectively with their peers in real-life scenarios, develop their interpersonal and communication skills and enhance their ability to reflect and discuss.

According to the Buck Institute for Education (2011), students in PjBL setting gain a deeper understanding of the concepts and are able to build workplace and lifelong learning skills. Do Amaral (2019) claimed that PjBL approach provides several benefits to students such as research opportunities, motivation in addition to continuity of partnerships. These claims demonstrate that the PjBL approach allows students to explore beyond their classrooms.

McConnell et al. (2013) explained that PjBL empowers students to take control of their learning since they are looking for the solution to project problems, which allows them to tailor their work according to their needs and reflect on it to increase their learning. Furthermore, Han et al. (2016) clarified that PjBL was used in STEM majors and in business courses to improve students' performance and increase their level of success upon graduation. This claim aligns with Aggarwal and Zhan (2016), who mentioned that companies nowadays are looking for individuals who have a practical understanding, gained through practical experience and knowledge, of how business is conducted. Many studies have indicated that the PjBL approach enables students to learn without pressure in their search to find answers and collect information. Hertzog (2005) explained that PjBL helps students learn and face challenges during the project, which provides them with the opportunity to manage and learn from their mistakes. Lo (2018) pointed out that students in PjBL can create an experience that encourages them to learn the content. Other researchers looked at PjBL as a supportive tool that provides students with feedback. The feedback assists students in making decisions on the projects and revising them. Grant (2002) explained that constructive feedback provides students with more support to continue their learning even after the completion of their projects. Feedback benefits are widely known; however, more research is needed to examine if more evidence exists for the benefits of feedback in a PjBL environment.

Tamim and Grant (2013) used a multi-case approach for a study of six teachers who implemented PjBL in their classrooms. They employed semi-structured interviews with the teachers and analysed the classrooms. Their research implied that PjBL develops students' critical-thinking abilities and supports students' engagement in the learning environment, which gives them the opportunity to work with others and apply their skills in many situations. A study by Vanasupa et al. (2007) compared a junior cohort of material engineering majors engaged in PjBL curriculum at California Polytechnic State University with comparable juniors in other engineering majors who were exposed to traditional curriculum. The results of this study showed that students in a PjBL environment perceived themselves as more independent and self-reliant and were able to direct their learning, compared to the students engaged with the traditional curriculum.

It was essential to highlight the global genealogies of PjBL and the experience of using this approach in other contexts. For example, when discussing the experience of implementing PjBL in one of the countries in Latin America such as Brazil, PjBL was seen as a challenging experience for both the students and the teachers. PjBL required a change in the process and learning environment for creativity and innovation that would create a level of uncertainty. In this study for Lima et al. (2017), a group of researchers conducted several workshops in higher education institutions in Brazil on the PjBL approach to identify the impact of these workshops on the staff to improve their practices in engineering. This study showed that teachers improved their teaching practices, were more motivated and interested in PjBL as a new teaching strategy and had the opportunity to share their experiences. In addition, teachers who were using this approach applied what they have learned in these workshops and positively impacted their teaching practice.

An ethnographic case study conducted by Paugh (2018) in Mexico sought to understand how English language and literacy practices were used within the application of PjBL in the classroom. The study was conducted at Wilson High School, located along the US/ Mexico border. The students in this study used translanguaging to communicate formally and informally in their classrooms. The case focused on students in the 9th grade in an English Geography class using purposive sampling with four local English language learners. One of the findings in this study showed a connection between PjBL and higher-order thinking, where the learning environment acts as a mediator to improve students' skills. Another study by Uziak (2016) in Chile focused on introducing PjBL approach in the engineering curriculum as the best way to fulfil the increasing

demand in the industry, prepare students for their professional careers, and create new fundamental knowledge.

Another study was conducted in Uganda by Kajjora (2018), focusing on using PjBL as a method to improve teaching and learning at the YMCA institute. The research study used a participatory action research design which involved 25 stakeholders who were purposively selected. The data in this research study were conducted through focus groups, observation, and interviews. The findings of this research study revealed, in one part, that students who worked in groups during PjBL had more responsibility to learn and were more self-reliant. Another part of the same findings showed that vocational teachers recommended the employment of this approach in other disciplines.

Notably, PjBL has encountered resistance and has been criticised in some studies that demonstrated that students in a lecture-based classroom outperformed those students in PjBL classrooms, especially in the subjects where content knowledge was emphasised (Fatade et al., 2013; Hixson et al., 2012). Moreover, there were a number of gaps and omissions in the current research on PjBL. For example, studies by Quigley (2010) and Hixson et al. (2012) showed that there were many issues surrounding the topic of PjBL such as teachers' practices related to this approach and the ability to improve students' 21st century skills. In 2008 and 2010, the Department of Education in West Virginia partnered with Buck Institute for Education (BIE) to provide teachers with high-quality professional development with a focus on PjBL. The study compared a group of students learning from teachers who had been trained to use PjBL with another group who did not have PjBL teachers. The study revealed that there was no difference in the students' performance on the state-wide tests, which indicated that there were no specific gains from using PjBL. It would appear that more evidenced research was needed on the topic. Another study by Quigley (2010) focused on examining the soundness of PjBL in addressing student achievement in maths. Forty-four students participated in the study, results revealed that there was no difference in test results and performance. The findings of this research study contradict those of another by Fatade et al. (2013) in Nigeria, in which 96 students participated in a study with a focus on maths. The results revealed that students engaged in PjBL outperformed their peers in the control group, which was taught using the lecture-based method. Nevertheless, Quigley (2010), in his presentation of sound and objective study, continued to stress the need for more practical data,

especially when it comes to responding whether PjBL can be viewed as a legitimate alternative to lecture-based learning. Other studies, such as that by Nowak (2007), suggested that students in a PjBL setting do not always demonstrate greater achievement, which contradicts the aforementioned findings of Fatade et al. (2013), as this was measured through their test grades. In this research, Nowak provided insight into performing a comparative study and also utilised data to determine exactly how students perform. The results showed that non-PjBL students scored far better than PjBL students, which was unexpected.

2.8 Project-Based Learning Implementation and Challenges

The benefits of PjBL have been noted by many educators who recommended the approach. However, PjBL requires careful treatment when it comes to its use and implementation to achieve its learning goals. Successful implementation of PjBL lies in teachers' ability to motivate students, support their leaning, and guide them throughout the learning process. A study by Mergendoller and Thomas (2005) on the proper implementation of PjBL explained that teachers should carry out certain practices for successful implementation in their classrooms. Moreover, providing effective scaffolded instruction with high-quality experience helps to reduce students' cognitive load (Hmelo-Silver et al., 2007), which enables them to take successful steps and achieve cognitive growth just beyond their reach (S. Bell, 2010). In the learning process, teachers should consider giving more control to students to work together and reflect on the purpose of the project. Giving more control to students is considered an important aspect to improve their learning where they are able to set realistic and clear goals to make decisions related to the course content (Helle et al., 2006). Moreover, teachers should learn how to scaffold their students' inquiry. Teachers should focus on groupwork, collaboration among students, time management and public speaking (S. Bell, 2010; Condliffe, 2017; English & Kitsantas, 2013; Hmelo-Silver et al., 2007; Krajcik & Blumenfeld, 2006; Lee et al., 2014; Mergendoller & Thomas, 2005; Thomas, 2000; Vega, 2011; Vega & Brown, 2012; Yetkiner et al., 2008).

Other practices of implementation are related to the design of the curriculum. Parker (2018) claimed that the curriculum is delivered through designing projects, which is the core of the course in a PjBL approach. Teachers should make sure that engagement is the most important concept, creating a reason for students to get involved through reading texts, paying attention in their classrooms, and finding answers to their questions (Grant, 2011; Larmer & Mergendoller, 2010).

Furthermore, it is crucial to balance curriculum requirements and high-stakes tests, time management and management in general, all of which hinder the effective implementation of PjBL. Özdener and Özçoban (2004) explained that students utilise creativity, thinking and problem-solving skills when working on projects with their group members, and with other teachers, parents, community in addition to external partnerships. According to Smith et al. (2005), teachers should encourage students to work together to achieve a goal, in addition to promoting their cooperative learning to ensure that misunderstandings and gaps are being identified, and help students discuss what they have learned. Proposed projects need to reflect reality in order to close the gap between PjBL and real-life situations. Both theory and application should follow a systematic approach in light of students' competence levels. Parker and Lo (2016) explained that projects are created to provide authentic experiences for students and offer opportunities to engage in real-world tasks. A study by Tamim and Grant (2013) on PjBL implementation explored in-service teachers' definitions of PjBL and their explanations of the meaning of their PjBL implementation. Three themes evolved from the inductive analysis: 1) teachers identified PjBL through its perceived advantages for learning, 2) teachers varied their use of this approach in the learning process and 3) teachers adopted student-centred approaches in PjBL. Findings indicated that when students worked on projects, teachers perceived that students' motivation and engagement increased. Therefore, teachers need to create an understanding of PjBL practices for proper implementation in their classrooms.

Many of the implementation challenges and concerns are related to the way PjBL is implemented and how each person understands PjBL as an approach (Baines et al., 2017; Condliffe et al., 2017; Lee et al., 2014; Thomas, 2000; Vega, 2012; Vega & Brown, 2012). To be more specific, Baines et al. (2017) and Condliffe et al. (2017) explained that although teachers may have experience in teaching, they become novice teachers again when it comes to PjBL implementation, which adds more stress even if the teachers are excited about PjBL as an approach. Krajcik and Czerniak (2007) found that lack of time for implementing a new teaching strategy and limited teacher experience with PjBL, in addition to other factors related to the organisation, can negatively impact the effectiveness of PjBL. Educators need reliable guidance during the project, which demonstrates a potential struggle for teachers to present challenging activities that allow students to push themselves. Moreover, teachers are now considered facilitators in PjBL environments who guide students' learning. Both teachers and their students become more

confused about their roles and responsibilities (Lee et al., 2014; Mergendoller & Thomas, 2005; Savin-Baden, 2007; Thomas, 2000; Vega, 2011; Vega & Brown, 2012).

One of the challenges that PjBL faces regarding implementation is the idea that it is difficult to plan. Although there are a lot of factors that support effective implementation, the comprehensive review of Condliffe et al. (2015) recommended that future research examine the implementation of PjBL in different contexts. Nevertheless, there is little empirical data to address how educators make sense of their experience of the use and implementation of PjBL. Tamim and Grant (2013) mentioned in a case study of six teachers that there were some challenges related to the nature of the learning environment, and it was mentioned in the findings that PjBL seemed to be ambiguous due to the student-focused curriculum, that it was difficult to select content that was beneficial for PjBL, and that the guidance on student projects and the assessment of students in the project in addition to the process itself could affect proper implementation of PjBL. Tamim and Grant (2013) explained that teachers should understand the right application of PjBL practices in the classroom and the crucial role of supporting and delivering specific learning outcomes by adopting PjBL instructional methods more effectively. Sudjimat (2019) noted that some teachers avoided using PjBL in their classrooms since they faced difficulties in deciding the suitable application strategy for PjBL. Therefore, teachers are required to have more understanding of the approach and the content for correct implication. Adams et al. (2017) explained that teachers might struggle to implement PjBL due to the need for complex teaching skills and advanced pedagogical knowledge. English (2013) noted that teachers still need support with maintaining good teaching practices in the implementation of PjBL. In addition, Krajcik and Czerniak (2007) explained that teachers might find it difficult to prioritise PjBL when they have to meet national standards and prepare standardised tests. Therefore, educators feel pressure to cover much of the material and perceive the difficulties of working on a project and extending the time to finish it.

Teachers need guidance during projects to ensure that the goals of each project are met and not avoided. Park Rogers et al. (2001) conducted a case study for math teacher and two science teachers who applied PjBL in their classrooms. The researchers used a multiple case study so they could identify the patterns across individual cases. Data collection for this study was achieved through semi-structured interviews with the teachers about their experience when implementing PjBL to ask about their teaching. The researchers found that teachers' acceptance and use of PjBL

may be related to teacher orientation to the classroom. This means that teachers might be resistant to PjBL. Park Rogers et al. (2011) found that teachers need support during school personal and professional development sessions for successful implementation of PjBL. The ability to generalise from this research is limited, however, as the number of teachers being interviewed was only three.

Dochy et al. (2003) and Gijbels et al. (2005) found a zero-effect size for PjBL when compared to a lecture-based learning environment and discovered that the application in addition to principles of the understanding, rather than the knowledge itself, are most affected by PjBL. Furthermore, Newman (2004) found an unfavourable effect for PjBL on the build-up of facts, which might be the significant outcome of assessing teaching methods. Blumenfeld et al. (1991) outlined additional challenges to PjBL related to the little attention that is focused on the role of the teacher. PjBL requires more attention from teachers towards its approaches in order to structure activities and tasks. Teachers require professional development to learn how to engage students in PjBL through their practices. Additionally, teachers fear that collaboration among groups will become loud and unorganised which cannot be controlled by the teacher. Larmer (2018) explained that some teachers are fearful of incorporating projects in their classrooms because it will limit their ability to cover the material that students need to have. Moreover, Dow (2019) reinforced this belief in his claim that "so often we are driven by our effort to transmit the prescribed curriculum, that student curiosity is left by the wayside" (p. 79). Teachers need to cover the material to be tested to achieve learning goals. Matheson (2008) noted that students still value the teacher's lecture and leave little room for alternative methods to be utilised in the classroom. Thornton (2001) explained that lecturing method is considered unsuccessful in anticipating student's full attention and does not retain knowledge; therefore, other methods such as projects should be considered.

Pellegrino and Hilton (2012) and Ravitz (2010) noted that when teachers practise poor implementation of PjBL, it will result in the failure to take the student-centred constructivist approach to learning, in addition to the failure to select appropriate topics for PjBL (Krajcik et al., 2008). Teachers will fail to develop a collaborative learning environment since they lack the important characteristics needed to develop a project in their classrooms. Moreover, they will lack clear expectations, with limited assessments on PjBL requirements, such as performance

assessments, weekly reports, and self-assessments (Tamim & Grant, 2013). Consequently, Hallermann (2011) research study makes it clear that when teaching faculty use poor implementation techniques when applying PjBL, the results are ineffective and considered a waste of time. However, research reveals that when PjBL is implemented effectively using key knowledge, understanding and success skills, focusing on challenging problems or questions that drive the focus of the project and enhance student involvement, learning becomes more engaging and meaningful. Therefore, organisational support is needed to encourage teachers on the proper implementation of PjBL to know what kinds of projects and activities students find interesting enough to become engaged in them. Blumenfeld et al. (1991) mentioned that projects are often developed without sufficient consideration of the complex nature of motivation and the level required to engage students in cognitive work. However, it is often assumed that students will be motivated in PjBL.

2.9 The Role of Teachers Using the Project-Based Learning Approach

Teachers play a crucial role in the successful implementation of PjBL (Han et al., 2015). In response to this educational reform, the teaching faculty role has changed from that of content experts, who have more authority in class, to that of facilitators, who move around the classroom rather than stay in front of it (Weimer, 2002). In PjBL, students are the centre of learning; however, in traditional learning, students' efforts are focused on recording the information provided by the teacher who chooses and selects the content in addition to applying concepts (Wright, 2011). Therefore, teachers involved in PjBL must fully understand the concepts and procedures involved in this approach so that they can serve as effective problem-solving role models for their students (Carter, 2016). Teachers perceive PjBL as an attractive methodology to be carried out in their classroom because it has been shown to be effective for students to acquire both professional and lifelong learning skills (Garcia-Martin & Martinez, 2017). Alves et al. (2016) explored PjBL's impact on students' learning and teachers' practices. The sample for this study was first-year students in the industrial engineering and management programme at the University of Minho, Portugal, during 2004/ 2005. Data was collected using written narratives of these teachers at the end of the PjBL semester. It was found that teachers expressed a positive view of PjBL as a learning approach; they appreciated that students engaged with PjBL gained a better understanding

of the application of concepts in real-life situations and saw this as an important outcome of the project for students.

In PjBL, teachers shift their responsibility towards students and encourage them to learn and improve their skills outside the classroom. According to Frank et al. (2003), the new role of the teachers is defined through helping students construct their own understanding by encouraging motivation, providing resources, and helping learners build their own knowledge. Moreover, English and Kitsantas (2013) claimed that self-regulated learning is an important component of PjBL where students are able to develop their projects; however, improving self-regulated learning in PjBL requires teacher's guidance, which gives students the opportunity to enquire and develop their projects. Moreover, according to Aldabbus (2018), the teacher's role is critical in providing students with guidance and feedback that motivates them to be more independent. Therefore, teachers' perceptions towards using projects differ based on how they can support the learning process; their opinions of PjBL are different towards the learning environment as well. According to this approach, the teacher's task is to tutor the students and teach them how to learn. Teachers are no longer providers of knowledge and facts; rather, they are mentors, facilitators, helpers and mediators for learning. Therefore, teachers must create a learning environment based on inquiry, which will allow students to build their own knowledge through experience.

Still, the teacher plays an important role in influencing the student motivation required to improve students' learning. Lally et al. (2010) explained that the teacher's role in PjBL is to discover students' motivation to continue their studies and develop the habits needed to master their skills towards changing their learning behaviour. Moreover, McDonough (2007) explained that teachers play a critical role in facilitating learners' motivational thinking by giving them the chance to be active learners and by providing them with choice to promote their autonomy. Additionally, teachers' instruction in PjBL affects students' learning outcomes. Aral et al. (2010) intended to understand the impact of PjBL instruction on the learning curriculum for six-year-old preschool children's conceptual development. Two classes of 14 pre-schoolers were assigned at random, one to the experimental team and the other to the control team. The experimental children's group took part in project-based education and learning for an overall of 12 weeks, while the control group followed the regular preschool curriculum. Data on the children conceptual development were gathered making use of the Bracken Basic Idea Scale-Revised (Bracken, 1998).

The outcomes revealed that all children enhanced their grades between the times of the pre-test and also post-test, however there was a small distinction in favour of the experimental group in the post-test grades.

Teachers' skills play a pivotal role in carrying out their new role in PjBL. Tal et al. (2006) aimed to document instances of good teaching in PjBL. Their findings showed that PjBL provided greater student performance on post-tests compared to students in other classrooms who were taught by less-skilled teachers. Teacher skill is a key factor to ensure the success of PjBL instruction when it comes to managing the classroom, planning for projects, setting high expectations, student-centred questioning, in addition to designing a suitable curriculum material based on solid teacher content knowledge. Teachers are considered a key to the achievement of PjBL. Good teaching practices in PjBL will ensure that constructive learning will take place and will be reflected in students' academic achievement.

Ryan and Deci (2000a) explained that teachers should support and help students engage in behaviours that enhance learning by promoting the idea of motivation and establishing student ownership of knowledge, which leads to deeper learning (Blumenfeld et al., 2004). Teachers may support student motivation through their teaching (Adkins-Coleman, 2010; Eccles, 2004; McHugh et al., 2013; Meece, 2003) by designing lessons and practices to connect the classroom with outside experience when students are looking for more information (Thomas & Mergendoller, 1999). Rogers et al. (2011) explained that teachers need to utilise PjBL practices completely in a way that allows them to motivate their students.

2.10 The Effectiveness of Project-Based Learning in Higher Education

Many research studies have explored PjBL effectiveness in higher education in different countries. The effectiveness of PjBL in higher education was related to its cognitive strategies, benefits, and students' experience with this approach (Guo et al., 2020). The literature review showed certain factors that can help and facilitate the adoption of PjBL instruction in the classroom. These are summarised in what follows.

According to Kokotsaki et al. (2016), most of the studies on PjBL focused on engineering education; for example, a study by Ruikar and Demian (2013) made a link with industry engagement through multimedia podcasting in the United Kingdom. Another study by Hassan et

al. (2008) adopted an integrated multicourse using PjBL in electronic engineering in Spain, and Fernandes et al. (2014) followed a project-led education model developed by Powell et al. (2003) to engage students in learning at a university in Portugal. Moreover, in Australia, a study by Stewart (2007) examined the relation between self-directed learning and PjBL learning outcomes in management course for postgraduate students. The results showed that students' self-directed learning, such as self-management skill, was provided through PjBL learning outcomes. Another study by Gibbes and Carson (2014) focused on investigating project-based language learning to utilise activity theory in a university language programme in Ireland. The results of students learning outcomes were mixed because of the contradiction that was found in the university system where there was a lack of time as a result of community requirements or rules that governed the modules activities. Moreover, a study by Assaf (2018), focused on the impact of PjBL approach on students' attitudes in English courses through the creation of videos. Another study by Belagra and Draoui (2018), examined students' mastery and orientation towards an electronic power course after three months of using PjBL. Other studies on PjBL effectiveness in higher education were noted with its relation to helping students with their future career (Beier et al., 2019; Papastergiou, 2005). Teachers in higher education are encouraged to adopt the approach of PjBL. According to Guo et al. (2020), in higher education, there were many practices related to the applications and effectiveness of PjBL in STEM education, therefore, future research should consider implementing PjBL more in the field of humanities and social sciences.

