Working with teachers to adopt cooperative learning: implication for teachers' development in private higher education in Singapore.

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Declaration

I declare that no portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning

Abstract

This research focused on the development of teachers in higher private education in Singapore through cooperative learning. Cooperative learning has been widely adopted to engage students actively in the learning process (Hennebry and Fordyce, 2018). However, there has been limited focus on how it serves as a developmental tool for teachers in higher education, as most studies were focused on school-based learning (Tadesse, Asmare and Ware, 2021). The unique contribution of the current research resulted in improvement in knowledge and practices. An important consideration in this current study was fine-grained analysis to produce a detailed account of teachers' experiences and examine their impact on changing their perspectives and beliefs of teaching and learning.

This study employed longitudinal empirical research to investigate how cooperative learning impacted eight higher education teachers' development from four academic disciplines who participated in the study. In addition, twenty-two students were selected to gain insight into their learning experiences. Semi-structured interviews, focus groups, and class observations data collection methods were employed to collect diverse information. Importantly, the research was conducted for nine months to obtain rich and contextual information on how teachers developed. The analysis was presented in three parts. The first part consisted of the thematic presentation of teachers' adoption of cooperative learning. Next, full case studies for three teachers were developed to illustrate their development experiences over time. The final part examined the impacts on teachers regarding knowledge, practices and student engagement.

The original contribution to the literature showed that cooperative learning was a developmental tool for teachers shifting to student-centred teaching practices. Teachers adjusted teaching approaches, including posing questions, giving encouragement, altering activity sessions, and withholding information to encourage students' participation and contribute ideas. Significantly, the implementation of cooperative learning was more effective when the academic developer (primary researcher) worked with teachers to give them support and encourage reflection. Teachers' engagement in reflective practices deepens their understanding of teaching to active students' learning. However, teachers faced challenges in implementing cooperative learning due to tight curriculum constraints on its usage. Students were reluctant to interact with peers. The diverse classroom experiences enriched teachers' knowledge and impacted their development differently as they varied in response. The current study findings led to the development of theoretical models whereby teachers' knowledge, involvement in lesson planning, implementation and reflection in a cyclical process impact teachers' development. A distinct feature was teachers' responsiveness and adjustment to lesson planning and implementation due to contextual variables, including students' receptivity towards active participation. Teachers' reflection enhances practical knowledge, which contributes to the enrichment of pedagogy knowledge. Implementing cooperative learning is a complex process that can influence development in varied ways as teachers acquire diverse experiences. Teachers shifting their focus from student-centred and culturally responsive pedagogy create a more inclusive learning environment to accommodate diverse students' learning needs. It suggests that the adoption of constructivist teaching and reflective practices can potentially be recommended to private and public higher education institutions to improve students' engagement in learning.

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Chapter 1: Introduction

1.1. Background of the research

Cooperative learning has been widely adopted to engage students actively in the learning process. Numerous studies have examined how cooperative learning foster collaborative student engagement (Felder and Brent, 2007; Hennebry and Fordyce, 2018; Johnson and Johnson, 2018; Silva, Lopes, Morias and Dominguez, 2023). However, most research has focused primarily on how students learn and encourage active learning (Hennebry and Fordyce, 2018; Ifeome, Ngozi and Nkem, 2015). This emphasis on students has left the role of teachers in implementing cooperative learning under-explored, even though teachers play a vital role by organising students into groups and guiding the learning process (Goodyear and Dubley, 2015, Keiler, 2018; Seyoum and Molla, 2022). According to Colak (2015) and Uiboleht, Karm and Postareff (2018), teachers' engagement significantly impacts students in active students.

Implementing cooperative learning has shown diverse outcomes across Asia (Chen and Liu, 2017; Thanh-Pham, 2011; Tran, Nguyen, van De, Soryaly and Doan, 2019) and in higher education (Chang and Brickman, 2018, Herrmann, 2013; Moges, 2019). Teachers structure learning, establish students' grouping and facilitate students' engagement to inculcate participative and responsible learners (Johnson and Johnson 2009; Biggs and Tang, 2011). This study investigates how teachers' current teaching practices evolve to be student-centric when introducing cooperative learning. Significantly, such changes can encourage teachers to become more attuned to students' learning needs and rethink their teaching approaches to foster active learning. This perspective positions cooperative learning as a teaching method and a tool for teachers' professional development. However, the teachers' development is not a linear process and varies. Therefore, this underlines the significance of the current study to investigate its impact of using cooperative learning. Specifically, this study explores the experiences of eight teachers implementing cooperative learning in a Singaporean private higher education institution and examines the impact of this approach on their practice over time. The significance of academic development, active learning, multicultural classrooms, and teachers' reflection will be highlighted in the literature review, findings, and discussion chapters of this PhD thesis.

1.2. Problem statement

1.2.1. Cooperative learning in higher education

This study addresses two primary issues: the application of cooperative learning in higher education and its role in enhancing teachers' practices. First, cooperative learning has traditionally been implemented in state-owned schools, as examined by Johnson and Johnson (2002a) and Slavin (2014). More recently, it has been extended to higher education levels (Johnson and Johnson, 2014; Herrmann, 2013; Malatji, 2016; Mendo-Lazaro, del-Barco, del-Rio and Lopez-Ramos, 2022). However, outcomes for higher education students in Asia have been mixed (Chen et al., 2017; Thanh-Pham, 2011) in which they are benefits and challenges experience by teachers and students. One benefit is students learn better when they are engaged. However, there is resistance from teachers and students who are familiar with didactic teaching and learning. This empirical study uncovers how teachers change their practices when implementing cooperative learning in higher education. In Singapore, few studies have examined cooperative learning, as most studies have focused on school settings (Jacob, McCafferty and Iddings, 2006; Sim and Ananthi, 2017). The demand for higher education has undergone considerable change due to the rapid expansion of private higher education, spurred by increased demand for higher education (Qureshi and Khawaja, 2021). In Singapore alone, about 150,000 students are enrolled in private education institutions (Sam, 2018). Yet, research on teaching and learning, and cooperative learning in Singapore's private higher education sector remains unexplored. This study, seeks to address literature gaps underlining the significance in conducting research that is focused on cooperative leaning in a private education institution.