PjBL was explored and practiced in different phases of schooling to higher education. Therefore, it was expected that higher education classrooms respond to this approach the same way K-12, primary and secondary classrooms would respond. Chu et al. (2017) explained that the success and effectiveness of this approach introduced in K-12 education continued spreading gradually in higher education, showing the advantages over lecture-based teaching through promoting students' professional developments in different aspects of learning. Students who used PjBL approach in higher education improved their life skills and learned in an interdisciplinary way; moreover, they had the opportunity to work with other community members to solve ill-structured problems in the real world. A study by Bilgin, Karakuyu and Ay's (2015) explained that students in higher education who were taught in primary education using PjBL developed better performance skills in different disciplines, and their self-efficacy beliefs increased compared to other students who were instructed by the lecture-based teaching method. Another study by Yang

and Cheng (2010) showed that students in higher education responded positively to this approach and were able to build their life skills through communication and teamwork, which increased their innovation and creativity.

2.11 Project-based Learning in the UAE

In the UAE, research on the PjBL approach has been very limited, and only a few relevant significant papers were found. The literature review conducted used Google Scholar and online databases (e.g. Taylor & Francis, ERIC) available in the online libraries of the University of Liverpool. Research on PjBL in the UAE focused on addressing PjBL from the perspective of learning styles and preferences as engineering students and faculty were surveyed, so their learning and teaching styles are relevant to PjBL as an approach (Chowdhury, 2015). Another study on PjBL focused on the use of PjBL and its positive impact on students when properly applied in Islamic and Emirati studies (Mohammed, 2017). Most of the research papers in the UAE focused on STEM project-based learning, such as the paper by Fouad (2018), which considered the impact of STEM project-based learning on the achievement of high school students in the UAE. A study by Al Basha (2018) focused on investigating teachers' perceptions and implementation of STEM education in American system schools in the UAE. Another study by Makhmasi et al. (2012) focused on students' interest in STEM education in UAE high schools. Jenns (2019) sought to understand Emirati women's reasons for studying the STEM-related subject of engineering. Moreover, other existing studies provided evidence that PjBL is considered an effective approach to enhance students learning. For example, a study by Dimmitt (2017) investigated first-year student needs for developing critical thinking skills at a university and research centre in Abu Dhabi, UAE; through the power of PjBL experiential education. Another study by Ayish and Deveci (2019) focused on students' perceptions of responsibility for their own learning and for supporting peers' learning in a PjBL learning environment. Therefore, it is crucial to highlight the importance of PjBL in creating a learning environment that supports students' work on their projects and connects them to their life experiences.

The PjBL approach is seen in the UAE as an international approach that is effective to the region. Indeed, the UAE government wishes to adopt critical pedagogies related to student-centred approaches such as PjBL. Yet, the adoption of this approach might include some limitations, such as the student's authority over the teacher, which might not ensure learning, and disempowers

teacher professional authority. To explain further, the UAE is currently taking the PjBL approach as a challenge for reform to create appropriate circumstances and growth. Higher education still follows traditional teaching methods based on memorisation, which lacks active student engagement and participation (MBRF & UNDP/RBAS, 2014). Tally (2015) explained that the majority of students' have been raised in traditional classrooms where they received knowledge from their teachers, which makes them not fully prepared to become responsible for their own learning.

Moreover, Jackson (2015) explained that using this approach does not mean that foreigners or westerners can criticize students in the local context. The occurrence of this approach in the UAE focused on empowering local students and engaging them in learning which could have an unexpected result. The local society in the UAE has a significant impact on education, and it has specific interrelations where global policies do not influence local values. The US-centred approach promoted by western institutions empowers students over teachers; therefore, deep understanding is required to the approach limits and benefits.

PjBL approach focused on student-centred learning has been seen to develop the world a few decades ago. However, there were different perspectives on this approach to engage students and empower them to learn. The approach of PjBL was embraced and emphasised by the UAE government to match students' interests and make UAE institutions more credible within the region and the globe (Aubrey & Coombe, 2011). The Emirati leaders and educators encouraged teachers to find new ways to empower students through viewing the world from a problem-based framework and importing student-centred practices (Jackson, 2015). Furthermore, many education institutions in the UAE have taken the initiative to move towards an active learning approach to promote learning and innovation in the classroom (Mohammed, 2017).

The vision of UAE 2021 was declared in late 2010; the vision focused on developing the knowledge economy through education development. For that reason, the vision required a complete transformation in teaching methods and the education system. PjBL approach played a critical role in this transformation. Furthermore, the PjBL approach still plays a significant role in achieving other visions of the UAE, such as the vision of 2040, which is considered a new strategic plan initiated by the UAE government to develop different economic, environmental changes to

leverage the level of innovation through the use of technology for sustainability purposes (Ackland, 2021). This vision indicates an increasing need for educational developments to respond to the economic activities in the UAE, which used to be driven mainly by oil, real estate, construction, and trade (David, 2017). These strategic plans are tied to the aim to invest in students to build the local economy.

The education system in the UAE was similar to other countries in the Gulf Region. Education was previously taken as a religious study, and it was observed mainly as a social constructivist approach. However, according to Hourani, Diallo, and Said (2011), education in the UAE was based on Islamic education and memorisation, which included inquiry and critical thinking in addition to cultural context and values. Since the establishment of the UAE in 1971, the country was growing and competing with other top countries, which have embraced diversity while still holding to the culture and traditions (David, 2017).

The UAE witnessed several educational reforms and aligned the work done in schools with higher education to produce an Emirati generation who is educated and skilled. However, the learning of Emirati students was described as superficial in terms of achieving learning outcomes and goals (King, 2011; Swan, 2012). The students were not sufficiently equipped with the adequate tools independently; therefore, power was given to the teacher responsible for their learning (King, 2011). These teaching practices encouraged the educational system towards surface learning (McLaughlin & Durrant, 2017).

The arrival of foreign institutions branches played an essential role in promoting the process of adopting the PjBL approach in the local context, especially since there is a direct link between education in the Arab world and education in North America and western Europe (Moh'd Suliman, 2000). The priority of the UAE higher education is to change from the traditional pedagogy to a student-centred pedagogy such as PjBL to prepare students for "independent learning" and "ability to work as a team" (UAE Minister of Higher Education and Scientific Research, His Highness Sheikh Nahayan Mubarak Al Nahayan, Mezies 2009, paragraphs 12–14).

Today, the UAE educational system is seen as liberal yet still conservative regarding Western values. 'Western trained academics working in the Gulf region have to censor their

academic thrust of knowledge in order for it to fit adequately to the sensitive social, cultural and religious contexts within which they are operating' (Hourani, Diallo & Said, 2011, p. 352).

The UAE higher education sector depends on foreign institutions and expatriate teaching professionals in building and improving students learning, which reflects the diversity of this country. However, there are still some challenges related to the number of expatriate teachers available in the UAE higher education and their imposition of values and methods of knowledge building, in addition to their language and its impact on the way they build students' skills (Samier, 2019). It is important to note that the ratio of foreign English speaker faculty members in the UAE higher education sector is high, where 88 % of the workforce are expats (Dubai Statistics Center, 2018; Global Media Insight, 2018; UAE Government, n.d.).

2.12 State of Research on Project-Based Learning and Student Motivation

According to Grant (2002) and Splitter (2009), the constructivist learning theory places greater emphasis on the learners, in that the learners construct knowledge for themselves by creating new ideas and concepts based on experience. Learning occurs when students are able to use their life experience and their existing knowledge and collaborate with peers to organise activities (Grant, 2002; Splitter, 2009). Constructivism also supports the idea of motivating students to learn through engaging with the curriculum, learning and collaboration (Splitter, 2009). Since student motivation is considered a critical element in the learning process, many studies have shown the pivotal role of PjBL in motivating and engaging students to learn through its constructive, student-centred approach.

Researchers such as Patton (2012) found that PjBL is a highly engaging and motivating approach to enhance students' learning, and several benefits and advantages are listed in general education literature. The major benefit is that it provides opportunities for intrinsically motivating students to learn. Hilvonen and Ovaska (2010) interviewed a total of 12 information technology students at Saimaa University of Applied Sciences in Finland participating in courses where PjBL was used to explore what issues of PjBL affect motivation to learn. The study revealed that students were motivated through PjBL because teachers gave more control to students and provided guidance to learn. This aligns with another study by Lou et al. (2011), which confirmed that PjBL increases students' level of enjoyment and engagement and affects their motivation. The study

included female senior high school students in Taiwan to understand the effect of PjBL curriculum design on students' behaviour. Additionally, a study by Hung et al. (2012) revealed that student motivation is considered a critical component to ensure the quality of education, PjBL was found effective in fostering students' motivation in learning and improving their capability to solve problems. Palmer (2007) noted that when students begin to work on a task, they ask questions, give answers, and appear to be happy and enthusiastic.

It is important to note that, according to the self-determination theory, there are two primary types of motivation: intrinsic motivation and extrinsic motivation (Deci & Ryan, 1985). The self-determination theory (SDT) is a theory of motivation that uses traditional methods that have been 40 years in the making and assumes that regardless of a student's age, gender, nationality and national background, it provides a motivational foundation for students' high engagement in the classroom and positive functioning (Deci & Ryan, 1985, 2000; Reeve et al., 2004; Ryan & Deci, 2000, 2002; Vansteenkiste et al., 2010). According to self-determination theory, students possess inner motivational resources; consequently, it offers recommendations to teachers on how to nurture and animate their resources to facilitate high-quality engagement in the classroom (Niemiec & Ryan, 2009). Dopplet's research (2003) supported PjBL and its effect on students' motivation. The study used qualitative and measurable tools for exploring students' progress in affective and cognitive domains. The research used analysis of students' portfolios, and observations of their class activities in addition to meetings with students, teachers and school management and their scores in the admission examinations and assessments of student's projects. Findings showed that PjBL increased students' motivation towards self-image at all levels and students achieved specific affective learning outcomes. Over a duration of three years, the activities were summarised and indicated an increase in the number of students who achieved the college admission requirements. Students who were low-achieving succeeded with distinction in the same admission examination taken by other high-achieving students in the same school.

Other researchers, such as Koparan and Güven (2014), reported that PjBL students have the opportunity to show their learning independently and take ownership of their work. The study targeted eighth-grade students to understand their attitude towards PjBL, and the research found that students developed positive attitudes towards their lessons compared to students taught by instruction from textbooks. A similar study by Ocak and Uluyol (2010) investigated how the PjBL

environment can influence students' motivation. According to the results of the study, PjBL positively affected students' engagement and interest in learning. Likewise, a study by Baumgartner and Zabin (2008) examined the ability of PjBL to increase students' knowledge of scientific investigation and foster positive attitudes towards the content. The descriptive case study presented PjBL as a teaching model that combines elements from other learning strategies. Consequently, PjBL enhances students' motivation through creating authenticity, a sense of ownership and a feeling of competence, which reflects on students' motivation. Gültekin (2005) highlighted the positive effects of PjBL instruction on students' learning outcomes for fifth-grade social studies students. Findings showed that students' in the PjBL class demonstrated greater academic gains than their peers who were traditionally taught. This aligns with a study by Beneke and Ostrosky (2008) to explore teachers' perceptions of PjBL and the responses of parents. Findings showed that teachers felt that students were more successful and noted improvement in their interest and motivation. Another study by Mateo and Sevillano (2018) to implement PjBL methodology with students' working on microbiology in the University of the Basque Country and to analyse its result along time. The overall results showed that students were motivated and referred a greater interest about research than they had before; they would choose PjBL versus the traditional way of learning. Today's higher education graduates in various courses are expected to apply creativity and motivation to design "products, processes, systems, operations and breakthrough developments that are responsive to real-world needs" (McHenry et al., 2005, P. 2). The skills and competencies are improved through the instructional strategies of constructivism to educate higher education students and improve their learning. Moreover, researchers such as Meyer et al. (1997), who examined the effectiveness of PjBL curricula in terms of students' motivation, categorised students into "challenge seekers" and "challenge avoiders". In their study, it was found that students needed support and guidance from their teachers to perform their projects and make sure that they were achieving the learning goals. The findings explain that teachers play an important role in use of PjBL in their context. Hence, there does exist a body of research that provides some evidence of the positive impacts of PjBL on aspects of student motivation.

2.13 Relating the Literature Review to the Current Study

This study aimed to uncover the current teaching practices at RIT using the PjBL approach to foster students' motivation to learn in order to improve the teaching and learning experiences

of this approach. This meant that I needed to have a clear understanding of what constitutes PjBL and its benefits for influencing students' motivation and engagement. Researching the PjBL approach in depth demonstrated that it needs to be fully utilised by the teachers in the local context to achieve the best possible learning outcomes. Currently, teachers have been using PjBL in their practice, but I needed to examine their practices and the way this approach was being implemented in the institute due to lack of available information on the current uses and implementation of this approach. PjBL can be used in an effective manner by teachers for the benefit of the students. In my research, I aimed to investigate the best ways to facilitate PjBL as a suitable opportunity to share experience among the teachers, which assists in identifying the additional support and development that may be required to enhance the teaching practices of PjBL as a learning approach.

2.14 Chapter Summary

The literature review in this chapter defined PjBL and described the key elements and characteristics of the approach. In addition, the chapter discussed the potential advantages and challenges associated with its use and implementation and described the role of teachers in the PjBL approach. The discussion of PjBL implementation and challenges shows that teachers are always in need of developing their teaching practices while using PjBL to foster students' motivation. Overall, I discovered that PjBL is considered a useful approach that can help teachers motivate students if applied in a helpful context. The following chapter presents the methodology of my research study.

Chapter 3 - Research Methodology

3.1 Introduction

In this research study, I explored teachers' implementation of PjBL in their practice. This involved qualitative research using phenomenology, which provided descriptions of teachers' lived experience. I sought to create a better understanding of the approaches of the teachers while implementing PjBL. The purpose of the research was to understand how teachers describe PjBL from their own perspectives and determine whether their practices enhanced students' motivation to learn.

The study was guided by one main overarching question and three research sub-questions that I as researcher had developed. The research questions were fundamental in helping me determine the focus and the aim of the research study. The research questions used in this study were considered the core of my research since they directed all other components of the research design. Aware of a research question's potential to direct research, I had ensured that each question developed was mapped onto the research objective and served the research aim. The research questions emerged from the aim of this research study, which was to explore the current teaching practices in a higher education institution that had opted to use the PjBL approach, with the goal of fostering students' motivation to learn and improving teaching and learning practices in this approach. As little is known about PjBL in the UAE, research was needed to clarify teachers' implementation approaches and strategies within this particular context.

The central research question was, 'how do teachers at Rochester Institute foster students' motivation while implementing project-based learning?'

The sub-questions were as follows:

1- How is project-based learning used by teachers in this institute?
2- How do teachers use project-based learning specifically to motivate students' engagement and learning?
3- How do teachers perceive their role in project-based learning?

This chapter describes the methodology in detail as per the following sections: my research paradigm and ontological and epistemological views; research methodology and design;

participants; data collection method; research setting, procedures, data analysis; and themes development; research trustworthiness; and ethical considerations.

3.2 Research Paradigm and Ontological and Epistemological Views

Maxwell (2013) asserted that researchers should have a clear philosophy for the conduct of research because it shapes the research questions and data collection methods. As a practitioner-researcher, it was essential that I clarify my research paradigm as well as my ontological and epistemological views because they shape the problem statement, the research questions and the data collection methods. A paradigm is also important for researchers because it outlines a researcher's philosophical orientation, which directs any decision made in the research process, including the choice of methodology and methods. Moreover, paradigms provide beliefs and dictate scholars' views on which discipline influences how and what should be studied and how results should be analysed. The word "paradigm" was first used by Thomas Kuhn as a philosophical way of thinking that aimed to describe the researcher's world view. The worldview includes abstract beliefs and principles that shape how researchers see the world around them and how they interpret the problem and interact within the world.

To explain it further, a paradigm is a lens through which the researcher explores the world and examines the methodological aspects of the research methods that are planned to be used and how the data will be analysed. Creswell (2014) described the research paradigm as a set of beliefs that guide the action of the researcher towards a relationship with the world. Moreover, a research paradigm is a defined as a collection of common beliefs and common arguments that are shared by researchers regarding how knowledge is realised and understood and how questions are addressed (Cohen et al., 2011). In other words, research paradigm includes the experience of the researcher and the relationship to knowledge and real-world application (Patton, 2015).

My research followed the paradigm of social constructivism. According to Denzin and Lincoln (2011), in social constructivism, individuals seek understanding of the world they live in through developing subjective meanings from their experiences for objects they are interacting with. The meanings are multiple and varied, which leads the researcher to look at the complexity of the views rather than to narrow the meanings into categories and ideas. The concept of social constructivism relies on participants' views of the situation because participants describe their

experience, and they are able to construct a meaning for a specific situation through their interactions and discussions with others. This is where my research stood. This research study was formulated following the guidelines of the qualitative research paradigm. It attempted to explain a real social phenomenon by maintaining a critical stance and acknowledging the social constructivist nature of the PjBL implementation experience.

Researching a broad topic like PjBL through the experiences of teachers entailed exploration of various social aspects; this could be served within the realm of social constructivism. My research aimed to explore people stories told by participants and phenomenology based on common experience in order to make meaning and generate new findings. Research questions pertaining to the exploration of teachers' implementation of PjBL were designed to lead my investigation. PjBL implementation is considered crucial research not only to find a practical meaning but also to obtain knowledge about other aspects of the structure and relations that describe PjBL implementation. Therefore, it is not sufficient for a study to commit to searching only what is in the context; it must also look at and analyse with a critical eye the patterns that emerge along with detailed reasoning.

Furthermore, the social constructivist paradigm is characterised by a relativist ontology, in which reality is constructed through human experience (Denzin & Lincoln, 2018). Ontological beliefs concern the nature of reality, which is discovered via the researcher's lens. This incorporates problems pertaining to the nature of the world, consisting of social phenomena; whether reality is logical or lawful; the presence of the all-natural social order; and factors to consider that reality is created by the people associated with the research study environment (Creswell, 2014). The ontology of this research study was relativist since it attended to link the knower and that which is known by assuming the meaning to be related to individuals' constructs rather than to one independent reality.

Epistemology is another philosophical assumption that addresses the relationship between the researcher and what is being studied as connected and interrelated (Creswell, 2014). According to Creswell (2014), a social constructivist epistemology is subjective; in other words, meanings are created through interaction with individuals and through cultural and structural norms. Based on the subjectivity of the participants' reality, my opinion as a researcher was that I must withdraw

my own assumptions of reality and attachment to the phenomenon of how teachers' implement PjBL. My assumptions as I embarked on this research were to seek an understanding of the environment within which the participants lived, worked and studied to formulate meanings of such experiences based on their reality or perspectives. The aim was to explore teachers' practices based on their experience within a selected context and gain insights for more understanding of their behaviour from their own viewpoints.

The researcher is keen to understand individuals' perspectives related to their social interaction and how they contextualise and communicate such realities through their expressions in their language. As a practitioner-researcher, I was interested in improving the knowledge of students' and enhancing their motivation and engagement in the learning process. I realised that the research problem related to the implementation of PjBL was heavily vested in the social structure. Therefore, I was keen to explain the phenomenon involving the experiences of human subjects in my local context (Belfrage & Hauf, 2017). My study was not looking for definitive answers regarding what constitutes a universal approach to implementing PjBL. However, because PjBL practices are so varied, the benefits of this approach are not always seen. Therefore, this research focused on exploring current teaching practices and approaches in a PjBL environment that affects the motivation of students. As I engaged participants, I constantly thought about my personal assumptions and how they would probably affect my interactions with the participants and the situations, which could be a limitation of the research. Jootun et al. (2009) recommended acknowledging personal assumptions and expectations in order to come up with reliable findings. Therefore, I created a personal journal to take notes and guide my point of personal reference in order to ensure that self-consciousness was observed, acknowledged, and addressed throughout the research process.

At the beginning of the research process, I considered my position as a previous lecturer to be a potential limitation because I had experienced the same conditions as the participants when using PjBL in the classroom and motivating my students through the use of PjBL. Yet, upon reflection, it was evident that my position was not a constraint; it was a point of reference because I was able to understand participants' responses. This research topic of exploring PjBL practices to foster students' motivation to learn was a lived reality for me. I sought to understand teachers' experiences at a higher education institute, what initial practices they considered more

motivational for engaging their students, and what perceptions they had towards their role in PjBL that could help them in improving the learning process.

My experience as a former lecturer implementing PjBL in my classroom to enhance my students' motivation influenced my understanding of teachers' experiences and points of view. I relied on real-life situations and created interesting topics to get students involved in my courses. I was also keen to maintain a good relationship with my students to enhance their motivation. However, I remained reflective during the research process, and I was able to bracket my expectations and present the voice of the participants, knowing that the transparency of the research was essential to reporting reliable findings. Moreover, I relied on self-reflexivity which is defined by Krefting (1991) as "an assessment of the influence of the investigator's own background, perceptions and interests in a qualitative research process" (p.128).