1.2.2. Using cooperative learning as a tool for teacher development

Teachers' development has received much interest due to various interpretations regarding how it occurs, and various terminology used to describe it. Despite variations, researchers agree that teacher development is important for improving teachers' knowledge (Abakah, 2023), pedagogical skills (Vella, 2015), and attitudes (Desimone, 2009). Teachers' participation in training initiatives is essential for improving teaching competencies to engage students in learning. During training, teachers benefit from exchanging classroom experiences with peers, which can increase their effectiveness (Goddard, Goddard, Kim, Miller and American, 2015). Despite its importance, teachers struggle to find time to attend training due to tight schedules

(Darling-Hammond, Hyler and Gardner, 2017) and may be unaware of the need to deepen their pedagogical knowledge (Dijk, Geertsema, Schaaf, Tartwejk and Kluijtmans, 2022). Hence, their development is impacted which can affect students' learning since teachers play important roles. Using cooperative learning could address then gap of teachers not attending training and affecting their development. Teachers' adoption of cooperative learning assumes the role of learning facilitators, modifying their engagement with students by prioritising how students learn over simply transmitting knowledge. Teachers improve their practices as they acquire practical insights to engage students to learn actively. The impact on teachers' development varies when they respond and take no different roles. With cooperative learning growing in importance in higher education and resonates with constructivist teaching, it holds significant potential to foster teachers' development.

1.3. Research questions

The research questions guiding this study are:

a) How do teachers implement cooperative learning with diverse student groups?
b) What are the impacts of cooperative learning implementation on teachers' development?

This study examines how cooperative learning influences teacher development when teachers encourage students to learn collaboratively. This results in a shift in teachers' roles, teaching practices and perceptions of teaching and learning as they evolve through the process impacting them in various ways. The use of cooperative learning is important for teachers as a developmental process.

1.4. Significance of study

1.4.1 Cooperative learning in higher education in Singapore

In Singapore, limited research has been conducted on cooperative learning, with existing studies primarily focused on primary and secondary schools (Crawford, 1995; Koh, Tan, Wang, Ee and Liu, 2007). While Gan, Menkhof and Smith (2015) studied cooperative learning in a local university, their focus was on facilitating collaboration in digital media projects. Notably, research on cooperative learning within private education institutions (PEIs) in Singapore is scarce, with database searches yielding no relevant studies in this context. Private education plays a significant role for students pursuing higher education locally in Singapore (CPE, 2010;

Yahya, 2017). This research, therefore, represents a novel contribution by examining how cooperative learning affects teachers and students in a Singaporean private education institution. Existing studies predominantly explore cooperative learning as a student-centred teaching method, yet its potential as a developmental tool for teachers remains underexplored. Teachers' development is important as it impacts their professional role and also how they engage students to learn to achieve desirable learning outcomes.

1.4.2 Employing qualitative research to understand teacher development

Previous studies by Johnson and Johnson (2005; Johnson and Johnson, 2009) have established the efficacy of cooperative learning through experimental studies and meta-analysis. However, while meta-analysis provides overviews of learning outcomes such as academic results and self-esteem (Johnson and Johnson, 2009), it lacks nuanced insights into teachers lived experiences, particularly regarding how they adapt cooperative learning to diverse student needs, class sizes and subject areas (Jacob and Loh, 2003; Nan, 2013). This research leverages qualitative methods to capture teachers' unique experiences and adaptive strategies in implementing cooperative learning. Qualitative research is crucial for the capturing of detailed insights to uncover, analyse and understand teachers' cooperative learning implementation (Creswell, 2009). Interpretation of qualitative data elucidates meanings derived from the collected information and provides significant insights into teachers' experiences (Njie and Asimiran, 2014). Despite participating in multiple academic development sessions, teachers implemented cooperative learning differently. Teachers' development is inherently complex, and the adoption of longitudinal research is essential to comprehend how changes occur over time.

1.4.3 Academic development to support teachers in implementation

A key aspect of teachers' cooperative learning implementation has been the academic development they experienced. While research shows that training can effectively shift teaching methods and beliefs (de Vries, van de Gift and Jansen, 2014), this study highlights the importance of academic development that occurs beyond formal training. During data collection, teachers engaged in reflective dialogues with the researcher and their peers, facilitating ongoing reflection resulting in them adjusting their teaching practices. Thus, academic development emerges as a critical component of cooperative learning implementation, offering opportunities for professional growth through reflection and peer

interaction which could impact teachers in developing differently. This differs significantly from quantitative studies, such as meta-analyses, which measure outcomes via pre- and post-tests (Johnson and Johnson, 2009) and may overlook the developmental nuances uncovered in qualitative, longitudinal studies, which are important to understand how teachers develop.

This current research involves me as a researcher working with the teachers in Shine Academy to implement cooperative learning practices. As I worked collaboratively with the teachers, I saw myself as a partner in their implementation process, which is a significant aspect of this research. Implementing cooperative learning poses a significant challenge for educators, especially when they lack familiarity with practices that actively engage students in the learning process. Therefore, offering suitable assistance can influence teachers' development in multiple ways, underscoring the importance of the present study.

1.5. Importance of context in influencing teaching and learning

1.5.1. Introduction

Understanding the unique context within which this study on cooperative learning in private higher education takes place is crucial. The educational landscape and institutional factors shape how cooperative learning is implemented and experienced by teachers and students. This section explores three key areas: the broader Singapore education system, the role of private education, and the characteristics of private education institutions (PEIs) in Singapore, which form the focus of this research.

1.5.2. Singapore education system and higher education

The Ministry of Education in Singapore oversees education development and management, structuring students' academic journey around three major milestones. Students complete six years of primary education, beginning at age seven, followed by the Primary School Leaving Examination. Based on the results, students then enter secondary education, lasting four to five years (MOE, 2023). Most Singaporeans receive their first ten years of schooling in public, state-funded institutions, which are compulsory and heavily subsidized (Low and Tan, 2017). Students have several options for post-secondary education, including junior colleges for A-level certification, polytechnics for diploma programs, and specialised institutions offering the International Baccalaureate (MOE, 2023). From here, students can progress to universities, including state-subsidized and private universities (Basillote, Gradus, Lamb, Sharoni and

Thnget 2016). Due to cost factors, many Singaporeans prefer government-funded institutions, as they tend to be more affordable and lead to higher employment rates due to employer preferences for local graduates (Chan, 2024a). Singapore's six autonomous universities, including the National University of Singapore and Nanyang Technological University—ranked eighth and fifteenth globally in QS's 2024 rankings, respectively offer diverse programs and enjoy internal governance autonomy (MOE, 2023; Chan, 2024b). Autonomous universities cater to Singapore's rising demand for higher education, with over 95,000 students enrolled (Basillote et al., 2016). This trend aligns with the growing international demand for higher education, particularly in Asia, where UNESCO (2022) forecasts an increasing number of students pursuing overseas education, anticipating 70% of all international students to be from Asia by 2025 (OECD, 2015).

1.5.3. Private Education and PEIs in Singapore

The higher education landscape has experienced significant changes recently, with a growing number of international students studying abroad (Qureshi and Khawaja 2021) has led to significant growth in private higher education institutions. Private higher education institutions (PEIs) contribute to a third of the global enrolment for students pursuing higher education (Bothwell 2018). PEIs in the current study are commercial entities that offer post-secondary education programs, diplomas and degrees (Yahya, 2017). Recent estimates indicate that approximately 65,400 international students are currently enrolled in PEIs, a number that significantly declined during the 2020-2021 pandemic but has subsequently rebounded, although it was previously near to 100,000 (The Business Times, 2022).

In Singapore, PEIs operate in a distinct regulatory framework under the oversight of the Ministry of Education and, since 2016, the Committee for Private Education (CPE) was established to elevate and monitor the quality of private education (Yahya, 2017). CPE enforces strict standards, including the EduTrust Certification, a quality assurance program that mandates annual or bi-annual audits based on an institution's certification status. This certification ensures that PEIs maintain high educational standards (CPE, 2010). As a monitoring agent, CPE's regulations and guidelines affect three main groups of stakeholders: PEI, teachers and students. CPE's regulation influences among various things, the type of qualifications PEIs can award, the type of teachers appointed to teach courses and students' enrolment into PEIs.

Unlike public institutions, PEIs are often smaller, family-owned or privately managed organizations, typically with fewer than 1,000 students (Asian Development Bank, 2012). These institutions are primarily self-funded, relying on tuition fees for revenue. They play an important role for local students who cannot gain entry into autonomous universities, as well as for international students seeking opportunities to pursue external degree when autonomous university is not an option. While PEIs are permitted to award qualifications ranging from certificates to diplomas, they are not authorised to confer degrees independently— only public universities may do so (Sam, 2017). To meet the demand for degree-level courses, PEIs establish partnerships with overseas universities, primarily in the United Kingdom (UK) and Australia (SkillsFuture, 2024), through external degree programmes or transnational education involves students pursuing a foreign degree programme while remaining in their home country has registered phenomenal growth (Montgomery, 2014). UK universities such as the University of Birmingham, Northumbria University, the University of Essex, and the University of Warwick have partnered with PEIs to deliver these qualifications in Singapore (Sam, 2017). Currently, 26 PEIs in Singapore, including Shine Academy, where this research is conducted, offer EDPs (SkillsFuture Singapore, 2024). These partnerships create a unique environment within the teaching and learning landscape, with course delivery either partially or fully outsourced to PEIs, depending on the agreement with partner universities (Sam, 2017). Although transnational education offers opportunities which widen the choice of a degree programme, Leask (2004) argued unique challenges whereby PEIs are required to adapt the curriculum to reflect local context. Degrees in business, hospitality, and information technology are particularly popular for their cost-effectiveness and aligned with market demands with half of all PEIs offering these programs (Hunt, 2016). This provides an overview of some of the courses and programmes PEIs in Singapore offer.

PEIs are known to attract students from neighbouring countries, leading to cultural diversity in classrooms. Students exhibit diverse learning abilities and preferences ranging from passive to active learning. Moreover, students face challenges with English language proficiency, requiring more time to learn compared to native English speakers (Sam, 2017). This present challenges to teachers to accommodate differences in learning preferences. Furthermore, it is common for PEI students to complete their degrees in a shorter period, typically less than two years compared to three-year programmes in public universities, which serves as a competitive selling point (Sam, 2017). Hence, PEIs structure their semesters to include more intensive classes and shorter semester breaks (Sam, 2017) to generate higher revenue for PEIs through

increased intakes. It compromises learning by placing significant pressure on students, limiting the time available to absorb and understand concepts and for teachers to cover syllabi within tight curriculum. As a result, didactic lectures are frequently used in these settings for information transmission, which is not ideal for engaging students in active learning (Felder and Brent, 2007). PEIs may not necessarily provide a conducive learning environment for teachers and students due to the circumstances highlighted.

To manage costs, PEIs employ a mix of full-time and adjunct teachers, with adjunct often comprising at least 50% of the teaching workforce (Sam, 2017). Adjunct teachers bring varying pedagogical approaches and teaching experiences; however, the reliance on adjunct teachers contributes to a higher attrition rate, presenting a challenge for PEIs in managing staff turnover (Anis, Islam and Abdullah, 2018). Higher turnover may undermine student confidence (Nair, Sahu and Sadom, 2024). Since adjunct teachers typically work at multiple PEIs, they may not consistently assess student understanding from one topic to the next (Sam, 2017), leading to surface learning approaches, where students focus on memorisation without integrating new concepts with prior knowledge. Moreover, teaching staff in PEIs are hired solely to teach and are not required to conduct research or publish academic papers (Hunt, 2016; Sam and Loh, 2018), a contrast with public university faculty, who dedicate considerable time to research and publication (Sam, 2017). While this focus may allow PEI teachers to concentrate on teaching, it limits their ability to share broader research insights with students. This underscores the importance of PEIs to provide academic development to improve teachers' pedagogical knowledge and skills. Adjunct teachers face challenges in attending these programs due to a lack of remuneration or scheduling conflicts, potentially limiting development efforts to full-time teachers only. As a result, this study recruits only full-time teachers. Students' diversity and limited pool of full-time teachers underscore both the opportunities and challenges in teaching and learning within PEIs, particularly when adopting student-centred learning approaches, such as cooperative learning initiatives.

The above discussion provided insight into Singapore's private education landscape. The predominant presence of international students in PEIs introduces opportunities and challenges when engaging students to learn actively from teachers' perspectives. It highlights the importance of the current study to learn of teachers' teaching practices in the private higher education context which is an uncommon research field. PEIs primarily employ adjunct teachers, and the high teaching load impacts teachers' preparation for lessons, teaching

approaches, use of learning activities to engage students, and ability to participate in academic development sessions are the features of the challenges faced by teachers. Chapters Five through Seven will examine how teachers implemented cooperative learning and its impact on their teaching.

1.6 Personal statement

At the point of my PhD study. I served as a full-time academic at Shine Academy for seven years. The encouragement from my superior and my interest in cooperative learning inspired me to pursue this research. At the start of my study, my goal was to implement cooperative learning at Shine Academy as an effective teaching method to introduce teachers' influences by its positive impact on student learning as evidenced in academic journals. In addition, cooperative learning is rarely implemented in private higher education. My PhD study had an academic purpose and was unrelated to my role as a teacher, as I did not see the connection between them. Towards the end of my PhD, I realised how wrong my previous misconception as the research activities I had taken profoundly influenced my academic practice, which I will discuss further in chapter eight in the reflection journal section. The present study was important as it allowed me to see beyond its academic purpose and establish a meaningfully connection with my professional practice.

1.7 Clarity of terminology

The following terms have been defined to provide an understanding of ambiguous terms found in the research.

Teachers can refer to those at the high school level and those at the post-high level, i.e. university level. Several sources use the term “teachers” even for those teaching at the university level. These sources include Kember (1997), Postareff and Lindblom-Ylanne (2008) and Fry, Ketteridge and Marshall (2014), who refer to “teachers” in higher education, whereas King (2004) uses the term “academics” to denote those who teach in higher education. In the current study, “teachers” can mean those who teach at both pre-high school and post-high school levels, while “higher education teachers” refer specifically to those who teach only at the tertiary level.