As I examined my personal perspectives, I acknowledged that the course in which I had introduced PjBL resulted in highly motivated students. I removed myself from the study so that I would not introduce bias, as I had used PjBL in my past professional experience in my classes. Hatch (2002) explained that being aware of one's personal beliefs might affect an objective investigation. Therefore, it is important to approach the data in an objective manner. I strongly believe that PjBL helps and supports students improve their skills to become successful in acquiring depth to their knowledge content. I was interested in discovering teachers' perceptions of PjBL. The investigation of other teachers' perspectives on PjBL helped to reduce the bias in the study. Being a research practitioner in this study, I constructed what teachers experienced; for me, it was a new experience to explore other experiences of PjBL as a phenomenon.

I believe that PjBL is an instructional approach that builds students' skills so that they become successful in other areas, providing an opportunity for acquiring knowledge to create a well-rounded learner for the future. Therefore, I have always tried to understand this approach in relation to students' motivation. I assume that developing students' skills and updating them with the information needed for the learning material pushed me to delve deeply and understand how to create a constructive learning environment that supported their motivation to learn. I found PjBL to be an interesting topic, and I was curious to know more about its importance and its effective implementation.

Methodology refers to the techniques, strategies and approach used in the quest for original and new knowledge (Gray, 2014). My methodology was based on a subjective reality in relation to what exists. Therefore, for this research study, I chose to use a qualitative research to understand PjBL from the experience of the participants in the structural context. According to Creswell (2018), "qualitative research is a type of educational research in which the researcher relies on the views of participants; asks broad questions; collects data consisting largely of words from participants; describes and analyses these words for themes" (p. 46). Gary (2014) explained that researchers and participants in qualitative research must bring their own perspectives to provide meaning to several social matters. My research was based on the belief that the teacher's voices should be heard expressing their opinions and experiences. The researchers in qualitative research rely on themselves when collecting data through interviews, observing behaviour and examining documents. The researcher is the key instrument in qualitative research; in other words, the researcher does not rely on other researchers or instruments developed by others (Creswell, 2014).

In this research study, I placed a great emphasis on understanding participants' points of view, lived experience and social and cultural views through using phenomenology (Creswell, 2014; Welman & Kruger, 1999). Choosing to use phenomenology helped me as a researcher to gain a deep understanding of the phenomenon under discussion and allowed me to make sense of individuals' experiences within their context. Phenomenologists attach great importance to describing what participants have in common, which is critical for reducing individual experiences with the phenomenon to describe a universal essence (Creswell, 2014). I selected phenomenology for my research study to assist me in enhancing my understanding of how teachers' approach PjBL, which would enable me to advance my own educational perspectives and provide me with insights into how and what types of practices are introduced in the context.

3.3 Research Methodology and Design

The purpose of the research was to understand how teachers describe PjBL from their own perspectives and determine if their practices enhance students' motivation to learn. To advance my understanding of the phenomenon of teachers' experiences of PjBL and to support my research goals, I employed a qualitative research methodology to be able to speak to the participants directly and listen to their experiences. I employed a qualitative methodology using a phenomenological research design in this study to gain a deep understanding of participants' lived experiences and

identify the essences of this experience. Selecting phenomenology enabled me as a practitioner-researcher to address my research questions, which were shaped according to the characteristics of phenomenology; consequently, I found that phenomenology proved to be most suitable for this study.

3.3.1 Qualitative Methodology

This research used qualitative methodology to gain an in-depth understanding of research participants' social circumstances and experiences related to PjBL. There are key aspects to choosing a qualitative research methodology, such as the flexibility of the research design, the richness provided with the qualitative data and the inductive organisation of the data (Creswell & Poth, 2018; Denzin & Lincoln, 2011). Moreover, Creswell (2014) stated that qualitative methodology examines individuals' personal experiences, interactions, and practices in understanding a specific phenomenon; hence, using a qualitative methodology creates an inclusive understanding of the phenomenon under discussion (J. Bell, 2010; Cohen et al., 2011; Gray 2014; Moses & Knutsen, 2007). Using a qualitative research methodology in my research study gave me the opportunity to interact face to face with participants through semi-structured interviews to understand participants' underlying assumptions and opinions regarding PjBL. Additionally, using a qualitative methodology in this study provided me with a clear understanding of the phenomenon, its characteristics, practices, and implementation to foster students' motivation.

3.3.2 Phenomenology

It is important that researchers identify the best approach for their research study. A qualitative approach recognizes the purpose of the study and the researchers' positionality when it comes to the topic under investigation along with the techniques that will be made use of for evaluation of information accumulated (Creswell, 2014). I chose phenomenology as my research design because it focuses on understanding and placing meaning on how participants relate to a phenomenon they have experienced. Phenomenology is rooted in the philosophy of Husserl, who believed that when human behaviour is investigated, it is important to consider the subjective components of experience in a pre-reflective way (Caelli, 2000; Giorgi, 2009), as most often, individuals' subjective views cause reality (Lopez & Willis, 2004). Every human comes to know

his world and derives meanings from it through his understanding of the experiences that are encountered (Dahlberg & Dahlberg, 2003).

Phenomenology is defined as a "systematic study of people's experiences and ways of viewing the world" (Barker et al., 2002, p. 76). Barker et al. (2002) explained that the main characteristic of phenomenology is its focus on perceptions, actions and understanding experience and assumptions. In this research study, I placed a great emphasis on understanding participants' perspectives through their lived experience, social involvement, and points of view; therefore, using phenomenology in this research study was essential (Creswell, 2014). It is important to distinguish between two types of phenomenology: the descriptive phenomenology by Husserl (1859–1938) and the interpretive phenomenology by Heidegger (1889–1976). Therefore, it is important to show the main differences existing between these two phenomenological types (Lowes & Prowse, 2001).

Husserl's Descriptive Phenomenology

Descriptive phenomenology focuses on describing individuals' lived experiences of a phenomenon. To analyse the phenomenon, the researcher must separate himself from the mindset of phenomenology by making use of bracketing (Giorgi, 2009). Bracketing means that a person's natural perspective is set aside, in addition to anticipation and presumptions, to fully provide the phenomena as they present themselves in reality (Bevan, 2014; Giorgi, 2009; Husserl, 1913/1983). Consequently, it is anticipated that the researchers will certainly bring into awareness their own biases, past understanding, and post-positivist propensities in order to try to find the causality of the data while dealing with the description of the participants' present experiences (Ashworth, 1999; Bevan, 2014; Giorgi, 1997, 2009).

Descriptive phenomenology can provide psychological knowledge without theorising, placing a thematic focus on dialogue, literary analogies, or theoretically based interpretation (Wertz et al., 2011). In other words, in descriptive phenomenology, the researcher writes the description of the phenomenon and reflects on the essential themes that constitute the nature of participants' lived experience to maintain a strong relation to the topic of research and to balance the parts of writing as a whole (Creswell, 2014). Descriptive phenomenology is considered one of the phenomenological traditions. It is used to indicate the experiences of individuals through

narratives, which allows for the essences that are universal to emerge. In descriptive phenomenology, the researcher is the medium by which the patterns and new meanings are collected through individuals who experienced the phenomenon of interest.

The scope of descriptive phenomenology is to dig deep as well as produce understandings of the meaning of daily lived experience by explaining the vital structure of the phenomenon being examined (Patton, 2002). As a result, descriptive phenomenology does not count on respondents to produce articulated views however makes use of individuals' lived experiences as a source of understanding. Findings from descriptive phenomenon allow people to share their experiences to create a general shared structure of the phenomenon. For the description of individuals' lived experience to be considered a science, there should be commonalities in the experience of individuals to ensure that a generalised description is feasible (Lopez & Willis, 2004).

Heidegger's Interpretive Phenomenology

Heidegger developed interpretive phenomenology, which is focused on being in the world rather than on knowing the world. Interpretive phenomenology moves beyond describing the basic concepts of individuals' experiences towards seeking meanings that might be embedded in everyday events. Heidegger believed that personal awareness is intrinsic to phenomenological research and did not accept the fact that understanding is how we know as humans but accepted knowing and what it means (Dahlberg et al. 2008).

There might be other studies and methodological approaches in the literature which focused on teachers' experience. However, this research study examined the experience which was more into an exclusive experience that worth studying, rather than setting specific variables that might be determined in advance by the researcher instead of the research itself.

My methodological approach was related directly to the way research questions were designed and based on participants' descriptions of the experience. I might have considered grounded theory as an alternative methodological approach for this study. The grounded theory approach would rather restrict the researcher to begin with any pre-assumed idea about the study under examination either by researcher's own experience or literature to ensure researcher objectivity through the use of literature review in the data analysis phase (Corbin & Strauss, 1990).

If I were to use grounded theory in my research study, I would attempt to look for issues that might be extended to find concept applicability in a different context and look for fundamental meanings to obtain more knowledge that might be related to the power, structure, relation and how things are working underneath the surface of PjBL use and implementation which goes beyond the current appearance (Corbin & Strauss, 1990).

There is little literature about the topic of PjBL in the UAE. The emergent themes and the inductive analysis used in this study were related to this context; as with the grounded theory approach, the analysis process goes throughout the research rather than coming up with a separate phase at the end (Goulding, 1999). Although grounded theory might be inspiring when it comes to some elements in my research study, the procedures of this approach were not used for data collection, such as theoretical sampling or constant comparative method of data analysis (Merriam & Tisdell, 2016) as it would have been a grounded theory.

I found that the phenomenological approach flexibly operationalises my research. Phenomenology attempts to access the 'essence' of the research subject and not look for a thick description. Furthermore, I found descriptive phenomenology more suitable for exploring participants' experience and their actual words leaving it open for new variables to present themselves. I wanted to gain insights into how teachers use and implement PjBL in practice to motivate students and engage them in learning. As a researcher, my possible concepts were put aside in order not to affect the results of individuals' descriptions. Instead, I aimed to develop an understanding of the way "phenomenon present themselves to consciousness' (Giorgi,2012, p.6). I focused on describing the phenomenon under investigation through the experience of the individuals where I had to return back to participants to ask if they confirmed the findings of my research.

If I were to ask for the meaning of the phenomenon without bracketing my bias and my prior engagement with the question understudy, I would operationalise interpretive phenomenology where the researcher's decision in interpretive phenomenological approach is based on the researcher's belief, personal engagement, and reflection during the study. Moreover, the interpretive nature of data analysis does not require participants' confirmation of the findings

since interpretive phenomenology asserts that the depth and the involvement of the researcher confirm credibility (Reiners, 2012).

3.4 Characteristics of Descriptive Phenomenology

To understand individuals' lived experiences, as they are articulated by the participants, researchers have to recognize their personal presumptions, predispositions, and expectations of such experiences. This procedure of abandoning individual worldviews is described as bracketing. Bracketing prepares the researcher to describe as precisely as possible the phenomenon, refraining from any type of pre-given framework, but holding to the facts (Groenewald, 2004), as connected by the participants. Wimpenny and Gass (2000) also described that phenomenological decrease or bracketing is embarked on to suspend belief and to ensure that preconceptions and also presuppositions are deposited. The process of bracketing allowed me to remove my very own suggestions, ideas as well as my own presumptions as I was associated with the analysis of the data. I had the ability to recognize participants' perspectives and views clearly through their individual experiences (O'Reilly & Kiyimba, 2015). By bracketing my individual experience, I was focused on interviewing the participants, which made me a lot more appreciative of their assumptions and understandings and allowed me to explore their experiences and construct thoughtful meanings for the phenomenon of PjBL.

As a researcher, I focused closely on participants' descriptions and their expressions to uncover the meanings of participants lived experience while abandoning my own personal assumptions. In qualitative research, "researchers present descriptions of the interactions among participants and researchers in naturalistic settings with few boundaries, resulting in a flexible and open research process" (Harwell, 2011, p. 148). I would argue that assumptions are informed by underlying preconceptions; therefore, I needed to bring them to my awareness. While developing my consciousness and taking enough time to reflect on my prior notes, I was able to obtain new insights into my intrinsic beliefs and assumptions regarding certain areas related to my research on PjBL.

Using interviews as the primary tool for data collection is an important element of phenomenological studies. I used semi-structured interviews with the participants in my research as the main source of data in order to understand the phenomenon as experienced by individuals.

Semi-structured interviews have some degree of predetermined order; however, they ensure flexibility through the mechanism of open-ended questions that are related to the phenomenon of interest and follow-up questions that are open and non-leading in the way issues are addressed (Dunn, 2005). For this study, interviewing participants face to face provided invaluable insight into the realities and the lived experiences of the participants and was a means to collect data. As the interviews were semi-structured, they provided the opportunity for me as a researcher to capture important details that would be lost if structured interviews were used. As a researcher, these interviews provided more discussion with the participants in comparison to being tied to a strict form of question-and-answer session.

An important aspect of phenomenology is its small sample in relation to other research designs. Boyd (2001), Creswell (2014) and Creswell and Poth (2018) have suggested that the number of participants for a phenomenological study should range from two to 15. In this research study, the sample was six participants, all of whom were teachers. The number of participants allowed me to explore the phenomenon of PjBL as it was experienced by the teachers. My evaluation of the sample size was based on the quality of the information provided by the participants (Connell, 2003). The quality of the sample was evaluated through carefully selecting the participants, that is, those who had experienced the phenomenon, so that as a practitioner-researcher, I could come up with common understandings.

As I interviewed participants and listened to their experiences, I had the opportunity to understand the uniqueness of participants' experiences within their context. The phenomenological approach employed in this study gave me the chance to be a reflective practitioner (Watt, 2007), and this reflective process helped me create an understanding of teachers' use and implementation of the PjBL approach.

3.5 Participants

For this study, the data were collected from what Miles and Huberman (1994) have described as a "purposefully selected group". The participants for this study were teachers who were working at RIT, an institution that had actively taken the initiative to implement PjBL in all its academic programmes. By using a purposeful sample, I followed the lead of Cohen et al. (2011) who argued that the sample number should fit the study purpose to generate quality information.

Purposive sampling is used in descriptive phenomenological research, as it allows the researchers to focus on individuals' experiences of the phenomenon, which is critical to the study (Dane, 1990). For the purpose of this study, I assumed, based on my theoretical understanding of the topic of PjBL that the individuals chosen would provide an important perspective on the phenomenon, and their availability should be ensured (Mason, 2002; Trost, 1986). As a practitioner-researcher, it was my responsibility to make sure that the participants selected for the research study had the experience of the phenomenon under investigation. I followed the judgement of the chairs of the Department of Science and Liberal Arts and Department of Business and Management, who helped me choose the participants based on their sufficient capability to contribute to the research. I was encouraged to conduct the research in those two departments, as they were applying PjBL for students in different academic year levels. The criteria of selection included teachers who had been involved in PjBL for more than one academic year (to eliminate novice teachers who had no prior experience with PjBL), taught general courses in various academic levels, and were interested in participating in the study.

For this research, my data sample consisted of six teachers who agreed to participate in this study. From the group of sixteen teachers selected by both chairs. I planned to interview ten teachers to participate in the study, however, six teachers accepted the invitation, signed the consent form, and were interviewed for the study. The number of participating teachers in relation to the overall number of selected teachers can be considered a good proportion of the total population of teachers in both departments. The number of participants was sufficient, as the teachers' chosen for this study had a fundamental experience in the phenomenon of PjBL and its practices. Giorgi (2009) explained that at least three participants are needed for the method of descriptive phenomenology and found that more than this was difficult to write about. However, other descriptive phenomenological studies noted that the number ranged between three and 15 (Broomé, 2013; Giorgi, 2011). In this research study, the data collected from the six participants were sufficient for data saturation. According to Guest et al. (2006), the researcher reaches a point where there is no new information added from further data. Notably, the literature does not offer specific guidelines on the appropriate sample size for phenomenological research. It can be argued that sampling should concentrate on quality more than quantity (Todres, 2005). The quality in phenomenological studies is defined by the scope to sample participants' expressions of life and experiences that are relevant to the phenomenon of interest.

Moreover, the sample represents teachers practicing PjBL, taking the fact that those teachers were selected by the institute authority to provide an informed opinion based on their practical experience with this approach in the institute. The selection of the participants did not include local or Arab speaking faculty due to the multi-cultural environment of this institute which was dependent on foreign expatriates who were teaching professionals in their fields. It is important to note that it was a challenge to interview other participants due to the role of the gatekeeper in the institution, which limited the access to other respondents and controlled the access to other sites in the research setting (McFadyen& Rankin, 2016).

I focused on the quality of information provided to me by allowing the participants to describe the phenomenon and not lead them down to a fixed path to generate their responses. The data gathered for this study were collected from a group of teachers who work in the Department of Business and Management and the Department of Sciences and Liberal Arts. At the time of the study, teachers taught the following subjects: English literature, anthropology, maths, business, psychology, and computing science. The group of teachers shared their experiences of using PjBL in their practice.

Confidentiality with all participants was maintained, including their information. I have ensured that no private information was shared throughout the study in order to secure the privacy of the interviewees. I prepared a description of each participant and linked the participant with gender names organised in alphabetical order. Following the description of each teacher

Ben is a British middle-aged teacher who teaches computer science at RIT. He has been teaching for six years and using PjBL for five years with his students. He has been teaching in this institution for five years.

Danny is a British middle-aged teacher who teaches business courses at RIT. He has been teaching for ten years and using PjBL for five years. He has been teaching in this institution for three years.

Henry is an Australian middle-aged teacher who teaches anthropology courses at RIT. He has been teaching for four years and using PjBL for four years. He has been teaching in this institution for four years.

Lara is a Canadian middle-aged teacher who teaches psychology courses at RIT. She has been teaching for seven years and has been using PjBL for seven years. She has been teaching in this institution for five years.

Nicole is a Canadian middle-aged teacher who teaches math courses at RIT. She has been teaching for six years and using PjBL for three years. She has been teaching in this institution for three years.

Peter is an American middle-aged teacher who teaches English language courses at RIT. He has been teaching for twenty years and has been using PjBL for ten years. He has been teaching in this institution for three years.

3.6 Data Collection Method

The primary data collection method for my research study was semi-structured interviews. Semi-structured interviews allow for gaining descriptions of participants' experiences through one-to-one interviews (Finlay, 2008; Giorgi, 2009; Van Manen, 1997). Kensit (2000) and Seidman (2013) noted that the researcher has the opportunity to learn from participants' experiences through interviews in order to discover their assumptions, personal expectations, and opinions.

The Semi-structured interviews were employed face to face with the participants, and questions were open-ended to encourage the participants and give them the opportunity to reflect on their experiences (Creswell, 2014). Additionally, the questions were set up to enable the reconstruction of participants' experiences of PjBL in their classroom. My purpose was to explore participants' practices in this academic institute using the PjBL approach. I have always referred to the main topic of PjBL, where I focused on teaching and learning practices to foster students' motivation and engagement to learn. Furthermore, I relied on follow-up questions to ask participants to expand on specific points that came up during the interview and ask for more information as a way to reflect (Whiting 2008). Finally, I used probing questions to understand further participants' use of this approach. The Probing questions were verbal, where the researcher repeats the participant's points to demonstrate interest with a verbal agreement (Whiting 2008, Turner 2010).

Following Crust and Nesti (2006), interview questions were based on the description provided by the person being interviewed. Kvale (2007) noted that the flow of the questions should focus on following up on the problem of the research, which, in this case, was related to teachers practices and implementation of PjBL to seek new information and discover new angles of the topic related to the main goal of the research.

In addition, descriptive phenomenology focuses on consciousness revealed through the interviews; Langdridge (2008) explained that descriptive phenomenology is not concerned with the way the world appears to the researcher. Interview questions were carefully developed and mapped into three research questions focused on 1) discovering PjBL practices and use in the classrooms, 2) how teachers use PjBL specifically to motivate students' engagement and learning and 3) how teachers perceive their role in the PjBL context. The interview protocol is provided in Appendix D.

3.7 Research Setting

It is important here to describe the setting and context of the organisation to help with understanding the procedures I followed. The data collected from this study were gathered from teachers. At the time of the research, the teachers were teaching general courses for various academic levels to students in their second semester. Teachers used and implemented projects during their courses. The institute decided to use PjBL as a learning approach across the majority of its classes in order to align with the policies of higher education to promote 21st century skills in students by using projects. For the purpose of my research, it was considered that one site would be suitable to conduct my research taking into consideration the topic of PjBL and the depth of understanding this topic which is required to answer the research question in a meaningful way (Creswell, 2014).

I chose RIT in Dubai for three reasons. First, Dubai is the city where I reside, which means that I have a professional network there. Second, the institute received federal recognition in the UAE and institutional licensure and accreditation of the available degrees (Commission for the Academic Accreditation; CAA 2008). The institute is private which means that no funding or financial support is received from the UAE government. As a result, the institute has the freedom

to raise resources, choose students, select, and recruit academic staff. Finally, the institution gained its reputation in the UAE for its teaching faculty and for implementing PjBL in its programmes.

Staff hiring procedures at the institute followed the governance structure laws and policies to recruit diverse and experienced educators who can refresh relevant disciplines. Compensation packages were based on the academic position and the expatriate model. The tax-exempt basic salary included other allowances such as housing, annual two-way airfare in addition to health insurance, and assistance with children's school tuition.

The programs offered are similar to those offered at the RIT campus in Rochester in New York, which is expected to provide students with a high quality of learning. The curricula design is independent, undergraduate programs and the design of the curricula in Dubai are meant to match the programs in Rochester, New York.

The institute includes a mix of Arabs and foreigners, and it offers full-time and part-time classes for graduate and undergraduate students. The percentage of Emirati students is 20%, and the expat is 80%. The institute includes 71% males and 29% females. Most of the students are sponsored by their families. However, there are partnerships with government entities for Emirati students only where they are fully sponsored to provide them with employment opportunities through the use of this approach which is embedded in the work environment.

The institution is one of the universities in the context following the western education model where the curriculum is defined and set out by the college as part of the overall educational system. Many similar foreign satellite campuses in the UAE provide curricula that strive to produce graduates who can work in different workplace environments. These institutions' practices and teaching approaches aligned with the higher education and local context in the UAE, considering the importance of STEM education as a university initiative to contribute to the country's development. Moreover, the federal universities focused on promoting the constructivist student-centred approach and considered it crucial to reach deeper levels of learning to support the UAE government and drive economic development towards innovation.

The practices implemented by satellite western universities and federal ones respond to the dynamic changes in the local context such as students' demands, job market requirements in

addition to government priorities (DiVerniero, 2011; Mourshed, Farrell & Barton, 2012; Punshi, 2008; Pennington, 2014) to set a good example in the development to embrace economic activities which reflect on the government strategies towards becoming part of the global world (Hijazi, Zoubeidi, Abdalla, & Harb, 2008; Nagraj, 2015).

The higher education system adopted new teaching pedagogies as a mandate to follow UAE policies. Therefore, there were many practices implemented by several academic institutions in the local context focused on the Emirati generation empowerment and improving needed skills for competition and knowledge economy development. These academic institutions aimed to prepare the population to meet labour market requirements and ensure future success influenced by the government initiatives to develop learning and teaching approaches such as PjBL. As a result, the approach was embedded in both curriculum and learning outcomes and greatly impacted on the learning pedagogy of these academic institutions (Hijazi, Zoubeidi, Abdalla, & Harb, 2008; Nagraj, 2015).

3.8 Procedures with Teachers

The following procedures were followed in this research to recruit teachers:

1- An initial email and a participant information sheet were sent to teachers to invite them to participate in the study. The number of participants who actually met the criteria was 16 out of 20, which is the number of the overall teaching faculty in both departments.

2- Only six participants responded to the email and agreed to participate; a consent form was sent for them to sign.

3- An initial meeting was organised with each participant to explain the study, introduce the participant information sheet, and schedule a time for the interview. The meeting was conducted on the institute premises.

4- Sixty-minute (approximately) interviews were conducted with each teaching faculty member to address the different parts of the interview protocol.

3.9 Data Analysis and Theme Development

I made use of thematic analysis with the transcripts of the semi-structured interviews. Thematic analysis is explained by Braun and Clarke (2006) as being a useful and flexible research tool, which can possibly offer a rich and in-depth, yet complicated account of data. It fit me well as a novice researcher because it was adaptable to make use of, with or without technology. The flexibility of the thematic analysis allowed me to address a comprehensive range of research triggers and also theoretical perspectives. I was able to recognize the needs of the thematic analysis, and also it included an ongoing practice to familiarise myself with the entire data set. Braun and Clarke (2006) explained that this kind of analysis includes searching for themes, recognising the themes, defining, and naming the themes and writing up the themes so that participants' stories are shared within the context through the existing literature.

To explain further, there is a strong link between descriptive phenomenology and thematic analysis. In this research, the thematic analysis focused on the lived experience of the individuals, which reflected their experience of the world (Sundler et al., 2019), and the philosophy of phenomenology has an emphasis on the lived experience of the individuals (Dowling & Cooney, 2012, Norlyk & Harder, 2010). In this research study, the thematic analysis approach used was inductive, and interviews were considered a prerequisite for the analysis. The data included individuals' experiences, and the data drove the emerged themes.

The thematic analysis is similar to the way descriptive phenomenological approaches operationalise by focusing on understanding and describing themes based on meanings (Dahlberg et al., 2008, van Manen, 2016). Thematic analysis was integrated throughout the analysis to understand better the complexity of meanings in the data rather than focusing mainly on measuring the frequency (Sundler et al., 2019). The themes that emerged from the data came up with meanings contributing to a solid qualitative research finding. Moreover, it was critical to move between individual's expressions and description text in the analysis stage to show the meaning of the lived experiences. Ultimately, the use of thematic analysis in the descriptive phenomenological approach goes beyond the original data to identify meanings to provide a valuable description of the lived experience that can be addressed by organising the data in a meaningful way (Sundler et al., 2019).

In this research study, I went through the data and focused on highlighting the significant segments and quotes, which enabled me to understand participants who experienced the phenomenon and the way they described their context or setting, which influenced their experience. As a researcher, I tend to write a composite description that demonstrates the essence of the phenomenon and focus on the common experiences of the participants. The description is presented in one or two long paragraphs, which gives the reader the feeling of understanding what it is like for someone to experience that phenomenon (Polkinghorne, 1989).

According to Blaxter et al. (2006), thematic analysis helps to find new concepts and patterns and recognise relationships between these concepts to discover a meaning and develop an understanding of the phenomenon under discussion. Jupp (2006) stated that qualitative analysis focuses on the themes, interpretation, and use of language for a more optimal and meaningful outcomes. I used inductive thematic analysis since the analysis was driven by the content of the data, participants' language, and their own concepts (Braun & Clarke, 2014). The Thematic analysis provides a rich description of the data sets, identifies key themes at the surface level of data and gets the data that is hidden in the dataset. Moreover, my analysis process was not linear, that is, moving simply from one set of data to another; I examined the data individually and then as a whole to compare the data sections with other sections. Throughout this process, codes and themes emerged from the data. I tried to keep an open mind while reading the transcripts for the analysis phase so that I could describe individuals' experiences related to the phenomenon. As a practitioner-researcher, I was able to analyse the data properly and stress patterns that occurred during the interviews since I had examined my epistemological and ontological positioning prior to starting the data collection, which kept my own attitudes and potential bias from interfering with the data.

To explain further, I analysed the data by reading, coding, and highlighting. Data were organised into codes and words that best represented the emergent themes and key concepts (Creswell, 2014). For the data analysis, the majority of my analysis was done on my computer, using Microsoft Word. This was a practical strategy as I was able to print out documents for reading and taking notes manually before adding my comments to the computer version. Similar responses were marked in each column with the same colour and then coded with significant themes emerging. I followed Braun and Clarke's six-phase framework (2006, 2013), which

included 1) pre-coding and familiarisation with the data collected; 2) generating initial codes; 3) searching for themes; 4) reviewing themes; 5) defining and naming themes and 6) producing reports. The phases are explained in the following subsections.

3.9.1 Pre-Coding and Familiarisation

Braun and Clarke (2006) noted that it is important as a researcher to involve yourself in the data and get familiar with the depth and breadth of the content. In this phase, I listened to the recordings five times before transcribing them. Then, I transcribed the data and read the transcript many times. In this step, as I immersed myself in the data, I became more familiar with it. I was actively reading the data before coding and searching for meanings and patterns. In this stage, I started taking notes on my initial ideas. Then I read the transcripts three times, taking notes during the second and third readings. Through reading the transcripts, I was able to reimagine the interview situation, its time and place, and to recall the voices of the participants.

3.9.2 Data Analysis: Generating Initial Codes

This phase included the production of preliminary codes for my data. The raw data (interviews) were investigated and afterwards organized into groups to find familiar codes that could lead to arising themes. Single occurrence incidents were not overlooked however were thought about to be a possible code that can result in an overall theme. As Boyatzis (1998) stated, one of the most fundamental fragments and aspects or areas of the raw data can be evaluated in a meaningful way pertaining to the phenomenon being examined. Braun and Clarke (2006, 2013) stated that in thematic analysis, the extracted themes rely on the data. This coding did not stop at the semantic coding level but proceeded further to find "hidden meanings" or concealed codes, such as presumptions underpinning the semantic material, as explained by Braun and Clarke (2014). This phase ended with assembling a list of codes from the data set. I did the coding manually, utilizing highlighters on the text I was analysing. In this step, I found as many possible codes as possible and also themes and brought together the data recognized under the same code.

3.9.3 Data Analysis: Searching for Themes

At this point, I had a long list of several codes. I focused on the broader level of themes as I sorted these different codes into possible themes. I relied on creating a table to sort my codes and to start searching for potential themes. I formed 40 “categories” from the collection of codes. This

process enabled for a much more precise examination of the codes that were classified into mutual ideas, shared themes, and familiar stories. Some codes and potential themes were absolutely discarded since they did not fit the developing narrative in terms of its relation to the research question and because they were not related to the research aim.

3.9.4 Data Analysis: Reviewing Potential Themes

According to Braun and Clarke (2006, 2014), there are two levels of review for potential themes: first, validating that the themes work in relation to the data, that is, making certain that the themes catch the essential attributes of the coded data related to the research questions; second, validating that the themes work within the whole data set. For this research study, the dataset was re-examined to make certain that each theme was coherent and essential, with clear limits and also a well- defined central ordered concept relevant to the research questions.

It is fundamental to ensure that the themes stand for the participants' voices. Braun and Clarke (2014) suggested that there is no excellent method to do the analysis: researchers should rely upon their analytical reasoning about what is meaningful, relevant to cultural significance in order to answer the research questions. In this step, themes were fine-tuned, and some themes were collapsed right into various other themes when some of my themes were required to be broken down into smaller elements. Upon reviewing the potential themes, I was able to confirm that the themes were based on participants' tales and voices. Consequently, each theme could stand alone, and the 11 themes could address the research questions in a meaningful way.

3.9.5 Defining and Naming Themes

Defining and naming themes was the phase in which the analysis form. Here, I acquired the essence of what each theme was about and the aspect of the data each theme captures. I produced a total narrative with all of my data and evaluated each theme and also its individual narrative to check whether it fits with the general narratives or not to recognize whether any of the themes consisted of sub-themes. At this moment, I formally named my themes and selected names that were concise and made sense of what the theme was about. By the end of this stage, I was able to recognise the elements of the themes.

After continual modification of my themes in relation to my data, I created a final thematic map to be able to explain each theme in a number of sentences. The themes created comprehensive and detailed definitions that caught their texture, appearance and how they connected with each other. According to Braun and Clarke (2014), the analysis must exceed simply summarising or paraphrasing the data; the data should inform a rich tale, a conceptually informed life story about the meanings embedded within each theme and go beyond the surface area significance of the data. The 11 themes showed the analysis of how codes from interview transcripts were generated and how they were evaluated, refined, repositioned, collected, and also reflected upon by the researcher until the themes emerged.

3.9.6 Producing the Report

After I reviewed the final themes, in this process, I started to write the report. While writing the final report, I made the decision to select the themes that made significant contributions to answer my research questions. Braun and Clarke (2006) explained that the goal of this phase is to write the thematic analysis and tell a story by presenting the data in a way that persuades the reader of the validity and the importance of the analysis. When writing up the report, I made sure to include enough evidence to demonstrate that the themes within the data were relevant to the data set. Moreover, in the narrative, extracts and quotations were utilised to provide and capture the meaning of the important points in the analysis.

Table 1 shows Braun and Clarke's (2013) discussion of the process for writing up the findings. Further development was done for this study, and some modifications to the themes, which resulted in the findings chapter. When following Braun and Clarke's (2013) six-phase framework, these phases got mixed up, and, often, themes might emerge during the coding and vice versa; the codes might need a revision during the creation of the themes. This was the case throughout the data analysis stage of the study.

Table 1 Braun and Clarke Thematic Analysis

Phases	**Description of the Process**
1. Familiarising yourself with your data	Transcribing the data; reading the data many times and noting down the important ideas.

2. Generating initial codes	Coding the interesting features of the data following a systematic way throughout the data set; and collecting data which is related to each code.
3. Searching for themes	Organising the codes under possible themes; and grouping all the relevant codes under a potential theme.
4. Reviewing themes	Checking on the themes whether they are related to the extracts being coded and create a thematic map.
5. Defining and naming themes	Carrying out an ongoing analysis where each theme is defined to tell the story and create clear definitions for each theme.
6. Producing the report	Analysing for the final time; selecting interesting extract examples and relating to the research questions and literature; producing an academic report of the analysis.

3.10 Ensuring the Quality of the Thematic Analysis

In a qualitative research study, the purpose is not generalisability for a repeatable objective or determining universal facts (Gray, 2014). Qualitative inquiry is individual. The researcher is the vehicle for the inquiry and provides the researcher's background, experience, capacity and cross-cultural sensitivity (Patton, 2015). Thematic analysis is not simply to sum up the data content, but to identify, and also analyse, but not necessarily all aspects of the data (Terry, Hayfield, Clarke, & Braun, 2017). In this research study, the benefit of thematic analysis was its capability to capture and describe the phenomenon under examination. Additionally, it helped with the meaning of the phenomenon under study and provided a foundation for developing legitimate models for human reasoning, feeling, and behaviour (Joffe, 2012). Thematic analysis was used to recognize patterns within and across the data in regard to participants' lived experience, viewpoints, practices and perspectives; in other words, it was "experiential research which sought to understand what participants think, feel and do" (Terry, Hayfield, Clarke, & Braun, 2017, p. 297).

In order to ensure the quality of thematic analysis in my research study, I followed the recommendations of Braun and Clarke (2006). Braun and Clarke (2006) stated that thematic analysis starts when the researcher begins to notice and look for patterns of meaning and issues of potential interest in the data, which can arise at all phases of the data collection. It is important to note that as a practitioner-researcher, my ontological and epistemological underpinnings were considered at all stages of the data analysis, where I was responsible for interpreting participants'

lived experiences with the phenomenon of interest through their own lenses. Moreover, I made sure that the argument supported the research question.

3.11 Research Trustworthiness

Every research aspect is bound to validity and reliability. Validity in research determines the degree to which researchers claim that the knowledge corresponds to the reality being examined (Eisner & Peshkin, 1990). Reliability is concerned with the consistency and stability of collecting and recording information in an accurate manner (Noble & Smith, 2015). Patton (2002) stated that validity and reliability are two important factors that any qualitative researcher should be concerned about while designing the research, analysing the results and judging the quality of the study. For the validity and reliability of this research study, I relied on reflexivity and the consistency of the research questions with the methods and procedures used. This is explained in the following paragraphs.

3.11.1 Reflexivity

Engaging in reflexivity throughout the research study was crucial to validate this qualitative study and to enhance credibility (Creswell & Poth, 2018). Reflexive activity helps identify and discover the potential influence of our beliefs and interests that may affect the research (Chan et al., 2013; Primeau, 2003). I was able to deepen my understanding of each step in the research process and knowledge construction using bracketing. Through bracketing, I was able to distance myself from my own personal assumptions so I can avoid any subjective judgment from my side in order to achieve objectivity (Creswell, 2014), I tried not to let my interpretation interfere with the participants' experiences and perceptions to avoid subjective conclusions.

Throughout the research, I contemplated on my professional background as a former instructor, charting my preconceptions and attitudes towards the phenomenon under discussion. Throughout the research, I clarified how data were collected, assessed, tested, and explained how themes were generated using evidence from participant quotes in the interviews, which are explained in Chapters 4 and 5.

The current study was designed to identify teachers' experience of using PjBL in order to explore practical practices and strategies to foster students' motivation to learn. The choice to

focus on teachers using PjBL was based on two main reasons. First, it was a personal pursuit of self-development towards pedagogical change within higher education institutions in the UAE. Second, it was related to my previous professional experience. I had attended many workshops related to PjBL that were conducted in my previous institution to promote student-centred learning, and I was keen to understand how teachers could utilise its practices in their classrooms to enhance students' motivation towards learning. I reflected on my personal experience and on my core values and personal beliefs. I acknowledged the educational methods I used in my class in the past, as I used PjBL to create an interactive learning environment to enhance and motivate my students. Despite my faith in the value of this approach, I was interested in discovering other teachers' perceptions and descriptions of their experience of PjBL. The investigation of teachers' experience helped me reduce the bias within my study. As a practitioner-researcher and a former lecturer, I interviewed participants to construct what they experienced, which was a new experience for me.

PjBL was operationalised by the UAE government based on the strong focus to develop the economy as a knowledge base, which is part of the UAE vision 2021 to develop the need to build human capital resources to support reaching these plans (Kumar & Van Welsum, 2013). To compete with the global economy, all members of the society needed to be involved, which required the citizens in STEM-related subjects to graduate to obtain jobs in these fields upon their graduation. The UAE government focused on employment in these fields to ensure the development of the country towards achieving the vision of a successful and sustainable economy.

When analysing UAE's government movements and directions towards STEM education, the direction required a type of constructivism where the knowledge will be co-constructed by the teaching faculty and the students. Based on this, PjBL was found to link the constructivist approach with the learning goals required in the UAE context. Moreover, the UAE national agenda explained that learning to build a knowledge economy goes beyond rote learning and memorisation to embrace new skills (UAE Vision, 2021), which requires a new pedagogic approach that provides key skills such as critical thinking and problem-solving, and decision making. As a result, the UAE context and government directions influenced PjBL as a pedagogic approach in the universities to build a new responsible generation for UAE's development.

In my point of view as a researcher, PjBL was operationalised as a learning and teaching approach that builds students' self-esteem and autonomy by taking ownership in learning and making decisions to construct knowledge. Students are supported by their teachers in all the phases of this approach and their learning is scaffolded to reach the desired learning outcomes. The PjBL approach was operationalised by the participants in this study as a method that encourages students to collaborate and work in groups to discuss the project topic and find solutions.

There might be a difference in how PjBL was operationalised by the UAE government, my analysis, and participants' views. However, all these parties agreed on the importance of this approach in improving the quality of education and enhancing students' skills by moving the learning process towards the student to deliver practical knowledge and meaningful education to achieve the vision of the UAE government (UAE Government, 2010).

3.11.2 Consistency of Research Questions with Methods and Procedures Used

To ensure the reliability of my research study, I made sure that the research questions were consistent with the methods used and appropriate to the research problem, the qualitative methodology and the design of phenomenology, for which I used semi-structured interviews to collect data and conducted a thematic analysis to address the research questions. In addition, I was consistent in following the procedures of conducting meetings with the teachers and explaining the research to them, adhering to the ethical considerations, and listening repeatedly to the interview transcripts after collecting data to ensure that the information was accurate. I analysed the data, and finally themes were generated; these themes served to convey the experience of participants and reflected consistency which enhanced research validity (Silverman, 2013). Table 2 illustrates the alignment of my research problem, aims, methods, and so forth.

Table 2 Research Alignment

Research Aim: To explore a teaching faculty's implementation of project-based learning in their practice	
Research Problem: No information about how teachers have adopted the PjBL approach and how exactly they have implemented it in their teaching practice.	
Overarching Question: How do teachers at RIT foster students' motivation while implementing project-based learning?	
Objective(s)	**Research Question(s)**

To explore how teaching faculty approach project-based learning	How is PjBL used by teachers in this institute?
To discover teachers' behaviour towards motivating their students	How do teachers use PjBL specifically to motivate students' engagement/learning?
To explain teachers' understanding of their role and their perspectives for better recommendations	How do teachers perceive their role in PjBL?

To ensure trustworthiness, as explained by Lincoln and Guba (Schwandt, Lincoln, & Guba, 2007), involves four criteria consisting of credibility, transferability, dependability, and confirmability:

- Credibility: To ensure credibility of this research study, I relied on member checking to validate my explanations of the findings. According to O'Leary (2014), member checking is about "checking that interpretation of events, situations and phenomena gels with the interpretations of 'insiders'" (p. 352). To ensure the validity of my findings, two teachers participated in 5-10 minutes follow up meeting interviews to confirm the accuracy and the validity of the information. The process of member checking allows the participants to discuss research findings by providing their feedback and adding new insights. The low number of participants who participated in the member checking was due to one member leaving the institute and the rest did not respond to the follow-up email. In this study, data and interpretations were returned to the participants in order to confirm and check the data and narrative accounts (Creswell & Miller, 2000).
- Transferability: The research took place as a descriptive phenomenology study of a specific group of individuals in a specific context; it is unlikely that the findings are generalisable to other contexts. However, the descriptive data are examples of one context that is considered part of a wider group (Shenton, 2004), which means it still has the opportunity to be used by others in their own research (Schwandt et al., 2007) if they discover the findings to be similar to their own (Shenton, 2004), perhaps even advising and guiding their institutional policy.
- Dependability and Confirmability: These criteria were observed in the overall design of the research study (Lincoln & Guba, 2000). Each element has been documented evidently so a similar research study could be repeated. Moreover, I discussed my

position within this research and my assumptions, which contributed to the quality of this study by removing bias from my side.