Teacher practices include teachers' pedagogical activities (Farrell, 2016). They refer to the methods and techniques adopted by teachers within an educational context (Cishe, Mantlana,

and Nyembezio, 2015). Thus, teaching practices describe teachers' behaviour in the classrooms (Cishe, Mantlana, and Nyembezio, 2015). In the current study, teaching practices refer to teaching methods and approaches.

The terms development, change, and shift are used interchangeably to refer to teachers' development. Boylan, Coldwell, Maxwell, and Jordan's (2018) article examined several teacher development models in which the term "changes" is adopted. Hughes, Baume, Silva-Fletcher, and Amrane-Cooper (2023) use "change," "changes," and "shifts" interchangeably to denote teachers' development of teaching conceptions.

Academic development, teacher development, and professional development are interchangeable terms. To differentiate, academic development involves initiatives to improve higher education teachers in teaching, research, and public engagement roles (Boud and Brew, 2013). Conversely, teacher development consists of improving teachers' knowledge and practices to improve students' performance (Korthagen, 2016) in pre- and post-secondary education. Professional development entails programmes to improve teachers' knowledge via either attending conferences, or formal or informal learning (Malik, Nassim and Tabassum, 2015). These terms convey different meanings relating to development.

1.8 Overview of the thesis structure

Figure 1 depicts the thesis structure, including the eight chapters. Next, a brief description of Chapters Two to Eight will indicate the key points to be discussed and analysed. Chapters Two and Three contain the literature reviews relevant to this research. Chapter Two discusses several aspects of cooperative learning and contains two main sections. The first section examines foundational theories and knowledge of cooperative learning, followed by the application of cooperative learning in higher education, multicultural classrooms, and group formation.

Chapter Three focuses on academic and teacher development, which covers a broad spectrum. It begins by examining between the two terms and what teachers' development entails. Next, several developmental models will be evaluated to understand the different ways in which teachers develop. Thirdly, the discussion will address factors that influence teachers' development, including their engagement in reflection, participation in professional development, and collaboration with peers.

Chapter Four presents the research carried out in this study. It consists of three main sections.

The first section portrays the research context, which provides an overview of the teachers and students involved in this research. The second section covers the research methodology, design, and data collection methods. The research result and key findings will be discussed in greater detail in the following chapters. The coding and themes from these chapters will also be analysed and concluded with discussion of thematic writing and case study development.

Chapters Five to Seven contain the research outcomes. Chapter Five thematically analyses how teachers implemented cooperative learning into their lessons. It includes insights into lesson planning, group formation, the roles teachers play, and how they engage students in active learning. Chapter Six takes a closer look at three teachers who implemented cooperative learning, highlighting contrasting outcomes in their approaches and variations in their understanding of cooperative learning. Chapter Seven focuses on the impact of using cooperative learning, the challenges teachers face, and the adjustments they make to overcome the challenges posed by the teaching and learning context.

Chapter Eight, the last chapter, discusses the two research questions. The findings in the research led to the development of proposed models of teacher development through the use of cooperative learning. Due to contextual factors, the teachers in this study implemented cooperative learning differently by adjusting and partnering with students. Finally, the unique contributions and recommendations will be outlined to highlight how this current research contributes to the literature on teacher development and cooperative learning. This chapter will conclude with a summary encapsulating the key ideas of the thesis.

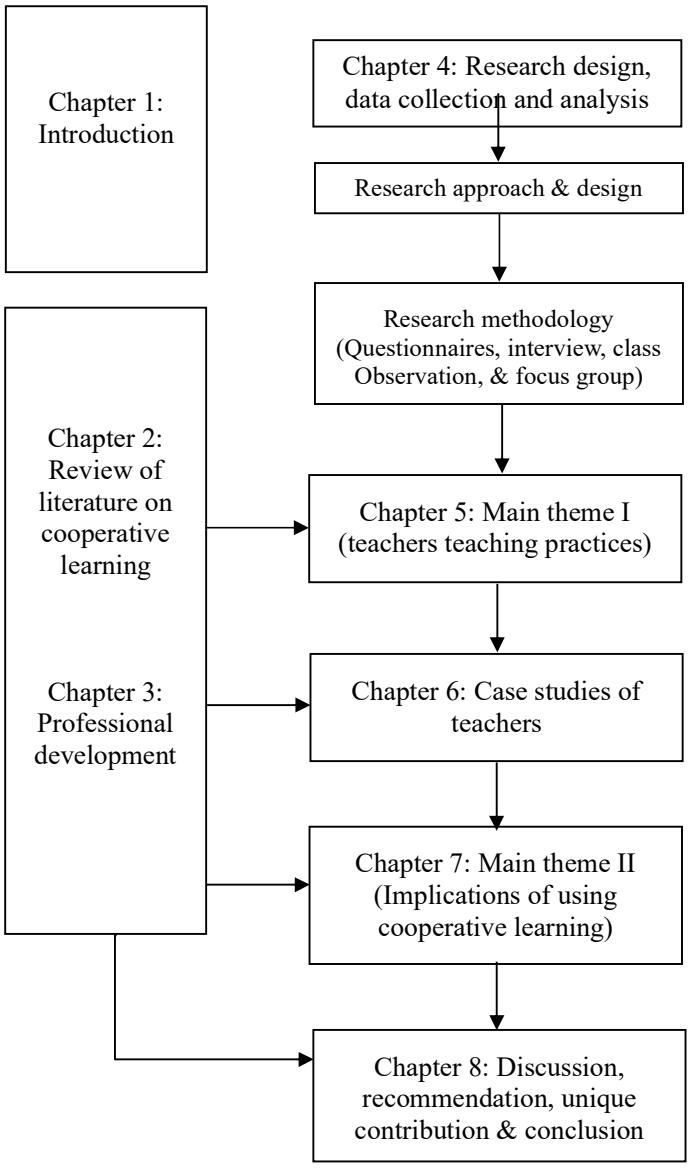

Figure 1 Structure of thesis

Chapter 2: Literature review I: Cooperative learning

2.1. Introduction

Cooperative learning has been widely adopted across various educational settings from schools to higher education. Since the current study involves teachers implementing cooperative learning, an understanding of it as a strategy, how it has been used previously and evidence for effectiveness is essential. To establish a firmer grasp of the concept, Table 2.1 outlines the structure of the chapter.

This literature review is comprised of two primary sections. The first section considers the theoretical principles which underpin cooperative learning, offering insight into the framework. These principles include theories on constructivism, cognitive elaboration and Johnson's model with a focus on active student learning and cooperation. The second section examines the application of cooperative learning in various settings, including higher education, multicultural classrooms, and group formation, to uncover the opportunities and challenges associated with its application. A significant aspect of the literature review is to allow for comparison with the findings derived from the present study on cooperative learning in higher education, potentially revealing unique findings as a contribution in this PhD.