3.12 Ethical Considerations

Research ethics are guidelines or codes of conduct that guide the researcher's procedure in terms of practices and participant relationships before, during, and after research is conducted (Gray, 2014; Wellington, 2015). Research ethics principles are specifically vital in an educational research study or social science research, as they are based on examining individuals, or can occasionally be risky due to the vulnerability of the participants (Cohen et al., 2011). Ethical consideration in research study refers to moral concepts and standards that go beyond the adoption of the most suitable research design to carry out research (Gray, 2014), and they are described in the following paragraphs.

3.12.1 Data Collection and Analysis Stage-Being an Outsider Researcher

Being an outsider researcher was advantageous as I have not faced any risk while interviewing the participants. Participants were comfortable and spoke freely during the interview. If I were an insider researcher in this study, I would have anticipated some challenges and potential problems related to sensitive information in addition to the dissemination of information observed (Cohen et al., 2011).

3.12.2 Pre-Study Stage: Seeking Institutional Approval

In preparation for my research, I had to seek the ethical approval from RIT and the Virtual Programme Research Ethics Committee (VPREC) of the University of Liverpool (UoL). The University of Liverpool and RIT required all necessary approval to be provided before I could commence the research process. The UoL Ethics Approval Certificate document is presented in Appendix C.

3.12.3 Seeking Participants' Approval

Prior to agreeing to participate, the teachers read and acknowledged the participant information sheet, which informed them of the research purpose and their roles as participants. The participant information sheet included a detailed written overview of the research outline. It was also made clear that no incentives would be provided, and anonymity would be maintained

through pseudonyms. Consequently, I had the opportunity to meet the participants and explain the nature of my research study to them. I ensured confidentiality during my initial meeting with the participants. Furthermore, within this research study, participants information was not revealed, and the participants were not recognised or connected with any collected data (Cohen et al., 2011). I explained that their participation would be voluntary and that they had the right to withdraw from the research study without prior notice. The participants signed a consent form which clarified in detail their role in the research (see Appendix B: Participant Consent Form).

3.12.4 Information Security

I used an audio recorder to record the interviews. I had explained in the participant information sheet that the data would be recorded and stored during the initial meetings and had described the procedures for storing the data recordings. Furthermore, to ensure that the data collected were secured, recordings were transcribed and protected with a password. Additionally, I informed the participants that the results of the interview would be reprinted as part of my doctoral education thesis. Moreover, the raw data were stored and locked in a safe place after transcription and will be destroyed after five years, further access to information will be restricted to me only. Digital files are password protected. I am aware that teachers provided information and shared their experiences with me; therefore, it is my responsibility to protect the rights of the participants who contributed to my research study.

3.13 Chapter Summary

This chapter provided a description of the methodology I used in the research study. The research design I employed was phenomenology. The study allowed me to collect deep and reflective information related to PjBL. The Thematic analysis helped me to develop themes that shaped the foundation for my research questions. Trustworthiness and ethical considerations were explained in this chapter. Chapter 4 provides the findings of these themes, supported by citations from the participants.

Chapter 4 – Findings

4.1 Introduction

This chapter addresses the research findings for this study. The data were collected through semi-structured interviews with six teaching faculty members. Throughout the research study, I utilized inductive thematic analysis, using 30 pages of raw data that came from around six hours of recording, to uncover themes and codes, find meanings and establish a deep understanding of the phenomenon of PjBL practices, issues, present teaching and learning strategies, and also potential improvements to foster students' motivation to learn. The current practices of PjBL included teachers' strategies in classrooms to engage students' while applying projects.

The research purpose of this study was to understand the phenomenon of PjBL as experienced by teachers to determine how they foster students' motivation through their use of PjBL in their classrooms. The goal of the research was to investigate how teachers describe PjBL from their own perspectives and determine if their practices enhance students' motivation to learn. I focused on teachers at Rochester Institute of Technology (RIT), in order to explore their use and implementation of PjBL. I identified 11 themes by uncovering current teaching practices.

For the process of theme development and analysis, I followed Braun and Clarke's six-phase framework (2006, 2013), which included familiarisation with the data collected, generating initial codes, searching for themes, reviewing themes, defining, and naming themes and producing reports. This process involved reading six transcripts from teachers. The analysis was done manually. I focused on the transcripts from different interviews as one big document. Data was organised into codes and were written in a way that well represented them according to the emergent themes and the key concepts (Creswell, 2014).

I reviewed the questions related to PjBL. The grouping included questions related to the teaching practices participants used in their PjBL approach. The questions were analysed to create a better understanding of the current practices, problems, and potential improvements. I reflected on and analysed the data, reading them several times to ensure careful evaluation and inclusion of the possible themes. I was able to develop sub-themes and group the data under specific themes in order to construct the meaning of PjBL as experienced by the teachers, and I was able to find relations between these developed themes. The themes that emerged were divided into several

sections based on the research questions. This chapter contains the findings related to teachers' implementation of PjBL, their practices for motivating students' and their role in the PjBL context.

In this chapter, I seek to answer the following research questions:

1- How is project-based learning used by teachers in this institute?
2- How do teachers use project-based learning specifically to motivate students' engagement and learning?
3- How do teachers perceive their role in project-based learning?

The emergent themes have been divided into several sections according to the specific research question. In this chapter, sections 4.2, 4.3, and 4.4 contain the findings related to the teachers. Section 4.5 summarises the chapter.

4.2 Research Question 1: How is PjBL Used by Teachers in This Institute?

Four themes emerged as a result of the discussion and interviews with the participants: 1) utilising PjBL design features; 2) ensuring students' understanding of PjBL requirements; 3) believing in the benefits of the PjBL approach; and 4) relating to the local context. The findings presented in Table 3 highlight some insights into several strategies that were used by the teachers in PjBL classrooms.

Table 3 Research Question 1

Emerging Themes for Research Question 1: How is PjBL Used by Teachers in This Institute?

	Themes	Sub-themes
	Utilising PjBL design features	Meeting learning objectives of the course Relating to the course material Relating to the curriculum Selecting challenging topics Being authentic Forming and setting groups Maintaining small group size Establishing group contracts Using inter-group competition Demonstrating familiarity with PjBL Providing interesting content
	Ensuring students' understanding of PjBL requirements	Students' understanding of the project Selecting correct timing Creating more understanding of the topic

	Believing in the benefits of the PjBL approach	Improving students' communication skills Enhancing students' motivation Ensuring Collaboration
	Relating to the local context	Connecting project topics to local context Exploring real local challenges and problems Being sensitive to the culture Creating activities outside of the classroom

4.2.1 Utilising PjBL Design Features

Participants in the interview explained, based on their professional experience, their use of PjBL approach. Participants shared their opinions when designing a project by utilising specific PjBL design features. All participants agreed that the main feature of project design is to focus on meeting the learning objectives of the course. For example, Lara stressed that "*projects should be relevant to the learning objective of the course and they should meet a scientific perspective.*" Nicole highlighted, "*I take into account the relevance to the curriculum and the learning outcomes.*" All participants also mentioned that projects should have a learning goal to be met. For example, Ben mentioned, "*The main objective is to follow the syllabus because there are learning outcomes that need to be embedded*." Ben also explained that projects should be relevant to the material students are studying to familiarise them with the project and expand on the topic. This shows that participants were focused on relating PjBL topics to the curriculum and the learning outcomes to make sure that the learning outcomes were met successfully. Moreover, Peter explained, "*When I design my projects, I relate them to the content of my course to ensure that learning outcomes are met.*" To explain further, all participants' responses emphasised relating projects to the curriculum as a key feature of using PjBL. Moreover, all participants noted that the project topic selected should focus on solving a problem, and challenging students to start acquiring and looking for answers. Henry stressed that "*there should be a problem under investigation that challenges them to know more*", and Lara said that "*there should be a question on a certain topic that presents a problem for my students to explore*". All Participants agreed that their project topics should revolve around a specific problem to be solved and push students to ask questions to acquire knowledge. Moreover, all participants agreed that projects should be authentic to meet real needs in the world outside the classroom. For example, Lara explained, "*I focus on*

the authenticity of the projects I provide to my students." and Peter explained, "*It is important to prepare students for real life when they are now in their classrooms*." All Participants focused on building hands-on experience through relating projects to realistic scenarios.

As perceived by all participants, projects were an ongoing process that focused on group work and selecting group members. For example, Peter noted, "*I enable students to work in small groups, as they share ideas and report findings to engage with their colleagues in many activities*." All participants agreed that in PjBL, students need to work together on activities that enhance their learning. For example, Henry explained that "*students get hooked together in an activity to emphasise their engagement in learning*." All participants explained that one of the main features of PjBL was forming groups, where students are interacting socially and collaborating. Ben explained, "*When students work in groups, they communicate in a very friendly manner, and the teachers will support them at the end in a way that enhances their skill level*." Lara added that "*the fact they are in groups, they have the chance to select their group mates where they can collaborate and work together".* All participants believed that their practices and approaches to encourage students to form groups were critical to successfully implement PjBL. It is worth noting that All participants relied on group structure to determine the effectiveness of group work in PjBL. Participants felt that a large group of students would encourage low participation, with some students relying on a few individuals, while a small group would provide each student with an equal chance to contribute. As such, they limited group size to about three students, as noted by Ben, "*[I do not] put a big number of students in a group to sit down, solve and think because one of them will be redundant. So, a group of three will be enough*." And Lara reported that "*the team should be able to perform when they are small*." Moreover, all participants developed group contracts between the members of the group, organising inter-group competitions, rewarding performance, and grouping students based on their ability. All participants believed that grouping students based on their ability, promoted inter-dependencies among them. High-ability students mentored low-ability students and provided more support. The selection of students based on abilities was related to teachers' understanding of students' strengths and weaknesses, and their level of achievement. Danny said, "*I assign the teams and discover what are they good at and then build a team with students with a combination of strength areas. So, the strong are mentoring the weakest*." Moreover, Henry explained, "*I make sure to have in the group a mix of student abilities*

to support each other." All participants were keen on creating a group of students with a mix of abilities to ensure that students were learning in a collaborative manner from each other.

The group contracts outlined the roles and responsibilities of each member. Some roles identified were group leaders and writers. All participants felt that assigning responsibilities encouraged members to remain active in the group. The student contract also spelled out work timelines and disciplinary measures for non-adherence to rules. It gave members the power to manage disciplinary cases. Danny stated, "*Students have the right to fire team members, but before that, they should be on notice and meet with me to try to resolve the issue*." This implies that students determined how to handle issues arising within the group; however, teachers were always available to intervene in difficult cases.

Furthermore, all participants agreed on choosing project topics that are familiar and excites students to learn so they can make connections. For example, Peter noted, "*Projects should connect students with something they are interested in and something related to them.*" Peter added, "*I look for a topic that attracts their attention and appeals to them*", and Lara explained, "*Students get attracted by a project that they are familiar with, which excites them to know more about it*". Moreover, Ben explained that *"the key feature of a true practice is to relate the project to something they like and are familiar with*". This shows that all participants were focused on selecting familiar and interesting topics that would enhance students' learning and capture their attention.

4.2.2 Ensuring Students' Understanding of PjBL Requirements

All participants frequently talked about "students' understanding", meaning that projects should be designed to deepen students understanding to its requirements in order to use this approach successfully. For this purpose, all participants focused on the timing of PjBL and when to present it to students. One participant explained that mid-semester was the best time, for students to gain a deep understanding of the course content and develop interest in the topic. This gave students' the momentum to start and complete the project. All participants described that beginning of the semester to mid-semester as an orientation period in which they introduced basic concepts and allowed students to develop a deep understanding of the course. Commenting on the strategies to enhance student skill levels, Henry said that it was important to "*choose the right time to give*

the proper background to students to complete a particular course and ensure that they have a sound understanding of the subject and skills to complete the tasks of the project." All participants explained that students' understanding of the project ensures their successful achievement of the learning goals. For example, Peter explained that "*projects should deepen their learning to create more understanding of the content*", and Lara said that "*students are capable of understanding certain terminology when it comes to project design.*" All participants agreed that students should have a clear understanding of the project as an important element before they embark on and start their application. Nicole noted, "*I always make sure that students understand the project components when they are explained to them in the classroom*." Additionally, Ben explained, "*I make sure to go to the background of each student and what their abilities to understand*." Peter explained, "*A quick orientation for the students will ensure their understanding when I approach projects*." Within these explanations, all participants agreed that understanding of the project requirements nurtures a significant element in PjBL use and implementation.

4.2.3 Believing in the Benefits of the PjBL Approach

All the participants believed that PjBL offers specific benefits to students. All participants agreed that the successful use of PjBL embraces the improvement of students' skills, such as communication skills through students' social interaction with their peers. When discussing the benefits of PjBL, Danny reported, "*Students are much more motivated when they are working in groups*", highlighting the positive effect of PjBL on students when they engage in group work to implement projects. Peter also concluded, "Students support each other and share their opinions when choosing topics", which again emphasises the concept of group work as a main benefit for students when using PjBL. Nicole also reported, "Students are interested when they get engaged with their peers in the activities of the project." Moreover, Peter noted that "with complex projects, students working in groups are able to contribute better, which engages them and fosters their motivation." All participants agreed that in PjBL, students are more productive and successful in doing the required tasks through working in groups. Participants explained that they sensed motivation in their classrooms when using PjBL. For example, Nicole explained, "they were more motivated and eager to finish the project." And Lara noted, "Yes, students are motivated, and it can be sensed in my classroom." Lara added, "My students feel more motivated when they are working on *projects with their peers. Now they are putting what they learn into practice*." Nicole

also explained, "*My students are learning in a more interactive way now, and they are more engaged in the classroom.*" All participants agreed that PjBL approach possess many benefits such as improving students' skills, enhancing their collaboration and increase their motivation. Through PjBL practices, all participants developed a positive perception towards its use and implementation, which led them to believe in its values and benefits.

4.2.4 Relating to the Local Context

All the participants agreed that relating PjBL to the local context played an important role in enabling students to understand this approach. When projects were related to local issues, it supported students in combining hands-on activities and real-case scenarios. All participants believed that when students relate their projects to the local context, they will be able to experience meaningful projects that familiarise them with the world around them and the life outside their classroom. All participants agreed that PjBL positively served students when project topics were connected to the local issues in UAE. Peter mentioned, "*We try our best to relate to the local context by choosing local topical issues.*" Besides, Henry explained, "*I am trying to be keen on engaging my students with the projects that set challenges and problems in the real world. We take many examples from the United Arab Emirates*." Many participants focused on the importance of utilising the local context issues to ensure that students learning is relevant to the local circumstances surrounding them. Lara reported, "*Involving the students in real-life situations is the role of us as teachers and the role of the institution*." Danny explained, "*For many of the projects I ask students to do, I tell them to pick something that is an issue in the UAE, or I tell them to identify a problem or an opportunity and base their question on that*." Many participants emphasised the importance of focusing on local challenges and problems while using the PjBL approach. Nicole explained, "*A particular model that the project needs to develop is to solve a local problem and apply the model to address local issues*." Henry mentioned that "*students are able to reach a conclusion or an opinion through discovering current local challenges and obstacles*." And Peter noted, *"It is important to make cultural connections.*" Moreover, many participants highlighted the important role of relating the project topics to the course itself for more consistency. For example, Ben explained, "*I try to focus on any local challenge that is related somehow to my course to engage my students in proposing questions and finding solutions*." All

participants agreed that PjBL helped students explore real-world challenges in their local context to find solutions for these problems.

All participants agreed that they were sensitive to the culture when selecting project topics. Lara reported:

> *I always mention that if they want to select a certain topic, they have to be culturally accurate and take into consideration the culture they are within since there are many variations; therefore, culture is a big pedestal in the learning. It starts with the local one. We won't be mentioning what goes against the culture.*

This explains that all participants were considering local cultural aspects and were accurate when relating project topics to the culture, which highlights the importance of aligning with current values and traditions. The participants were keen on choosing and assessing topics that students preferred to ensure their alignment with the local culture while considering the participants' years of experience in the region. This also made the participants more familiar with the current local context coupled with the faculty's orientation provided at the time of joining the institute detailing the local cultural disciplines, values, and customs.

All participants emphasised that their institute initiated several activities on campus to engage students with the local community. For example, Peter explained, "*We tie into conferences and exhibitions and business cultural events since it is an international environment. We are increasing the number of local students to offer a local perspective as well*." Peter added, *"We invite students to attend local events so that it is possible to relate to the culture as I can*." Many participants believed that the institution initiatives promoted student's involvement with the local community and enhanced students' learning outside their classroom.

It is important to note that all participants were able to help students better understand the world around them and connect them to the project goals by building on their previous knowledge and interest and by providing them with the opportunity to connect more with the local community. All participants did not show any difference between their discipline and the local cultural disciplines due to previous understanding of the traditional Emirati cultural characteristics, which they refer to as a set of values, traditions, and beliefs.

Moreover, students were motivated by their teachers to collect information about the world around them, and they were encouraged to ask questions, analyse, and think critically to make decisions which moved them from memorisation to active participation. These practices were found to improve student's creativity and innovation to achieve the institution's desired learning goals.

4.3 Research Question 2: How Do Teachers Use PjBL Specifically to Motivate Students' Engagement and Learning?

Four themes emerged as a result of the discussion and interviews with the participants: 1) establishing communication, 2) Ensuring teacher motivation, 3) accommodating students with learning disabilities and 4) scaffolding learning. The findings presented in Table 4 highlight some insights into several strategies and practices used in a PjBL classroom to motivate students.

Table 4 Research Question 2

Emerging Themes for Research Question 2: How do Teachers Use PjBL Specifically to Motivate Student Engagement and Learning?

Theme	Sub-themes
Establishing communication	Checking the progress of project implementation Involving students in the classroom Providing feedback
Ensuring teacher motivation	Having energy to teach Getting interested in the topic Diversifying teaching strategies
Accommodating students with learning disabilities	Determining role of counselling department Giving more responsibility to LD students in classroom Setting group work for LD students Increasing LD students' involvement
Scaffolding Learning	Enhancing students' skill levels Building on students' prior experience Supporting students

Many participants described that their motivational practices in PjBL were a result of establishing communication, teacher motivation, accommodating students with learning disabilities and scaffolding learning, which are explained in detail in the upcoming paragraphs.

4.3.1 Establishing Communication

All participants emphasised the effective role of communication in ensuring students' motivation and engagement in PjBL. Lara reported, "*I make sure that I stay connected with my students to understand every stage they do in the project*." Ben reported, "*The main point is communicating with students to check their progress*." Another example was Peter who noted, *"Maintaining an open-door policy with my students assists in engaging them in learning*", and he added, *"I dive in, and I am always there to support them, making sure to put them on the right track*". All participants agreed that communication was essential to observe that students were engaged in learning and could implement their projects. Moreover, all participants mentioned that students' engagement and motivation were observed when students' dedicated time to ask and acquire knowledge. For example, Lara explained, "*I notice how students come to my office and take time to discuss their project with me*." Nicole also explained, "*I can see my students are committed to attending the class and asking more questions about their project*." All participants agreed that students' motivation and engagement can be observed in PjBL classrooms in response to good communication. It is essential to acknowledge that participants were teaching in the English language to foreign and local students. This helped engage students while implementing PjBL without negative impact on the way participants communicated with their students, reflecting positively on participants when using and implementing this approach.

All participants believed in providing students with ongoing feedback throughout the project to motivate and engage them in learning. Lara noted, "*While providing the students with continuous feedback throughout the project, I also discuss the challenges facing the students and make sure that they have a vision for properly implementing the project*." Henry explained, "*I keep checking and giving students my comments on their progress*." Ben explained, "*Students need to know the weak areas into which they need to put more effort to improve*." All participants believed that continuous feedback, provided students with a clarification on their progress in implementing projects, to determine whether their performance was considered satisfactory, and where they needed to excel. For example, Ben explained, "*When students are getting feedback from me on their projects, they respond more positively and remember the experience of their learning*." Henry mentioned that "*students give feedback on my teaching approach in the classroom, and I make the adjustments to motivate them*." Lara reported, *"I get feedback from students on how much I*

motivate them." All participants approved that providing students with feedback was a successful motivational practice to ensure their engagement to learn.

4.3.2 Ensuring Teacher Motivation

All participants felt that students are motivated when their teachers are motivated too to carry out project requirements. All participants believed that they radiated energy to students, and, hence, a motivated teacher was likely to have a motivated group of students. For example, Nicole explained, "*I need to be full of energy to get engaged with my students*." Peter also reported, "*I need to show my eagerness towards the topic*", which explained that participants should be interested in the topic first. Henry also explained, "*I always think of new ideas to get myself engaged and engage my students*", and he added, "*If the teacher is not motivated, the students are also not motivated*".

Many participants had reflections on their practices for example, Henry explained, "*Every semester, I try to come up with different activities to engage myself with new ideas and avoid boredom*.". Danny noted, "*I write my own case studies, which makes me enjoy my learning strategies and teaching practices in the classroom more*." Peter explained, "*I have to think of new activities and ideas when I feel things are tedious, as sometimes, I lose focus*." Participants acknowledged that they need to diversify their teaching strategies to get themselves more engaged in their classrooms. Henry explained:

> *It's better to be creative in designing the projects and adding something new to update the course, its organic to keep developing the course and learn and don't stick to one thing and keep on refining the course.*

The findings showed that all participants felt that they the need to be motivated so that they can motivate their students in a PjBL practice; All participants were keen on getting out of the routine in their class and focused on diversifying their teaching strategies in the classroom to ensure that they were motivated too.

4.3.3 Accommodating Students with Learning Disabilities

Internationally, "learning disability" refers to students who face difficulties with cognitive processing. As explained by Fry and Hale (2000) and Weiss et al. (2016), cognitive processes are

defined through the efficiency of the required task that may include verbal understanding, effective thinking, memory and also processing speed. All the participants at RIT understood the challenges faced by students with learning disabilities in their implementation of PjBL. However, at RIT, some participants had different understandings of what was considered a learning disability. As per few participants' interpretation and understanding, language barrier and students' anxiety were seen as learning difficulties which disable students learning, which needed to be addressed to motivate their students while using PjBL.

In general, all participants believed that their role was to engage students with learning disabilities in the learning process to increase their motivation while using PjBL. Students with learning disabilities had the potential to perform equally as their peers through inclusion, so that they could get more engaged in learning. All participants agreed that students with learning disabilities faced challenges with learning and with certain skills; therefore, all participants needed more support to implement projects that would motivate students' engagement to learn.

Many participants emphasised the role of the institution in supporting students with learning disabilities. They mentioned that the counselling department provides a student support system to help students facing difficulties with learning. Peter explained, "*We usually receive a communication from the counselling department showing the case of a student with a learning difficulty, and I have to pay attention to this*", and Danny noted, *"The counselling department informs us about certain cases to deal with in our classroom*". All participants were aware of the students' learning disabilities as per the communication received from the counselling department and tried to accommodate them within their classrooms to ensure their motivation while using PjBL.

Participants had different motivational practices to accommodate students with learning disabilities; for example, Ben explained, "*The best scenario is to give them responsibility and make them active in the groups*." Nicole explained, "*I do give one-to-one attention coming backwards, giving attention to students who are struggling, holding their hands at the earliest stage*." Peter noted, "*What happens here is that these students are included in group work. I diversify the groups to benefit from the project and change things around*." Lara explained, "*I have to keep watching the work they produce*." Participants described their approaches when accommodating students

with learning disabilities according to their perspectives in the classroom. All participants felt that students with learning disabilities should work in groups where they can interact with their peers for their own benefit. Inclusion of students with learning disabilities was important to support their development and build their skills and knowledge, accordingly.

As mentioned earlier, few participants were united on their understanding of what was considered a learning disability; for example, Peter mentioned, "*students having Autism don't want to be part of the activity because of social anxiety therefore I need to be aware and not put them in a situation so I will be sensitive to that but it won't affect their discussion."* Ben explained that "*some students are anxious in the classroom, and they are looking for special treatment because they are having difficulty learning."* Ben added that *"many issues should be raised about disabilities. We deal with advisors to see if there are any disabilities that we need to deal with*." All participants were working with the counselling department to ensure that students who were reported as students with learning disabilities were accommodated in the classroom.

4.3.4 Scaffolding Learning

Many participants believed that enhancing students' motivation in PjBL requires following specific approaches and practices. All participants explained that these practices were important to motivate students' engagement to learn. I used the term scaffolding learning for this theme; because scaffolding learning can be thought of as a method that helps students accomplish a difficult task on their own (Singer et al., 2000). Many participants followed certain approaches and practices to improve students learning in PjBL classroom and believed that the key element to students' motivation and engagement in learning was through improving students' skill levels before implementing projects. Peter noted:

> *I approach projects to enhance skills and for them to acquire some skills, and the outcome itself is what they are learning or what they are learning about rather than setting them up with everything they need to explore. Depending on the project content, they are responsible for becoming experts.*

This shows that many participants agreed on improving students' skills before embarking on their projects to enhance their learning.

Additionally, all participants agreed that students' prior knowledge and interest play an important role in the way participants connect students to project topics and goals. For example, Lara noted, "*I build on students' previous learning, as it is the knowledge base for their learning*." Ben explained, *"Prior knowledge will help me as a teacher to build on it*." All participants agreed that the previous knowledge of their students was crucial to implement PjBL, which would enable participants to create new material. For example, Nicole noted, "*You need to check that the student can relate to the project topic*", which shows that all participants related to what students' were taught previously for successful PjBL implementation. Henry explained, "*It is easy for me to take the project into the classroom when students have previous experience*." Henry added, "*I encourage my students to express their interest in the topic and support them by relating it to something in their life*", while Ben explained, "*Students need to make connections, and I work on this by encouraging them to take challenges and by motivating them.*" All participants believed that projects should be related to student's previous knowledge to motivate them to learn.

All participants believed that their role in PjBL was supportive and that they were no longer the centre of learning, but they are facilitators. Peter reported, "*I am not a supervisor now; I am a facilitator*", which explains that participants had adopted new class management skills in their classrooms to support their students in learning. For example, Nicole explained, "*We need to give them the chance to explore*." Ben explained, "*Our role is to consult and talk about the stages of the project*." All participants explained that they provided support to students to do their projects. Henry noted, "*I set benchmarks for my students to do their projects*", and Nicole explained, "*I help students and remind them of their timelines so that they don't lose track of time*". Lara mentioned "*I lead students' to select project topics"*. All participants supported their students to ensure their motivation and engagement to learn. Moreover, all participants gave more responsibility to students. For example, Peter explained, "*Students need to be responsible and become experts to explore their own abilities to carry out projects.*" Lara added, *"I would also discuss the challenges facing the students' and make sure that they have the vision of properly implementing the project."* and Henry reported, "*We ask students and push them to start interacting with their peers*." Lara also explained, "*Students need to get ready for their presentation, and we are responsible for assessing them to improve their presentation skills*." All participants explained that providing support to students to scaffold their learning motivated them and improved their knowledge.

4.4 Research Question 3: How Do Teachers Perceive Their Role in PjBL?

Three themes emerged as a result of my discussion and interviews with the participants: 1) understanding the significance of teacher and student autonomy, 2) enhancing collaboration and 3) relying on teachers' self-efficacy. The findings presented in Table 5 highlight how teachers perceived their role in PjBL.

Table 5 Research Question 3

Emerging Themes for Research Question 3: How do Teachers Perceive Their Role in PjBL?

Theme	Sub-themes
Understanding the significance of teacher and student autonomy	Student control over choice of topic Exploring abilities towards challenges Teacher level of control in classroom Authority for teacher
Enhancing collaboration	Importance of teacher collaboration Gap in teacher collaboration Institutional structure
Relying on teachers' self-efficacy	Teaching experience Teacher character

4.4.1 Understanding the Significance of Teacher and Student Autonomy

How participants perceive their role in PjBL supports the use of this approach in the classroom. The findings showed that some participants supported students' autonomy in the classroom; participants gave learners the freedom to choose the topics, the strategies to use to develop a quality solution and, in some cases, who to work with. Some participants felt that under such circumstances, students chose meaningful topics and owned the learning. Nicole said, "*I give them the options to choose what is best for them, and the way of thinking, this choice gave them the freedom to build their solution*." Lara added, *"I expect students to start choosing their topics."* Some participants also allowed students to address project-related challenges. Peter stated, "*If I notice something that could be challenging, I will bring it to their attention, and I will discuss with them how to overcome these challenges and to have the ownership*." This implied that participants were keen on developing students' autonomy.

Ben noted, "*What I would rather do is to help students pick something they are interested in because they will do better work and take it more seriously*", which shows that some participants provided guidance for their students' in the classroom to choose and take decisions. Peter explained, *"my job is to provide them with the topics, and they have to look for the issue and they start to realize that they are producing knowledge, so the ownership does really affect in a significant way".* Another example was Lara, who explained, "*I do not dictate, and I am flexible in managing my class so that it does not affect students but ensures their productivity while implementing their projects*." However, few participants, had different perceptions towards students' autonomy in PjBL. For example, Ben reported, *"To be honest, this is the rule I set in my class: a fair and balanced role between me and my students*", while few participants believed in the authority of the teacher. For example, Henry said, "*It's the teacher who has the responsibility to control and have full command of the class in addition to being connected to students, or students will lose the reason for being in the classroom*." Some participants' views and perspectives varied regarding their understanding of the significance of teacher and student autonomy practiced in PjBL.

4.4.2 Enhancing Collaboration

All participants believed that collaboration among teachers would allow them to explore new ideas and share their opinions and thoughts. All participants explained that through collaboration amongst themselves, students' will have the chance to exchange their ideas and points of view which have a positive impact on the learning process. For example, Lara explained, "*It's better to have collaboration between peers to enhance students' learning while implementing projects, but it's not taking place*." Ben also reported that "*team meetings and exchanging ideas, and if any professor has a successful experience you share it. Some doctors do it, and we try to do it frequently*." All participants acknowledged that their collaboration was an added value to enhance the learning process and the way they approach and implement PjBL in their classrooms.

A gap in collaboration was highlighted during the interviews, where most of the participants agreed that they lacked collaboration with each other. All participants were looking for more collaboration that would include unified learning outcomes with their colleagues. Peter noted, "*The team mentality where instructors discuss students and projects and issues and share experience which fosters qualitative awareness is interesting, but again, it is difficult to create this*

coherency or consistency here." All participants felt that establishing connections among teachers was essential to have more coherency and harmony.

According to the participants, collaboration was a key that helped to support students' collaboration through sharing and implementing projects on a higher scale with different departments. For example, Lara noted:

> *I think students would love the idea of collaborating on specific projects where they would see things from a 360-degree perspective, and this is what the education process is about; how students are starting to realise that hands-on application makes it more fun because of the 360-degree perspective.*
>
> Lara looked at collaboration as a main element that would assist students in linking their PjBL topic to other courses across RIT to give them a comprehensive understanding and improve their learning.

Some participants believed that the structure and the hierarchal system in the institution were not enhancing collaboration among peers when it came to sharing ideas to enhance learning; for example, Peter mentioned that "*the structure of the organisation makes it difficult to collaborate*", which shows that many participants struggled with collaboration because of the institutional structure. Moreover, Peter noted, "*The range of courses that we offer all over the place is not connected*." Danny added, "*No, we don't have projects that span across departments*." Still, all participants believed that collaboration would guide them as teachers to help students with new topics for their projects. For example, Nicole explained, "*many meetings done to prepare students for the future, and that will help in choosing topics that are relevant to reach a mutual learning outcome."* And Peter explained, "*I am familiar with the model what I like about it is the team mentality where instructors discuss students and projects and issues and share experience which foster qualitative awareness.*" All participants explained that better collaboration among peers in different departments could improve students' learning outcomes through sharing teachers' ideas and views, which would support the learning experience.

4.4.3 Relying on Teachers' Self-Efficacy

Participants' beliefs and abilities to handle the tasks and challenges linked to their profession impacted their perception of their role in PjBL. The way people interpret their thoughts, actions, and emotions in given situations is related to self-efficacy, and that is the term I used for this theme. Self-efficacy reflects an individual's ability to perform a certain task in an effective manner (Bandura, 2010). The following sections provide a comprehensive explanation of this theme.

Many participants believed that the successful implementation of projects relied on teacher experience and personal character. Many participants viewed that their characteristics were considered a crucial element in the way they managed their classes and used PjBL. This has to do with teachers' self-efficacy perception, which is related to teachers' attitudes and learning practices, including their opinions towards their competencies to affect students' learning.

Many participants believed that their perception of their role in PjBL hinged on their experience of using this approach. Peter noted that "*I found that my experience in doing projects was considered a good one; however, it should not only be for ticking the box. It is about learning something*." In addition, Danny noted, "*Whenever I teach, I have the benefit of having a long experience, over 20 years, so I have a lot of experiences that I can call upon to emphasise information*." Many participants believed that they could do well when using and implementing PjBL in their classroom, relying on their experience in implementing projects, which gave them the privilege to improve students' learning.

Moreover, many participants relied on their character and friendliness with students. Some participants focused on being close to students and showing a caring relationship with them in the classroom, which impacted their use of PjBL. For example, Ben mentioned, "*If the students do not like you, you are done*." Peter noted, "*It is all about being close to them and listening to their concerns*." Some participants understood that they needed to be close to their students and listen to them to build a good relationship that reflected positively on their classrooms and enabled them to have more influence on their students, while other participants believed in adding more humour to avoid boredom in class. For example, Henry explained, "*I should have a sense of humour and joke around sometimes to grab their attention in my class. They like it*", and Nicole explained,

"Students are influenced by a teacher's character and the way he handles the subject". The findings showed that many participants believed that self-efficacy impacted their use and implementation of the PjBL approach.

4.5 Chapter Summary

This chapter with its various sections, has presented the analysis of data acknowledging the importance of teachers' practices when using PjBL to foster students' motivation to learn. The findings that emerged provided several aspects when it comes to the lived experience of participants and their use of PjBL. Participants explained what optimal PjBL should look like in their local context to enhance students' motivation to learn following their point of view. In general, participants in this study practiced PjBL based on their perceptions and beliefs on how successful learning can be achieved. All participants expressed that the key feature of using the PjBL approach is to complement the curriculum, relate to the course content and learning objectives, and ensure students' understanding of project requirements. Moreover, all participants were positive towards PjBL, showing its benefits in improving students' skills, motivating them to learn and enhancing their collaboration. All participants focused on relating their projects to the current local issues in the UAE and taking cultural aspects into account when using and implementing PjBL approach.

Evidently, all participants appreciated the use of the PjBL approach in their practice because they valued its benefits specifically for students' motivation and engagement in learning. All participants focused on establishing effective communication with their students, and they all believed that they needed to be motivated to motivate their students. All participants understood that students with learning disabilities should be included as active learners to ensure their motivation and engagement. Moreover, all participants believed in the importance of scaffolding students' learning through specific practices before implementing projects to meet desired learning outcomes.

Few participants varied in their understanding of the significance of teacher and students' autonomy in a PjBL practice. All participants highlighted the importance of teachers' collaboration towards an effective implementation of PjBL. Many participants agreed that their teaching experience and their relationship with students in the classroom influenced the implementation of

PjBL, therefore, it was shown that participants self-efficacy played a pivotal role in the way PjBL was used.

Chapter 5 provides a detailed account of the discussion and connects the literature with the current findings. Additionally, the chapter presents the limitations of the study, makes recommendations for practice, and suggests avenues for future research.

Chapter 5 - Discussion

5.1 Introduction

This chapter discusses the results of my study in relation to the overarching question, how do teachers at Rochester Institute foster students' motivation while implementing project-based learning? The current study was conducted at Rochester Institute (RIT), an American satellite campus in Dubai, UAE. Changes in learning require students to master 21st century skills to achieve a successful future. In order to gain these skills, it has been important for higher education in the UAE to shift to new teaching approaches to comply with the 21st century requirements and meet students' needs and goals. The PjBL approach was deemed by the institution to be a promising learning and teaching approach, which engages students in learning and obtaining skills through carefully designed projects and tasks. Carter (2016) suggested that teachers can capitalise on the opportunities afforded by this learning approach to optimise students' learning through effective facilitation of PjBL. It is assumed that teachers' practices are considered fundamental for the successful implementation of this approach. The findings indicated that participants valued the use of PjBL because of its benefits in constructing students' knowledge and fostering their motivation to learn. Participants have addressed their views on PjBL through their practical approaches in their local context.

In this chapter, I illustrated my research findings by designing a concept map (figure1). The concept map demonstrates the findings of the study. The discussion of this chapter will focus mainly on the links between the components of the concept map through my findings related to PjBL practices as perceived by participants to foster students' motivation.

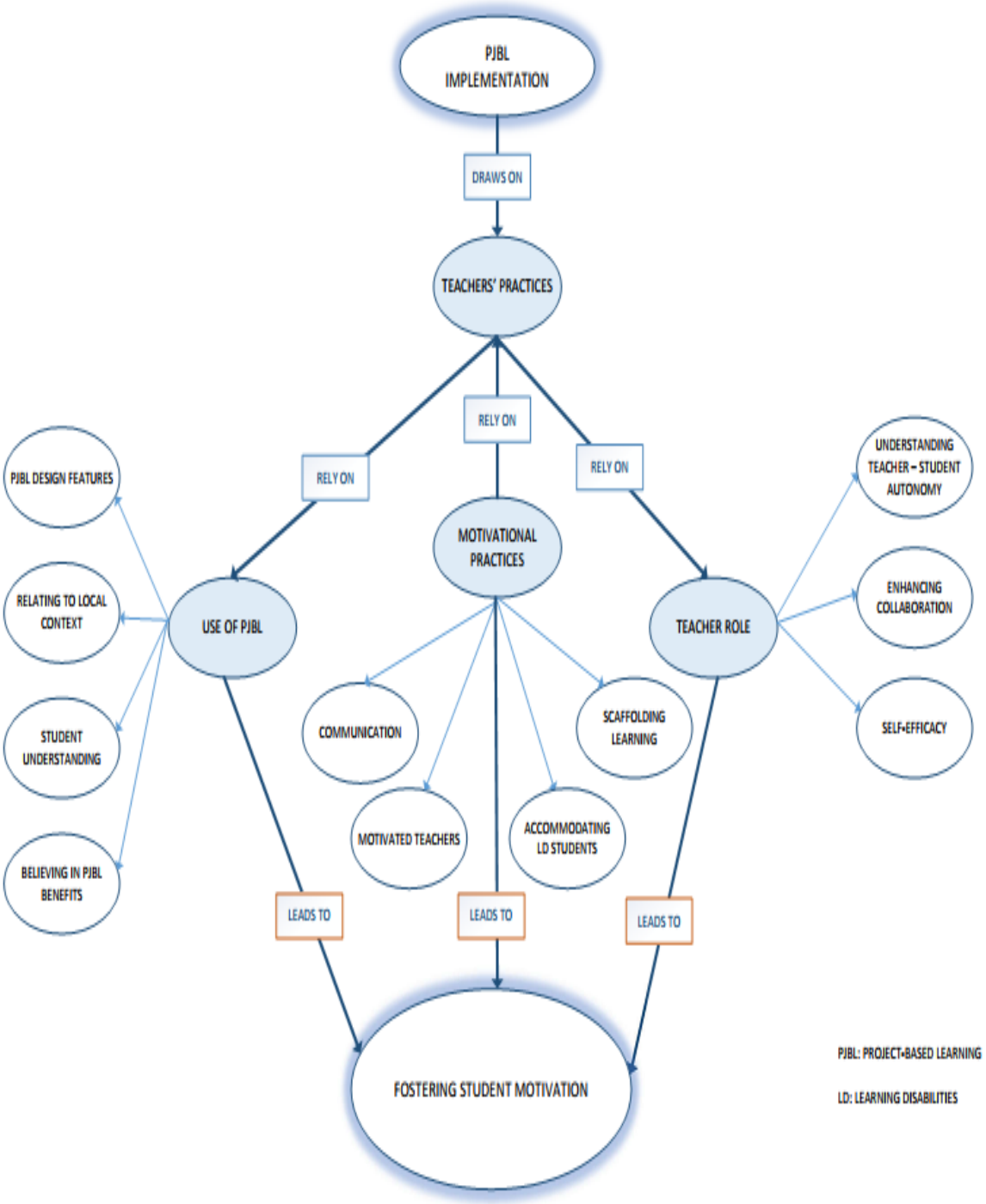

Figure 1 Concept Map

Sections 5.2 to 5.4 discuss the components of the mind map which are related to using PjBL as described by the participants. Section 5.5 is a summary of the key findings. Section 5.6 contains suggested recommendations for future practice. Section 5.7 includes the limitations of the study and recommendations for future research. Section 5.8 includes an evaluation of this study in terms of research questions, aims and objectives. Section 5.9 describes the contribution of the study to the discourse on PjBL. Section 5.10 includes a reflection on the study, and section 5.11 concludes this chapter.

5.2 The Use of Project-Based Learning

The concept map provided an explanation of the usage of PjBL to create better understanding of the phenomenon of PjBL approach as experienced by the participants. Participants described that their use of PjBL in their institute entails four essential components: 1) utilising PjBL design features; 2) ensuring students' understanding of PjBL requirements; 3) Believing in the benefits of PjBL; and 4) Relating to the local context.