Table 1 Overview of literature review on cooperative learning

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2.1. Introduction to cooperative learning and cooperative learning theories

2.2. Theoretical development of cooperative learning

- 2.2.1. Constructivism theory and types of constructivism.
- 2.2.2. Cognitive elaboration theory
- 2.2.3. Johnson and Johnson conceptual framework for cooperative learning
- 2.2.4. Comparing cooperative learning and collaborative learning.

2.3. Application of cooperative learning

- 2.3.1. Applying cooperative learning in higher learning.
- 2.3.2. Teachers and students' roles during cooperative learning
- 2.3.3. Teaching and learning in multicultural classrooms
- 2.3.4. Types of students group formation in cooperative learning

2.4. Conclusion

2.2. Theoretical development of cooperative learning

Several definitions of cooperative learning have emerged from different authors, and these provide an immediate insight into two key features of cooperative learning. The first feature relates to the emphasis on small-group learning, highlighting the importance of collaboration among students. Learning tasks are arranged to encourage students to work to accomplish given tasks and objectives (Felder and Brent, 2007; Johnson and Johnson, 2009), making students accountable for their learning. Hence, cooperative learning focuses on students being engaged in learning. The second characteristic involves students interacting with and sharing resources when they cooperate (Ifeoma, Ngozi, and Nkem, 2015; Tran, 2014), widening students' perspectives. Students gain knowledge through peer learning as they help one another (Biggs and Tang, 2011; Ghaith, 2018). Significantly, cooperative learning transforms students from passive to active learning when they are engaged in learning (Biggs and Tang, 2011; Johnson and Johnson, 2018). Although these definitions focus on students working collaboratively, teachers assume essential roles in designing learning activities, grouping students and facilitating students' learning. The crucial roles assumed by teachers will be examined throughout this thesis to understand how they implement cooperative learning and engage students in learning, impacting the development of teachers being the focus of the current study.

> "It is teaching methods in which teachers organise students into small group to work together to help one another learn academic content".
>
> Slavin (2014), p. 785

> "Cooperative learning consists set of methods in which students work together in small groups and help one another to achieve learning objectives".
>
> Johnson and Johnson (2009), p. 69

> "Involves instructional use of small group so that students work together to maximise their own and each other's learning".
>
> Johnson, Johnson and Smith (2013), p. 3

2.2.1. Constructivism theory and types of constructivism

The cornerstone of cooperative learning is active student learning, central to constructivism. Constructivism is founded on the tenet that students should actively generate information rather than passively receive it (Bhattacharjee, 2015; Fernando and Marikar, 2017). Students benefit

when they construct knowledge and draw conclusions from the learning materials, which enhances their understanding (Amineh and Asl, 2015; Fernando and Marikar, 2017). Importantly, learning becomes personalised and meaningful to students when they connect new information with existing knowledge, and it helps to deepen their insights. Students are encouraged to examine from multiple perspectives, broaden their knowledge and evaluate from different viewpoints (Lund and Hauge, 2011). However, Nguyen and Le (2024) argue that students' backgrounds and past learning experiences shape their interpretation of information. This means that when students encounter learning experiences that differ from previous experiences, they may face challenges adjusting their learning approaches. Asian cultures do not align with constructivist practices as students are passive listeners (Nguyen and Le, 2024). Students accustomed to information presented in an organised manner may find that peer discussion leads to disorganised information acquisition (Phuong-Mai, Terlow and Pilot (2006). This affects their understanding and results in varied learning and knowledge acquisition. Students struggle to learn actively and independently when constructivist teaching is enacted (Alt, 2017). Hence, there are diverse outcomes in using constructivist teaching.

Constructivist teaching requires students to adjust their learning approaches, which may benefit students differently. Significantly, there is a shift in teachers being the source of knowledge to students towards encouraging active student engagement in constructivist teaching (Holmes, 2019). This necessitates a shift in teachers' pedagogical approaches. Given that higher education teachers hold varied interpretations of constructivism, they consequently adopt a range of teaching practices (O'Conner, 2020). However, due to insufficient training in constructivist teaching, teachers often lack the necessary knowledge to effectively engage students in knowledge construction (Nguyen and Le, 2024). Another issue is that the gap between constructivist teaching and curriculum determines the content to be delivered. While teachers are encouraged to deliver constructivist teaching, the curriculum is not updated and not aligned with constructivism, leading to confusion among teachers in higher education (O'Conner, 2022). Adjusting curriculum to support constructivist teaching is a time-consuming affair that has not been given much attention (O'Conner, 2022). Despite teachers being encouraged to deliver constructivist teaching in higher education (Biggs and Tang, 2011), gaps in teachers' knowledge, competencies and alignment of curriculum lead to teachers' inability to engage students to learn constructively. Adopting constructivism requires teachers to know of students' prior knowledge and skills, which can be challenging when students vary considerably (Mohammed and Kinyo, 2020), indicating teachers devote a significant of time

and effort. Hence, adopting constructivist teaching and learning can be challenging for students due to the cultural differences regarding of how students in Asia learn and teachers lack training and familiarity with using interactive teaching practices.

Moreover, Kirschner, Sweller and Clarke (2006) argue that the teacher's role is complex in promoting active learning in a constructivist environment. Teachers take on different roles in facilitating learning, from closely guiding students to providing minimal guidance based on their interpretations of constructivism. Due to variations of teachers performing their facilitation roles, while constructivist teaching can benefit students' learning, the effectiveness is contingent upon the skills and abilities of the teachers assuming their roles. Kirschner, Sweller, and Clark (2006) and Amineh and Asl (2015) further argue that minimal guidance of students from teachers undermines the role of teachers in engaging active students' learning. Conversely, several scholars recognise that teachers play crucial roles, including Hmelo-Silver, Duncan, and Chinn (2007) and Bhattacharjee (2015), who assert that teachers organise information around big ideas to engage students to develop new insights. Furthermore, they supported students' learning by posing clarifying questions, soliciting feedback, and fostering active discovery (Felder and Brent, 2007; Shimazo and Aldrich, 2010; Tran, 2013). The discussion shows diverse interpretations of constructivism and changing teachers and student roles which this study will delve in greater depth in how adopting different teaching practices to actively engage students. Differences in teachers' understanding, knowledge, and skills in delivering constructivist teaching affect learning; hence, it is crucial for teachers to receive training to engage students. Cognitive and social constructivism are the two strands that influence how teachers engage students to learn differently.

Cognitive constructivism believes students assume learning responsibility to develop knowledge. To effectively engage students, it is essential for teachers to comprehend students' prior knowledge as it influences their engagement. However, engaging students to learn differently in a large class is resource intensive, demanding much time and effort (Nguyen and Le, 2024). Keramati and Gillies (2022) assert that time constraints caused by tight curriculum scheduling exacerbate the challenge to teachers in higher education in adopting differentiated teaching to engage students. Another critique of cognitive constructivism is its excessive focus on cognitive growth, neglecting the influence of teaching context impacting teachers and students. Teaching context includes educational resources, students' learning preferences and the opportunities to encourage individual student thinking (Alanazi, 2016). Alanazi (2016)

argue that it is difficult to separate the social environment from the learning process when they are integrated (Alanazi, 2016). Teaching and learning are social processes in which knowledge is intertwined with social context. Hence, it is challenging to determine whether cognitive ability alone impacts learning. Furthermore, while cognitive engagement fosters deeper learning through active involvement and reflection, its effectiveness depends on a balanced interplay between teachers and students. Students with diverse beliefs, knowledge and experiences either promote or hinder critical thinking (Kwan and Wong, 2015). A study found that constructivism does not necessarily lead to students' critical thinking when they engage cognitively due to the lack of strategic awareness and surface-level learning on familiar information (Kwan and Wong, 2015). Instead, it results in students engaging in less critical thinking when exposed to familiar information. Hence, the impact of cognitive constructivism varies, as evidenced by the arguments presented in the discussion.

In contrast, social constructivism posits that knowledge is developed through social interaction with peers as an integral part of learning. Teachers cultivate a conducive social environment in which interaction among students can provide essential support to one another (Bhattacharjee, 2015). Forming mixed grouping enriches knowledge through sharing and exchanging diverse learning experiences. Students' learning improves when they receive support from more competent peers and teachers (Holmes, 2019; Vygotsky, 1978). Akpan, Igwe, Blessing, Mpamah and Okoro (2020) elucidate that involving students in peer discussion facilitates communication, critical thinking and reflective thinking. Teachers' and students' engagement exchange ideas and improve comprehension of discussion topics. However, King (2002) argued limitations of peer learning rarely engaged students in deep learning and exchanging of complex ideas. Peers may not possess similar levels of knowledge, which hinders students from gaining knowledge. Moreover, students' learning is impaired by insufficient guidance from teachers arguing an over-emphasis and limitations on the role of the social environment in promoting knowledge enhancement. Alanazi (2016) echoes that social constructivism promotes group learning, undermining students' ability to learn independently. Hence, there is an over-reliance on teachers and competent students to provide learning support, impacting their development to be independent learners. Fox (2001) argues active engaged learning is essential for learning rather than students passively receiving knowledge from peers. Another critique of social constructivism, according to Alanazi (2016), is that dominant students who are more active overshadow the less active students. It results in unequal participation, and those who are less active will remain passive. Students' developments are, therefore, impacted

when they are less independent and active due to social constructivism. Furthermore, Grossman, Dean, Kavanagh and Herrmann (2019) add that competent students reject the work of less capable peers, affecting students' collaboration. Hence, the argument that students receive assistance from peers to promote learning appears to be over-simplified. Moskal, Loke and Hung (2016) argue that students were uncomfortable acknowledging their weaknesses, which aligns with Phuong-Mai's (2019) profess that Asian students are protective of their faces as a public image, making it difficult for them to seek help when they feel vulnerable. The above discussion underscores that although social constructivism promotes students working closely and enriches students through exposure to diverse knowledge, individual differences such as reliance on peers, hesitance to disclose weaknesses for support, and the predominance of more capable students can hinder the learning process.

Despite their differences, cognitive constructivism and social constructivism are complementary in their approach to student learning. Learning occurs through the interaction of personal understanding and social engagement which underscores teachers' role to encourage students to involve knowledge construction socially and allow opportunities for students to understand what they learned. Significantly, constructivist teaching demands that teachers rethink their roles and engage students actively in the learning process, moving from simply transmitting knowledge to facilitating students in constructing their understanding which could impact on their development differently.

2.2.2. Cognitive elaboration theory

The cognitive elaboration theory emphasises how students' involvement in explaining information to peers impacts students' learning process. O'Donnell (2000) and Zakaria, Chin and Daud (2010) highlight that explaining and clarifying ideas improves learning as students organise their thought processes. Van Blankenstein, Dolmans, van der Vleuten and Schmidt (2013) elucidate that elaboration refines students' existing knowledge, resulting in the deeper processing of knowledge and forming new knowledge. It enhances knowledge retention when they engage in learning (Slavin, 2014). Therefore, elaboration is an active learning process. Cooperative learning facilitates students sharing and explaining information to peers. Pressley, McDaniel, Turnure, Wood, and Ahmad (1987) argue that cognitive elaboration helps less competent students to improve knowledge acquisition by addressing gaps, while more competent students may face challenges in the learning process. As a result, the less competent students gain more knowledge compared to the more competent students. Levin (1988) posits

that elaboration is meaningful and compatible when it taps into students' prior knowledge. However, students who hold misconceived prior knowledge cause confusion (Blankenstein, Dolmans and van der Vleuten, 2013). Students' discussions could be impacted by misguided information when peers exchange knowledge. In this case, elaboration causes students to be misled rather than benefitting them. Furthermore, students who elaborate without prior knowledge can lead to misconceived knowledge when their existing knowledge is tapped into, which affects learning (Blankenstein, Dolmans and van der Vleuten, 2013). Replying to students to address the knowledge gap is beneficial for those who are less competent. Those who are more competent may not find learning to be a challenge. Levin (1988) asserts that guidance from teachers is crucial for students who are less competent to assist them in organising information, unlike competent students in which explaining and receiving knowledge from peers is more effective in promoting learning. As a result, engaging students in cognitive elaboration yields different outcomes, arguing that peer explanation varies according to student knowledge and competency level.

Cognitive elaboration has limitations as it exerts pressure on student learning cause by information complexity, which increases cognitive demand and hinder critical engagement, according to Sweller (2011). A further limitation is the assertion that elaboration is effective in promoting knowledge retention as it involves students engaging with learning materials (Levin, 1988). Students learn differently and engaging them to elaborate on information may not necessarily lead to recalling information if they engage in superficial learning instead of cultivating deep engagement with learning materials. Furthermore, arguing that students learn in a similar manner contradicts the principles of cognitive and social constructivism, which argues that teachers should engage students in learning differently due to their varied knowledge and backgrounds. Students must go beyond recalling information in higher education, whereby they can gain new perspectives when they exchange information. Although teachers seem to play a less important role in cognitive elaboration when students undertake self-directed learning, to ensure that students engage in deep conversation, teachers monitor and intervene on students' engagement (Bähr and Wibowo, 2012) is essential. It underscores teachers' role in encouraging cognitive elaboration among students. The effectiveness of cognitive elaboration on students' learning varies as there are different perspectives on how different students gain or limit knowledge acquisition impacting them difficulty. It is therefore for teachers in using cognitive to be cognisant on the effects on students while promote active learning.