5.2.1 Project-Based Learning Design Features

Participants described that PjBL should include specific design features for successful implementation. The findings showed that all participants agreed that the project should be designed to meet the course learning outcomes and objectives. This finding has strong links with the literature, as several researchers such as Krajcik et al. (2008) believed that PjBL requires careful treatment when it is used in practice, and those researchers explained that when PjBL is related to the course content, it achieved the desired learning goals. Krajcik and Shin (2014), explained that when PjBL is designed around the learning goals, these learning goals bring the core ideas from the discipline with key "disciplinary practices" (p. 283). Moreover, all participants clarified that PjBL should be related to the curriculum. The results revealed that PjBL was seen by all participants as an extension to the course provided previously to students to reinforce their learning. Notably, a study by Grant and Branch (2005), explained that PjBL should embed the curriculum; moreover, another study by Parker et al. (2013) considered teacher adaptation of PjBL curriculum to be a core design feature. Another study by Thomas (2000), explained that projects should be "central, not peripheral to the curriculum" (P.3), and that what distinguished PjBL from other learning approaches. Moreover, the findings showed that all participants explained that PjBL

design features should be authentic. Participants explained that they designed projects and developed realistic and authentic problems to their students to enhance their learning and to meet real needs beyond the classroom. For example, participants used PjBL and focused on different real-world subject matters to provide purposeful learning for students. According to Barrows (2000), projects should be linked to real-world scenarios to enable students' investigation and exploration. Participants explained that the authenticity of projects enabled their students to discover the world around them and resolve meaningful problems. As confirmed in the literature, PjBL design should include features built on inquiry strategies which develop students' curiosity about the real issues and concerns affecting their lives in order to enable them to solve complex problems encountered by daily living (Kean & Kwe, 2014). Moreover, according to Stohlmann et al. (2012), when students are engaged in solving authentic problems in real life, they develop understanding and self-esteem. Through authentic projects, students would be able to realise similarities between their learning and what is outside their learning environment (Gülbahar & Tinmaz, 2006). Dewey (2008) was very critical on the way content is organised and emphasized the relation between the content and real-life situations; since real-life cases allow students to learn from their experience to gain skills that are important beyond the subject itself.

Moreover, the findings related to the use of PjBL design features showed that most of the participants focused on forming and setting students in groups as an important feature to use PjBL in classroom, which reflected their belief in and comfort with PjBL as a constructivist approach to enhance students' collaboration and enhance their learning. This finding affirms Kiraly's (2006) study regarding the effectiveness of group work in empowering students because when students work in groups; they learn in a collaborative manner through social interaction with their peers, which has a positive effect on sharing ideas to reach common goals (Dolmans et al., 2005). Moreover, Savery (2006) and Lee (2004), explained that students, through social interaction, are able to develop a positive attitude towards taking the required steps to implement their projects. The finding aligns with PjBL practices that stimulate students towards collaboration to influence their learning positively (Dolmans et al., 2005).

In this study, findings related to the use of PjBL by the participants stressed the importance of group structure in terms of size, abilities, and contracts. Participants explained that they assigned students to work in small groups and described that having a limited number of students in a group

helped distribute the cognitive load and expertise among members, which allowed the whole group to challenge a specific problem that was difficult for individual students to tackle. According to Requies et al. (2018), when students work in small groups, they start their initial brainstorming which activates their prior knowledge that is not fully understood towards their projects. Moreover, participants divided students into groups based on their abilities. Participants relied on their own judgement and on students' level of achievement for the selection of students' group members to improve their learning. Cheng and colleagues (2008) stressed the fact that when the quality of the group process was high, both high and low achievers reported greater levels of collective efficacy giving much more significance to group work, for that purpose, participants were careful when making group work a productive effort. Moreover, participants developed group contracts where roles and responsibilities were well-defined for each student to avoid group conflicts. Participants explained that group contract encouraged students to get more active in their groups since it implied the timelines to do the projects based on previous agreements. The finding showed that participants believed that group contract was an efficient and effective way for students to perform their tasks and coordinate their efforts. Furthermore, participants described based on their use of PjBL design features that they selected appealing and interesting content for their students which affirms a study by Payne (2017), that explained that projects design should include an appealing and exciting content for students. In my review of the social constructivist framework of Dewey, I studied the phenomenon of PjBL with relation to participants' points of view. The findings signified the critical role of teaching practices in enhancing student's learning experience where social interaction plays a vital role in students' knowledge construction (Teague, 2000). Moreover, Dewey's social constructivism theoretical framework can be seen in the findings through teaching faculty practices that created a social learning environment among students by promoting collaboration, allowing for learning to become social with a primary focus on the individual learning experience. This section provides an extension to the literature and adds to the features of using this approach in practice to show how teachers use PjBL and how they adapt it based on their understanding of its implementation.

5.2.2 Relating to the Local Context

The findings showed that the use of PjBL relied on the local culture. Participants revealed that they pushed their students and encouraged them to make connections with the local context

by addressing local issues and problems in the UAE to find solutions. The findings explained that participants came up with cases related to the local context and discussed them with their students to connect them more with the culture they live in. Moreover, participants explained that the institute was focused on connecting students with the local context through launching events and activities that gave a clear picture of the local values and traditions. Furthermore, the results of this present study showed that the participants were sensitive to the culture and considered cultural aspects when using and implementing PjBL, which indicated that the use of the PjBL concept was not fully utilised in the classroom. The participants discussed that using PjBL required a great understanding of the current culture here in the UAE, which might create boundaries for students when selecting or choosing their project topics and might challenge the scope of PjBL in improving students' critical thinking skills. Being sensitive to the culture was a concern for the participants, as they stressed and shared with me during the interview. Most of the participants do not belong to the local culture, as most of them are expatriates; therefore, the participants made sure to be culturally accurate and align with the local cultural views. The finding affirms a study by McMurray and Scott (2003), which explained that being sensitive to the culture requires an individual's openness and respect for the cultural differences, which creates more understanding of the dynamics of another culture. It is worth noting that the literature focused on the effectiveness of the whole reform model which includes PjBL as a central component (Ravitz, 2010). However, research has not yet clarified how PjBL implementation is affected by the broader context.

Although the UAE is quite a multicultural country, the Emirati culture and traditions' roots are connected to the Arab and Islamic identities in the Middle East Region. Findlow (2005) explained that the UAE adopted the Egyptian model of education in the early years of the federation due to the strength of both the Arabic language and the Islamic identity, which were critical to preserving the young nation. Moreover, the curriculum, textbooks, and teachers from the countries surrounding UAE played a significant role in its educational system until 1985, as explained by Suliman (2000) and Khelifa (2010).

According to Altbach et al. (2009), the English language is taking high importance in the global context, especially its dominance in communication technologies and information. Therefore, due to the economic growth of the 21st century and globalisation, there was a need to invest in human capital to facilitate the shift in the UAE from the Egyptian-based curriculum to

western models with the English language as the medium for instruction in higher education (Khelifa, 2010). The western educational systems were expected to change the UAE's educational system and increase foreign cultural influence and the way of thinking among Emirati students. However, the UAE was keen on maintaining its norms and traditions towards strong nationalism (Hijazi, Zoubeidi, Abdalla, Al-Waqfi, & Harb, 2008; Litz, 2011; Wilkins, 2010).

The institute has firm regulations and requirements when it comes to academic freedom; however, at a certain point, there is no restriction on the freedom of the ideas and the information provided, which exposes students to various viewpoints. A balance is required considering respecting the principles of Islam and the values of the Emirate culture. Kelifa (2010) explained that UAE has a tribal background that is focused on the priority of the family bonds and relationships, which makes the influence of the western culture less effective. Riel (2010) explained that the UAE's culture is influenced by specific concepts and disciplines related to prioritizing the needs of the group before the individuals, which differs from the individualistic western way of living (Schimmack, Oishi, & Diener, 2005).

5.2.3 Students Understanding

In the findings, all participants described that the use of PjBL should deepen students' understanding of its requirements. Participants focused on the importance of understanding as the main component to use PjBL in practice. The finding is in line with a study by Krajcik et al. (2008), which explained that when designing projects, it is important to help students understand what the project is about so that they will be able to choose topics that represent a problem to discuss and solve. In this study, participants recognised that students' understanding leads to a successful implementation of this approach which is the foundation to reach desired learning outcomes. The finding in the present study affirms earlier findings for several researchers (e.g. Darling-Hammond et al., 2008; Krajcik & Shin, 2014; Larmer & Mergendoller, 2015; Parker et al., 2013; Thomas, 2000), which explained that the goal of using PjBL is to maintain students' understanding of the content to improve their skills and solve real-world problems associated with the features of this approach.

5.2.4 Believing in PjBL Benefits

All participants revealed that their use of PjBL was based on their strong belief in this approach and what it provides to the learning environment. The findings showed the ways participants determined the advantages of PjBL, which reflected their views on how this learning approach nurtures students learning compared to traditional learning. Participants focused on PjBL benefits and were positive towards its gains in improving students' skills, engaging them in collaborative work and fostering their motivation. Findings indicated that participants believed that PjBL improves student's communication skills since students are able to interact with their peers which enhances their social involvement in the classroom. Moreover, findings revealed that participants encouraged their students to work in groups because they believed that through collaboration, students can exchange their views and opinions to solve issues and their learning is thereby enhanced. The findings correspond to the findings of many researchers who associated the benefits of the PjBL approach with improving students' skills, enhancing collaborative work, and fostering motivation (Chiang & Lee, 2016; Grant, 2002; Krajcik & Shin, 2014). There was a consensus among participants on the benefits of PjBL in fostering students' motivation and engaging them in learning. The finding confirms a study by Blumenfeld et al. (1991), which demonstrated the positive effect of PjBL in improving and increasing knowledge retention.

5.3 Teachers' Motivational Practices in PjBL

The participants in this study described how PjBL was used to motivate students. The results of the present study revealed that participants stressed the importance of establishing communication, ensuring teacher motivation, accommodating students with learning disabilities, and scaffolding learning as the main practices used precisely to improve students' motivation. The explanation of each practice is in the following sections.

5.3.1 Communication

The findings showed that participants believed that establishing communication with students supported and fostered their motivation to learn and played an important role in ensuring their engagement in a PjBL classroom. Participants explained that teachers' effective communication resulted in motivating their students and engaging them in learning and that can be sensed through students' participation, involvement, and interest to do their tasks. The finding

affirms a study by Catt et al. (2007), which recognised the critical role played by communication in fostering students' motivation and transferring content material. In this study, there was a consensus among participants, who revealed that the level of students' motivation increased as a result of good communication. Moreover, findings showed that participants provided continuous feedback to their students in the process of project implementation to ensure their motivation. According to Norman and Spohrer (1996), engaging students through frequent feedback and interaction enhances their motivation and engagement to learn. However, according to Pebruanto et al. (2018), feedback given to students should not focus only on developing areas of improvement but also on identifying the quality of the ongoing process towards achieving learning goals. In order to ensure such a positive understanding, it is necessary to determine the kind of feedback obtained by students and whether it allows the development of both the obtaining of goals and positive achievement (Pekrun et al., 2014).

5.3.2 Motivated Teachers

Participants described that their motivation was associated positively with the way students perceived instructional support in PjBL. Findings presented that participants believed that their own motivation supported the motivation of their students. Lam et al. (2009) considered practices, such as presenting challenging work to students, integrating real-life significance, and stimulating students to learn specific tasks to be related to teacher motivation. Carson and Chase (2009) considered teacher's motivation essential to enhance motivation through enhancing the classroom effectively and providing a high quality of instruction. The findings showed that participants had better teaching practices when they were motivated and engaged in the learning activities, which might affect the quality of instruction in the classroom (Thoonen et al., 2011), though, participants may not be following a systematic approach to achieving successful learning outcomes (Wagner et al., 2008). The findings provided insights into the importance of teachers' motivation in motivating students and engaging them during their use of PjBL, and they were consistent with the study of Lam et al. (2009) which indicated that the benefits students receive from PjBL hinges on the teacher's motivation for a successful implementation. Therefore, if the teachers themselves have a strong motivation to experiment in their learning environment, that will be reflected in the improvement of their practices in their classroom. Ushioda and Dörnyei (2011) highlighted two dimensions of teacher motivation: the motivation to teach and the motivation to remain in the

profession. Motivated teachers reported enthusiasm about their teaching practices and work in the classroom (Kiziltepe, 2006).

Notably, in the literature, teacher motivation has been investigated primarily in terms of self-efficacy beliefs (e.g. Dicke et al., 2014; Klassen & Chiu, 2010; Moe et al., 2010), while less often it focused on intrinsic motivation (Kunter & Holzberger, 2014; Roth & Weinstock, 2013). In this study, participants focused on their intrinsic motivation and the importance of motivating themselves and diversifying their teaching strategies in class to avoid monotony. This is not easily understood since the participants were role models to their students and inspired them to adopt values and attitudes.

5.3.3 Accommodating Students with Learning Disabilities

The findings showed that participants accommodated students with learning disabilities to foster their motivation. Results showed that participants focused on including students with learning disabilities in PjBL to engage them and improve their learning. Students with learning disabilities were given more responsibilities and offered more attention to check on their progress. Moreover, participants explained that students with learning disabilities were included in group work. The current study confirms the literature, that students with learning disabilities can be supported and accommodated within collaborative learning approaches, providing them with a less restrictive learning environment compared to those who use traditional modes of instruction (Belland et al., 2009; Ferretti et al., 2001; Hernández-Ramos & De La Paz, 2009; MacArthur et al., 2002). Participants were aware of the challenges that students with learning disabilities face, and they were supporting their development to build their knowledge and skills to ensure their engagement. However, findings showed that participants needed more reasonable adjustments for those students besides group work. According to Asghar et al. (2017), students with learning disabilities struggle while engaging in PjBL activities, such as group work. Therefore, students with learning disabilities often experience challenges in social interactions and social skills deficits (Kavale & Forness, 1996; Sridhar & Vaughn, 2001).

5.3.4 Scaffolding Learning

The findings highlighted that participants followed certain practices before implementing projects to scaffold students' learning and ensure that they acquired the basic skills required for

PjBL implementation. These practices as explained by participants would help students work through projects smoothly to ensure their readiness, therefore, participants explained that they assessed students' skills level and tested their problem-solving skills by giving them practice problems and engaged them in project-implementation strategies such as workshops to identify the areas of strength and weakness for improvement. Grant (2002) and Tobias and Duffy (2009) explained that the scaffolding learning process in PjBL is needed, and in the constructivist approach and in student-centred learning environments in general. The finding aligns with a study by Kolodner et al. (2003), which explained that pre-project activities provide students with a specific model of desired practice that could be effective on later performance. Participants emphasized that the scope of preparation before implementing projects is to familiarise students with terms and important information that they may require before embarking on projects. Moreover, findings revealed that participants explained that the transfer of knowledge should be built on prior knowledge where students can make connections with prior understanding and real-life experiences. The finding is in line with a study by Stefanou, et al. (2013), which explained that students are better performers and construct knowledge when they are able to relate to what they know already.

Moreover, participants explained that learning scaffolding should include providing students with the appropriate support to work on their projects (Darling-Hammond et al., 2008; Grant, 2002; Krajcik & Shin, 2014). From a motivational perspective, participants supported students through managing their classroom effectively (Anderman et al., 1999). In this study, participants managed their classroom by supporting and facilitating students' learning throughout the project implementation to overcome challenges that they might face. When students perceive their teacher as supportive, they will be able to report high levels of success and motivation (Ryan & Patrick, 2001). These findings extend to other research that considered scaffolding learning to be an essential element for effective teaching practices provided to students in PjBL. Puntambekar and Hubscher (2005) and Singer et al. (2000) explained that the design of PjBL should determine how scaffold could be used by teachers' and how it fades over time. When reviewing the social constructivist framework and relating it to the finding. This section shows the primary function of the teachers in practice as they take the role of facilitators, which aligns with the social constructivism theoretical framework that requires teachers to create a learning experience with their students and guide them through this experience to construct knowledge.

5.4 Teacher Role in PjBL

The findings exposed interesting insights into the participants' current perspectives on their role in PjBL. This section explains how the participants understood their role in PjBL, for the use and implementation of this approach and it raised some important points into the factors that should be considered to ensure the proper use of this approach in practice.

5.4.1 Understanding Teacher-Student Autonomy

The findings revealed that not all the participants had a clear understanding of the significance of teacher and student autonomy in PjBL. Many participants described autonomy as a means to provide students with ownership so they can have the opportunity to select their project topics. According to English and Kitsantas (2013), teachers should provide the framework, leaving students to decide how to structure their projects. Another study by León et al. (2015), explained that building a list of options for students as part of teacher instruction in the classroom will support their need for autonomy and will make their project more purposeful and interesting. Moreover, Garcia-Martín and Martinez (2017) explained that teachers can ensure a high level of student autonomy when giving problems to students within some guidelines.

When relating the findings in this section with the social constructivism framework. It was seen that social constructivism could be achieved in practice through the change of the role of the teacher and the learner to improve learning (Teague, 2000). Yet, few participants perceived that PjBL practice significantly has not changed the level of teachers' autonomy which may impact the outcomes of this approach and the key component to improve students' motivation. The findings extend to the studies of Katz and Assor (2007) and Patall et al. (2008), which explained that there is still a gap when it comes to understanding student autonomy in the broader education research literature.

5.4.2 Enhancing Collaboration

The findings presented participants' views towards collaboration in their academic institution. Collaboration can be defined as task-related cooperative action among colleagues (Kelchtermans, 2006), which represents different actions that can be recognised according to their level of depth (Vangrieken et al. 2015). Collaboration can take different forms among teachers, such as assistance and sharing joint work, which shows the highest level of interdependence.

Participants believed in enhancing collaboration amongst themselves to improve project planning and the integration of several related matters to the project. However, participants explained that they faced difficulties and challenges with collaboration among the faculty members due to the structure and organization of the university. Participants described that their current institutional structure lacked harmony and coherency between available courses which resulted in a lack of collaboration among teachers. However, participants still believe in collaboration among colleagues which results in enriching students' learning in PjBL. According to Patton and Parker (2017), building relationships among educators develops a structure for interaction and development.

Moreover, participants understood that collaboration is an essential value in the institution. Participants explained that through collaboration, they are able to share and exchange ideas, experiences of other teachers for the benefit of students. These findings align with a study by Kosnik et al. (2015), which found that teachers working and collaborating in a cooperative manner can promote learning since their discussions influence the work of other teachers. Another study by Horn et al. (2017) explained that collaboration provides teachers with new learning opportunities, whereby they can exchange expertise and reflect on improving their instructional skills and, ultimately, the quality of their instruction. Thoonen et al. (2011) clarified that teachers sharing their experience in a collaborative manner can reflect positively on the core of the professional learning communities. Consequently, collaboration among teachers creates a collaborative culture in the academic organisation to sustain its development and growth. When teachers have a shared goal, plan together and share their experience, these exchanged ideas and thoughts become a priority (Eddy, 2010; Kezar, 2017; Kezar & Lester, 2009). Collaboration provides the opportunity for better problem solving and increases the synergy of programmes and services through cultivating collaborative work and fostering new approaches and answers to organisational challenges and problems, which will lead to programme development. The findings provide an extension to the literature and support the findings of a research study conducted by Grant and Tamim (2013), which focused on the importance of collaboration among teaching faculty since it positively affects the learning process and learning experience. Also, the findings correspond to a study conducted by Cho and Sriram (2016), which focused on collaboration as a competency to improve the effectiveness and efficiency of higher education and provide an extension to the literature since it affirms the value of collaboration in higher education institutions.

5.4.3 Teachers Self-Efficacy

The findings in this study revealed that participants relied on their abilities for the effective use of PjBL. Participants explained that their experience, personal characteristics, and relationship with students ensured a successful implementation of this approach. In the literature, teachers' experience demonstrated what teachers do, how they behave in their classroom, and the way they design their instruction and interact with their students. Participants' experience displays teachers' self-efficacy since it reflects teachers' beliefs about their ability to help students reach the desired learning outcomes (Holzberger et al., 2013; Tschannen-Moran & Hoy, 2001), and influence their orientation towards educational processes (Woolfolk & Hoy, 1990). The findings are in line with a study by Nie et al. (2013), which explained that teachers' self-efficacy determined the use of constructivist instructional practices. Research indicated that teachers could offer effective instruction to their students depending on their own pedagogical content of knowledge which is based on their previous experience (Keller et al., 2017). Another study by Choi et al. (2019), showed that when teachers interpret their experience to be successful, their self-efficacy can increase. In PjBL, teachers' self-efficacy affects the response to the changes in the classroom experience, which can influence how teachers design their practices and perceive the effectiveness of this approach. The finding expands the literature about the impact of teachers' self-efficacy on PjBL use and implementation.

Eventually, teachers' use and implementation of PjBL approach to foster student motivation are considered an essential element in social constructivism where the faculty and the students construct the knowledge within their context. Social constructivism is embedded in UAE's vision 2021 (2010, p.23). Both the vision of the UAE and the institute's mission are aligned and focused on the student as the main factor to improve and enhance learning. The findings of this research study presented the way teaching faculty utilised social constructivism in constructing knowledge to help enhance students learning and make their thinking visible.

5.5 Summary of Key Findings

PjBL implementation was discussed in relation to the concept map in order to describe teachers' practices and usage of this approach and acted as a guide to foster students' motivation

to learn. In general, PjBL was seen as an effective teaching and learning approach that promotes positive learning outcomes for students.

Participants were knowledgeable about the essential components of PjBL as described in the literature. While participants implemented PjBL to the best of their abilities, the research results showed that participants' use and implementation of PjBL lacked in-depth exposure to how much more likely they can bring to the learning process in terms of motivating and engaging students' learning.