2.2.3. Johnson and Johnson conceptual framework for cooperative learning

Johnson and Johnson conceptualised the cooperative learning framework, which consists of five components outlined as prerequisites for effective cooperative learning implementation. It includes positive interdependence with a focus on organising tasks to encourage student interaction to assist and encourage one another to achieve success. Teachers allocate resources, assign students roles and reward joint rewards for promoting students' interdependence (Johnson and Johnson, 2002b). Face-to-face interaction entails encouraging group members to interact, explain, elaborate, and clarify knowledge gaps (Ifeoma, Ngozi, and Nkem, 2015). Teachers engage students to gather and share information, leading to better decision-making when they take into consideration of various perspectives (Johnson and Johnson, 2002a). Moreover, students possess small-group interaction skills essential for sharing and communicating information and fostering teamwork (Bossche, Segers, and Kirschner, 2006) leads to the development of trust and acceptance of group essential for effective collaboration. On the other hand, individual and group accountability relates to students being held accountable for their contributions to group projects. Finally, group processing involves students reflecting on areas of improvement during cooperative learning, enhancing students' participation, learning social skills and practising cooperative skills (Ifeoma, Ngozi, and Nkem, (2015). Although cooperative learning principles is widely recognised by many scholars (Shimazoe and Aldrich, 2005; Gillies, 2016; Seyoum and Molla, 2022), there are a number of critiques regarding these characteristics, which will be explored next.

Fostering positive interdependence including creating different or similar resources and rewards to promote students' collaboration. Resource independence relates to assigning identical resources to students, whereas positive resource interdependence involves teachers distributing complementary resources (Ortiz, Johnson and Johnson, 1996). Buchs, Buteria, and Mugny (2004) found in a higher education institution's study that engaging students with resource independence leads to group members being over-reliant on peers for knowledge and impact on learning. Buch Butera and Mugnyet (2004) contradicted Johnson's (2009) assertion that positive interdependence leads to mutual gain for students. Furthermore, Buchs, Butera, and Mugny (2004) argued that in higher education, students' familiarity with learning in a competitive environment where they are presented with identical information does not promote cooperation as they do not perceive a need to collaborate. This lack of diversity of information reduces the need for students to engage in discussion and sharing information.

Instead, students learn individually without depending on peers, resulting in ineffective cooperation. Therefore, there are limitations of focus on structuring learning activity. This study on the other hand showed alternative means of how teachers organise lessons instead of structuring activities to encourage students to work together. Conversely, Cecchini, Carriedo, Méndez-Giménez and Fernández-Río (2021) and Tran, Nguyen, van De, Soryaly and Doan (2019) assert that cooperative learning is effective in motivating students to share information. Serrano and Pons (2007), in a study on higher education students, found that students cooperated closely due to reward structures rather than creating positive interdependence. Hence, the assertion of positive interdependence to promote student collaboration is unclear due to conflicting outcomes. Similarly, Slavin (2014) argued that rewards based on group performance are crucial to encouraging students, but organising learning tasks is effective even in the absence of rewards. Scager, Boonstra, Peeters, and Vulperhorst (2016) add inconclusive outcomes when using rewards to promote interdependence since rewards motivate students externally but not intrinsically. Hence, there may not be a long-lasting change in learning behaviour suggesting that changes in students' behaviour is short-term. The effectiveness of rewards is inconclusive. Furthermore, it is presumptuous that students can effectively collaborate independently without teachers intervening to encourage students. Divergent interaction between students may impede their ability to collaborate effectively when students with different skills and nationalities are grouped (Alanazi, 2016; Chen and Liu, 2017; Kelly (2009). As a result, students may not benefit when they vary in their ability to interact effectively. Thanh-Pham, Gillies and Renshaw (2008) argue that excessive control exerted by group members can pose a threat to the establishment of close relationships. Although organising learning tasks promotes positive interdependence (Johnson and Johnson, 2009), several practical factors to be considered, including how students respond to resource interdependence, using rewards to foster teamwork and closer cohesion among group members, impact students' learning behaviour.

To encourage face-to-face interaction, Slavin (2014) asserts that mixed groups should have no more than four students to promote learning through face-to-face interaction. Placing students in mixed groups is essential to promote peer learning (Felder and Brent, 2007); however, group members take time to know one another and work together (Kelly (2008). Grouping students to encourage face-to-face interaction does not mean students cooperate effectively when groups are initially formed. Hence, group size is a less important factor in influencing students working together; rather, it is the ability of students to work closely together and contribute. Katawazai

and Saidalvi (2020) argue that not every member in the group contributes, resulting in unequal participation. Tharayil, Borrego, Prince, Nguyen, Shekhar, Finell and Waters (2018) assert that students are resistant to active learning as they are required to exert more effort in learning compared to when they are used to learning passively. Kelly (2008) argues that in mixed-gender groups, male students tend to be more active and influential than females, whereas Koppenhaver and Shrader (2003) concluded that females perform better when assigned complex problem-solving. Hence, students interacted differently due to gender differences. Although Johnson's model suggests that placing students in proximity to each other offers benefits, the discussion can also have complications. Members' composition, including dominant students and diverse genders, affect face-to-face interaction. In addition, cooperative learning allows students to develop interpersonal skills such as communication, teamwork, leadership and problem-solving (Bossche, Segers and Kirschner, 2006). Students developing trust, acceptance, and mutual support affect how well they work together (Johnson and Johnson, 2009). Bossche, Segers, and Kirschnere (2006) emphasise that interpersonal context is a crucial criterion for understanding team members' engagement in coordinating their understanding. Although teachers impart students with social skills to promote cooperation (Tran, 2014), empirical studies show students encounter difficulties in reaching agreement due to different perspectives. To resolve differences in views, they made compromises which hindered learning (Baehtold, Roca and Checchi, 2023). As such, students may perceive their collaborative experiences to be challenging. Gu, Solmon, Zhang, and Xiang (2011) assert that cohesion is essential in fostering teamwork. However, cohesion depends on contextual factors, including how students are assessed. Sridharan, Tai and Boud (2018) argue that students exhibit more independent behaviour in summative assessments than group-based assessments, fostering dependent behaviour. Encouraging face-to-face interaction is more than placing students in proximity. Teachers' attentiveness is important to enhance their learning since students vary in interaction. The significance of this study was the involvement of teachers in grouping students including knowing students' learning preferences and sensitiveness in adjusting practices.