It is interesting to note that participants in this study did not show any concern over the challenges of implementing PjBL. This reintroduces their belief in PjBL role in enhancing the learning process. Believing in the importance of PjBL as a student-centred approach seems to enable the participants to work around the challenges of its implementation. However, an important aspect was found in this study, a lack of collaboration among participants. This lack of collaboration could affect the integration of subjects that could help students nurture and enrich their learning. Moreover, participants made sure to be culturally accurate when using PjBL and align their teaching with the values and beliefs of the local context. Participants were aware of the challenges faced by students with learning disabilities and the need to accommodate them to foster their motivation to learn. Finally, participants' experience and characteristics were found to have an impact on the way PjBL was implemented in the class, which demonstrated the influence of teachers' self-efficacy on the use of this approach.

In this research, the three primary components in the concept map showed that teachers' practices and implementation foster students' motivation. These teaching practices, which came out of the findings, played a role in contributing to student motivation by creating a learning environment that promotes PjBL activities more than the lecture-based ones. Moreover, having effective practices such as communication between students and their teachers allowed students to feel the support and guidance which would engage them more in learning. In addition to that, teachers felt the importance of collaboration among them and realised that this type of interaction would improve their practices and benefit students' motivation. The three components provide the tools to enhance students' motivation when appropriately implemented. Therefore, it is essential

to acknowledge that the findings of this study showed that student motivation is not an outcome of one component, rather an interaction between all three.

5.6 Recommendations for Future Practice

The findings of this research study, literature review and my analysis provided me with insights about PjBL and suggested several recommendations for future practice. These recommendations are important for the use of PjBL at RIT.

5.6.1 Recommendations for Individual Practitioners

The results of this study showed that teachers appreciate PjBL as a teaching and learning approach to improve students' learning and enhance their motivation. Teachers used PjBL approach specifically to motivate their students through building effective communication, scaffolding student' learning, and motivating themselves. To benefit more from this approach, I would recommend improving teachers' motivational instructional practices in PjBL to enhance students' autonomy, choice, and authority. Teachers in PjBL can promote students' autonomy to increase their motivation and engagement in learning. For example, teachers can encourage students to provide their feedback on their group work roles, tasks, questions, and reflect on their final products. Condliffe et al. (2016) explained that supporting students' autonomy in PjBL aligns with PjBL emphasis on student's direct inquiry, which is connected to PjBL design features.

Moreover, the study indicated that teachers considered the importance of cultural aspects in learning such as the values and traditions in the local context. I would recommend a structured, yet unified, PjBL design that would integrate cultural conditions with the improvement of students' critical thinking to recognise the benefits of this approach. A specific PjBL design will reflect the conditions of the local context where learning takes place in order to help and adjust both the context and the improvement of learning.

5.6.2 Recommendations for the Institution

The findings from this research study can be used to identify areas of improvement and where teaching practices can be developed and leveraged to reduce barriers and challenges. It can

help influence and impact the policies and procedures followed by the institute to achieve better organisational goals.

The results of the study indicated a lack of collaboration among teachers. Incorporating collaboration among teachers on campus supports the university goals and vision in providing successful learning for their students. I would recommend creating a structure for collaboration on campus amongst the teachers to promote new approaches and practices while breaking barriers to provide students with an effective learning experience. Emphasising the important role of collaboration among teachers provides a path to achieving the university's vision and lifelong learning.

Moreover, the results of this study showed that the institute was aware of students with learning disabilities. They were viewed as equal to their peers in PjBL practice. I would recommend establishing a professional development programme for teachers at RIT to prepare them adequately to support the individual needs of students with learning disabilities which builds teachers' understanding of various disabilities and pedagogical practices so they can foster students' motivation and increase their inclusion and achievement in PjBL practice.

The results of the study indicated that teachers' self-efficacy played an important role in the ways they used and implemented PjBL. It is important to note that PjBL includes changes in the fundamental approach to learning from a teacher-centred to a learner-centred approach. As such, the implementation of PjBL can significantly change the experience for both the teacher and the student (Choi et al., 2019). I would recommend developing a training programme for teachers at the institute where they can receive inducements to enhance their instructional and teaching practices. The training program will include procedures to facilitate the use of PjBL as a new instructional approach to support and understand its conditions and ensure teachers' adoption of these instructions as a means to improve teachers' self-efficacy beliefs; so that PjBL can be effectively implemented.

5.7 Limitations and Future Studies

There are limitations to this study; however, these limitations can be considered an opportunity for others to research further. I have based the research on the findings of a small

sample of participants who were selected by RIT department chairs in both the Department of Science and Liberal Arts and the Department of Business and Management. Only six teachers were interviewed. The sample size of the participants was dependent on the number of teachers who accepted my invitation to participate. It is worth noting that the chair of the Department of Science and Liberal Arts and the chair of Business and Management selected sixteen teachers to participate in this study, so one question that needs to be answered is, what stopped ten of those teachers from volunteering to take part in the research. There could be some possible reasons, such as, lack of interest, the study did not fit with their teaching, or had a busy teaching schedule. However, the participants I interviewed were experienced in the PjBL approach. Therefore, I believe that the collected data was invaluable to my study and sufficient for gathering an accurate understanding to teachers' practices in PjBL.

Smith (2018) explained that qualitative research findings may lack generalisability, and the findings from my study were not generalisable, as they reflect the opinions and perspectives of the participants (Creswell & Poth, 2018, Gray, 2014; O'Leary, 2014). However, the findings came up with new knowledge that can be tested in other contexts. A larger pool of participants could be interviewed to enhance my collected data further and gain other teachers' perspectives. It would also be interesting to see if this research could be replicated and applied to other universities and academic institutions in the United Arab Emirates or Gulf region to investigate and understand the implementation of the PjBL approach and compare the findings across institutions and the region at large (Gray, 2014; Ritchie & Lewis, 2003).

The outcome of this study could be enhanced further if I had more data collection points to compare my findings. I have considered other tools to collect more data from participants on the topic of PjBL, such as participant observation in the classroom; however, the institution rejected the practice. Further interviews with students to examine their views were denied, which was considered another limitation in this study. I hope that further research can be conducted to investigate students' views and opinions towards the implementation of PjBL in the classroom and how they experience this learning approach.

It is important to note that accessing other sites in the institute or interviewing other participants was a challenge that limited my capability and access to data and respondents due to

the role of the gatekeeper in the context, which might be considered another limitation in my study. However, I anticipated these challenges and gained insights and additional information in light of my research findings.

In this research, I have sought to understand the phenomenon of PjBL by gaining an understanding of the perceptions of teachers. I used interviews as a primary tool to collect data. I adopted semi-structured interviews to understand teachers' points of view and recorded all details, following best practices in conducting a phenomenological study. The research study followed descriptive phenomenology to examine teachers' practices while using PjBL to foster students' motivation. An extension of my study would be to better understand students' perspectives about their experience with PjBL, which could be determined through the use of semi-structured interviews with students to describe their experience in PjBL learning approach and share their opinions.

The data for this research study were generated from interviewing teachers reflecting on their experiences and perceptions in their local context. As a practitioner-researcher, I aimed to describe participants' points of view and opinions to have a clear understanding of the phenomenon of PjBL as experienced by teachers to motivate students to learn. According to Gray (2014) subjectivity relates to a researcher's personal experience. Subjectivity could have served as a limitation for this research study, as I collected data and was open to my own explanations. Since this study followed a qualitative research design, I conducted interviews with participants to understand their perspectives towards PjBL and their practices to foster students' motivation to learn. It was necessary to describe and interpret their ideas, opinions and attitudes. To ensure the trustworthiness of my study, I relied on reflexivity, member checking and the consistency of my research procedures. Objectivity was found through understanding the phenomenon of PjBL as described by the participants (O'Reilly & Kiyimba, 2015).

5.8 Evaluating the Study in Terms of Research Questions, Aims and Objectives

The study corresponded with those of many researchers who found that the use of PjBL motivated students' engagement and learning. In the present study, teachers perceived PjBL as a teaching and learning approach that improves students' knowledge. The study has answered my research questions, as I was able to create an understanding of the current teaching practices in the

local context, teachers' motivational practices and teachers' understanding of their role in PjBL. I aimed to investigate how teachers describe PjBL from their perspectives and determine if their practices enhanced students' motivation to learn. The findings of this research study helped in describing PjBL use and implementation in this local context. The approach was described by the teachers as positive and successful in enhancing students' motivation.

5.9 Contribution of This Study to the Discourse on PjBL

In the present study, PjBL was positioned to support, engage, and develop students' skills and provide the mechanism to deliver better instructional practices. Although this research study agreed with and affirmed the findings of other research studies, research outcomes are considered unique because I arrived at these findings after investigating the topic of PjBL at RIT, which had never been done. The study is important because a gap was found in the literature, particularly in the UAE.

This research study was conducted in a context where faculty members were western expats and not part of the local context in the UAE; the faculty members showed great embeddedness in the institute direction and the local context. Moreover, Participants added insights into the topic of PjBL, which had been newly introduced in the UAE, providing a better understanding of its implementation. It is essential to acknowledge that my research study showed that students' motivation to learn through PjBL is not only an outcome of this approach but rather a result of an ongoing process of teachers' instructions and practices in PjBL to motivate students and engage them in learning.

5.10 Reflection on the Study

Throughout my research journey and until I started the data collection, I was examining my original research question about how teachers motivate students' learning while implementing PjBL. I was not sure how teachers viewed the PjBL approach. However, by the end of the study, I came to realise that this approach was needed to ensure students' motivation and engagement to learn. I imagined the themes that came out of the data in my mind regarding PjBL practices. It is important to note that PjBL practices in this local context depended on teachers' views and perspectives towards its use and implementation.

From this thesis journey, I have advanced as a researcher, and I feel more confident in reading research reports and identifying what the limitations might be. Also, I learned that the outcome of any research is based on several factors, such as the context, the participants and the policies, and procedures. I have realised that qualitative studies cannot be taken out of context and implemented in another context without making sure to analyse all the factors that may influence them and identify their weakness and strength points. I believe I have become a more critical researcher as I was able to identify the strong and weak points in my research paper and value the entire research.

I am planning to disseminate the research and present a summary to RIT management, which will allow me to reach a wider audience and other teaching faculty members at RIT and will help to contribute to practitioners' knowledge further. Furthermore, I am planning to arrange for an academic development seminar that will help practitioners in this institute improve their teaching practices while implementing this approach in addition to holding conferences to gain more visibility on the current teaching practices to discuss the issues and ideas related to PjBL. It will be useful as well to prepare an infographic out of the conceptual map to provide a clear understanding of the teaching practices that will foster students' motivation using this approach.

5.11 Conclusion

The research study addressed the phenomenon of PjBL from the perspectives of teachers who have applied this approach to foster students' motivation. UAE's higher education, and national agenda are giving high priority to education as a fundamental element to develop the Emirati nation (U.A.E Vision, 2021). To promote innovation, creativity and ensure quality education, educators need to use new practices and innovative approaches that engage students' and allow them to be active members in their classroom. This research study creates an understanding of teachers' practices in PjBL and provides evidence of how this approach can be used for effective learning where students are motivated and engaged. Interestingly enough, UAE's higher education promoted the recruitment of educators, teachers, professors, etc., from western institutes as part of developing the nation, which was not evident in the past. Moreover, this study conducted at RIT institute showed the alignment of this western institute which included English-language expat faculty with the local context.

PjBL is an inclusive approach that requires a teacher's commitment to accomplish the desired learning goals. It is my hope that this research study, with its recommendations, will open a new discussion and will allow for more conversation on the teaching practices of PjBL, which can help the institute integrate these practices to support and enhance students' motivation and learning.

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Appendices

Appendix A - Teacher Participation Information sheet

Title of the study: Exploring Project-Based Learning Practices in Rochester Institute to Foster Students' Motivation

Invitation.

You are being invited to participate in a research study. Before you decide whether to participate, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and feel free to ask me if you would like more information or if there is anything that you do not understand. Please also feel free to discuss this with your friends, and relatives if you wish. I would like to stress that you do not have to accept this invitation and should only agree to take part if you want to.

I am conducting this research in my capacity as a student of the University of Liverpool. The data that is collected from you will be used for the purposes of my research as a student researcher from the University of Liverpool in completing my thesis and will be kept confidential.

Thank you for reading this.

What is the purpose of the study?

The purpose of this research is to expand the study of Project-Based Learning beyond the stated boundary in an effort to foster student motivation. The Research will adopt a qualitative case study using a semi-structured interview with teachers. The study will look at the Project-Based Learning practices within a learning organization guided by Dewey's (1938) theoretical framework to encourage Project-Based Learning practices as an attempt to foster student's motivation to learn.

Project-Based Learning:

In this research, Project-Based Learning refers to current teaching practices carried out in the classroom by teachers which would support students to have more control over their learning. Supporting students to learn through projects will reflect positively on students' motivation to learn compared to the traditional instructional methods of learning.

Why have I been chosen to take part?

Findings from the research can be used to identify areas that teachers could capitalise on or improvement to the current teaching practices and strategies. The participants of the research will

be teachers at Rochester Institute, specifically those who are formally involved in projects. You have been chosen as someone who potentially fits that profile.

Do I have to take part?

No. Participation in this study is entirely voluntary and you can choose not to participate any further. Should you agree to participate you are free to withdraw at any time without explanation and you can request that any data you have provided not be included in the study. A specific date will be shared with participants if they decide to withdraw from the study.

What will happen if I take part?

If you take part you are agreeing to an interview with me as the researcher, lasting 40 minutes. The interview will be at a commonly agreed time, place, where you feel comfortable that your privacy can be maintained. The interviews will be semi-structured.

With your permission, the interview will be audio/video recorded for the purpose of transcription and data analysis. The recording of the interview will be transcribed, and the file will be kept in a secure password protected storage space for five years in my password protected PC. The interview transcript will be sent to you for confirmation on its accuracy. I will use the data to write my thesis and may use parts of your descriptions in my thesis. You will be given a pseudonym and will not be identified in my thesis. The recordings will be store and password protected in a hard USB pen.

The interview session will be carried out in university's premises depending on the time of the interview. During the interview session, I will ensure that the room is locked to prevent access.

Are there any expenses, risks, and benefits in taking part?

It is not expected that you will experience any risk or harm during this study, nor should you incur any expenses, as you will be interviewed at a commonly agreed time and place. If you experience any distress or discomfort during the interviews you should let me as the interviewer know immediately. If faced with such circumstances, the interview would be paused or terminated if you wished. You are free to withdraw from the study at any time with no consequences.

There is no immediate, direct benefit to you in taking part but there will be some indirect ones. The purpose of the study is to help inform university to design projects provided according to student's expectations to foster their motivation in the classroom. There will be no gifts or reimbursement for taking part in the study.

What if I am unhappy or if there is a problem?

If you are unhappy, or if there is a problem, please feel free to let me know by contacting me at Nawar.mughrabi@online.liverpool.ac.uk or +971 561003732 and I will try to help. If you remain unhappy or have a complaint, which you feel you cannot come to me with, then you should contact my supervisor Dr. Greg Hickman at Greg.Hickman @online.liverpool.ac.uk and he will try to help. If you still remain unhappy please contact LOREC at liverpoolethics@liverpool-online.com When

contacting LOREC, please provide details of the name or description of the study (so that it can be identified), the researcher(s) involved, and the details of the complaint you wish to make.

Will my participation be kept confidential?

The data I collect is for the completion of my thesis, but there may be other opportunities to use the data for subsequent publications. I will not disclose to anyone that you participated in this study and you will remain anonymous in my thesis or any other publications. Recorded interviews and transcripts will be stored in my computer in password-protected external storage with a hard USB pen until the thesis is successfully completed and for up to five years. You will be given a pseudonym. My supervisor from the University of Liverpool and I will be the only people accessing the data and at the end of five years it will be deleted. I am conducting this research in my capacity as a student of the University of Liverpool. The data that is collected from you will be used for the purposes of my research as a student researcher from the University of Liverpool in completing my thesis and will be kept confidential.

What will happen to the results of the study?

The data from interviews will be put into descriptive form Data will be analysed and the results will be contained in my thesis to fulfil the requirements of the EdD thesis. You will not be identifiable from the results.

What will happen if I want to stop taking part?

You are free to withdraw at any time, without explanation or consequences. Results up to the period of withdrawal may be used, if you are happy for this to be done. Otherwise you may request that they are destroyed, and no further use is made of them. In a duration of one month after data collection you have the right to withdraw from the study.

Who can I contact if I have further questions?

Should you require further communication, please feel free to contact me at the following.

Name: **Nawar Mughrabi**

Work Address: **Emirates Telecommunication Company**
Training and Development Department
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United Arab Emirates

Telephone: **+971(04) 5548644 / +9710561003732**

Work Email: **Nawar.mughrabi@online.liverpool.ac.uk**

Appendix B - Participant Consent Form

Title of Research Project: Exploring Project-Based Learning Practices in Rochester Institute to Foster Students Motivation.

Researcher(s): Nawar Mughrabi **Please initial box**

1. I confirm that I have read and have understood the information sheet dated **Nov. 2018** for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline. ☐

3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide, and I can also request the destruction of that information if I wish. ☐

4. I agree to take part in the above study. ☐

5. I understand that confidentiality and anonymity will be maintained. I will be given a pseudonym and it will not be possible to identify me in any publications. ☐

6. I agree for the data collected from me to be used in future research and understand that any such use of identifiable data will not be made. ☐

7. I understand and agree that my participation will be audio/video recorded and I am aware of and consent to your use of these recordings for the following purposes:
   a) Transcription and analysis of data by the researcher for completion of thesis for EdD. ☐
   b) Transcription and analysis of data by the researcher for inclusion in any future publication.

8. I agree for the data collected from me to be used in relevant future research. ☐

9. I understand and agree that once I submit my data it will become anonymised and I will therefore can be able to withdraw my data. ☐

Participant Name	Date	Signature
Name of Person taking consent	Date	Signature
Name of Researcher	Date	Signature

Principal Investigator:

Name: Nawar Mughrabi

Work Address: Emirates Telecommunication Company
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Dubai
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Work Telephone: +971(04) 5548644 / +9711003732

Work E-mail: Nawar.mughrabi@online.liverpool.ac.uk

Appendix C - UoL Ethics Approval Certificate

Dear Nawar Mughrabi	
I am pleased to inform you that the EdD. Virtual Programme Research Ethics Committee (VPREC) has approved your application for ethical approval for your study. Details and conditions of the approval can be found below.	
Sub-Committee:	EdD. Virtual Programme Research Ethics Committee (VPREC)
Review type:	Expedited
PI:	
School:	School of Histories, Languages and Cultures
Title:	Exploring Project-Based Learning Practices in Rochester University to foster Student Motivation
First Reviewer:	Dr. Marco Ferreira
Second Reviewer:	Dr. Arwen Raddon
Other members of the Committee	Dr. Lucilla Crosta; Dr. Greg Hickman; Dr. Mary Johnson; Dr. Dimitrios Vlachopoulos.
Date of Approval:	9th January 2019
The application was APPROVED subject to the following conditions:	
Conditions	

1	Mandatory	M: All serious adverse events must be reported to the VPREC within 24 hours of their occurrence, via the EdD Thesis Primary Supervisor.

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Sub-Committee should be notified. If it is proposed to make an amendment to the research, you should notify the Sub-Committee by following the Notice of Amendment procedure outlined at http://www.liv.ac.uk/media/livacuk/researchethics/notice%20of%20amendment.doc.

Where your research includes elements that are not conducted in the UK, approval to proceed is further conditional upon a thorough risk assessment of the site and local permission to carry out the research, including, where such a body exists, local research ethics committee approval. No documentation of local permission is required (a) if the researcher will simply be asking organizations to distribute research invitations on the researcher's behalf, or (b) if the researcher is using only public means to identify/contact participants. When medical, educational, or business records are analysed or used to identify potential research participants, the site needs to explicitly approve access to data for research purposes (even if the researcher normally has access to that data to perform his or her job).

Please note that the approval to proceed depends also on research proposal approval.

Kind regards,

Lucilla Crosta

Chair, EdD. VPREC

Appendix D - Teachers' Interview Questions

Teacher Interview– Semi structured guiding questions

1- As a facilitator in your classroom, what are the key features you consider when designing a project to motivate your students?

2- How do you enhance student's skill level before implementing projects to ensure their motivation?

3- What teaching practices did you find that encouraged engagement among the students in your classroom while implementing projects?

4- How do you observe and assess student's motivation levels throughout the progress and implementation of projects?

5- How do you ensure students remain motivated throughout the learning process? Can you please tell me more?

6- How do you utilize the local context in U.A.E. to create a motivational learning environment in your classroom?

7- To what extent is your autonomy as a facilitator is responsible for fostering motivation through the learning process?

8- To what extent do you take into account the learning disabilities among students while implementing projects? How do you foster the motivation of students with learning disabilities?

9- Do you collaborate with teachers when choosing a topic for your project to reach unified learning goal that would be more effective in motivating students? Tell me more.

10- Before we conclude this interview, is there something about teaching practices you would like to share to foster student's motivation while implementing projects?