Furthermore, in individuals and groups, accountability is essential. Individual accountability implies that while students learn in groups, they perform independently (Johnson and Johnson, 2002a). To achieve group objectives, members receive assistance and support. Yamarik (2007) propose that students are held accountable for a particular aspect of learning, such as the accomplishment of their groups. Achieving quality cooperation is a demanding and time-

consuming process. Teachers setting sufficient time is crucial for students to have the time to work together to achieve group goals (Letina and Vasilji, 2021). However, rigid curriculum structures in higher education mean that setting aside sufficient is difficult (Katawazai and Saidalvi, 2020) and affects group accountability and performance. Regarding group processing, teachers set aside time to allow members in a group to process how effectively they are working together, reflecting critically on areas to be improved to ensure the successful completion of academic tasks and goals (Kauffman, Sutow and Dunn, 1997). However, students' feedback is not taken seriously (Kamp, Dolmans, van Berkel and Schmidt, 2013) and feedback could be biased and dishonest (Papinczak, Young and Groves 2007). Students questioned the fairness in giving feedback and who lacked confidence (Kritikos, Woulfe, Sukkar and Saini, 2011). Keramanti and Gillies (2022), in a study on higher education students, uncovered the reluctance to give constructive feedback to maintain relationships with peers. Teachers monitoring and guiding students is essential to encourage students to reflect and improve their cooperation. It shows that managing students' processing demands close teachers' attention which emphasises the crucial roles they play in influencing students' learning actively due to various factors. Hence, teachers' engagement with students could influence teachers to develop differently.

Although the five characteristics of Johnson's model provided a more structured way of how students learn collaboratively, there are a number of critiques. It encompasses students' reliance on peers for learning support rather than developing independence. Moreover, rewards do not necessarily change students' learning practices. While students are encouraged to interact, students working cooperatively is a complicated affair as several factors affect how well students interact, including group composition and cohesion, since it is affected by contextual factors, including gender and assessments. One of the difficulties is attaining an agreeable conclusion; consensus and compromise are necessary, which affect students' learning. Students exert more effort and time, which can be challenging (Sridharan, Tai and Boud, 2018). For teachers, implementing cooperative learning requires them to assign roles and distribute resources, and research shows different learning outcomes. Since cohesion is influenced by context, fostering students' cohesion can be challenging for teachers. In addition, Johnson's cooperative learning model has been criticised in several areas, including the focus on school-based learning and Western education settings (Herrmann, 2013; Keramati and Gilles, 2022). Since cooperative learning has been used in a restricted number of contexts, extending its application to other contexts, such as higher education and non-Western education, could have different learning outcomes for teachers and students. To get an idea of the educational setting

in which cooperative learning is being applied, Table 2 provides a summary of some of the studies conducted mainly on Johnson and Johnson's cooperative learning and social interdependence. An overwhelming number of studies involved school-based studies, i.e. primary, post-secondary and high (Johnson and Johnson, 2002a; Slavin, 1995). Furthermore, quantitative data analysis is predominately utilised to yield limited insights into students' learning behaviour and how outcomes are impacted. Despite limited applications in Johnson's studies, learning, and applying cooperatives in higher education and students with diverse learning behaviour can enhance its on teachers and students and potential to promote effective collaboration.

Table 2 Type of studies, learning outcomes and type of institutions being applied

Number of studies analysed	Type of studies in terms of methodologies used	Learning outcomes	Type of institutions	Source
158	Meta-analysis on cooperative learning methods	Determine effect size of different cooperative learning methods in relation to (cooperative vs competition); (cooperative vs individual).	Elementary schools, middle schools (76%) and post-secondary and adult (24%)	Johnson, Johnson and Stanne (2000), Cooperative learning methods: A meta-analysis
375	Meta-analysis on social independence	Academic achievement and knowledge retention	N.A.	Johnson and Johnson (2002a), Learning together and Alone: An overview
117	Meta-analysis on "Learning together and Alone"	62% of the learning outcomes were focused on academic achievement and 38% on other dependent variables (interpersonal attraction, social support and self-esteem).	75% were conducted on students at college and below (with 48% K-6 level).	
305	Experimental studies on the efficacy of cooperative, competitive and individual learning		Tertiary students and adult education	Johnson, Johnson and Smith (2013), Cooperative Learning: Improving University Instruction.
504 students	Pre and Post-test on Cooperative-individualised score	Achievement and Attitude scores	Elementary schools	Slavin (1982), Combining Cooperative Learning and Individualized Instruction: Effects on Student Mathematics` Achievement, Attitudes and Behaviors.

375 students	Pre and Post-test (experimental studies) on Cooperative-individualised score	Achievement, Attitude and behavioural scores	Elementary schools	Slavin (1982), Combining Cooperative Learning and Individualized Instruction: Effects on Student Mathematics` Achievement, Attitudes and Behaviors.
148	N.A.	Positive peer relationships	Middle school, ages 12 – 15	Roseth, Johnson and Johnson (2008), Promoting Early Adolescents' Achievement and Peer Relationships.

Apart from school-based, Keramati and Gillies (2022) argue that limited research is conducted in other countries with different social, educational and cultural systems. These shortcomings indicate that the model did not examine its application within the broader context of higher education and non-Western societies, which may yield different outcomes. Several factors affect the effectiveness of cooperative learning depending on teachers' inclination to shift teaching practices in favour of interactive learning and active student participation. Reluctance to change their teaching practices as more effort is required affects cooperative learning implementation (Moges, 2019). Students' reluctance to use change learning approaches affects learning outcomes (Felder and Brent, 2007). Applying cooperative learning to Asian societies reveals challenges, including students' avoiding disagreements with peers and teachers to maintain good relationships (Phuong-Mai, 2019). Furthermore, didactic lectures and uncertainty of their roles as learning facilitators (Penfold and van Deer Van, 2014) cause teachers to face difficulty using cooperative learning since it focuses on participatory teaching practices to engage students to learn actively. Applying cooperative learning in a various context, including higher education and non-Western societies, presents opportunities and challenges that impact teachers and students. These will be examined in section 2.3.2, which discusses the use of cooperative learning in higher education, and section 2.3.4 in the application in diverse classroom contexts.

Another critique of adopting quantitative studies is that they include meta-analysis and experimental studies. Meta-analysis involves the review of a large number of studies with the use of statistical analysis to conclude findings (Gray, 2014). Most of the research studies conducted by the Johnson studies employed meta-analysis, allowing researchers to review a large number of studies. Bailar (1997) argue that simplifying data too much can misrepresent the true nature of the findings, potentially leading to misunderstandings. Moreover, meta-

analysis incorporates multiple studies to generate outcomes based on average scores, which can overlook data important in evaluating the impact of cooperative leaning (Walker, Hernandez and Kattan, 2008). Information is analysed superficially, leading to biased interpretation. In addition, the types and selection of articles to be reviewed also lead to possible bias such as what articles are reviewed, how they are chosen and the omission of unpublished articles (Walker, Hernandez and Kattan, 2008). In addition, experiment studies assume constant contextual conditions based on examining intervention impact learning outcomes. It means that learning outcomes changes is caused by intervention and no other factors which impact outcomes. In a dynamic class environment, contextual factors play an important role and not recognising their role is unrealistic, demonstrating the failure to control the variables and treatment, and that the experience of participants being identical is a shortcomings of experimental studies (Al-Sinani, Al-Kaff and Al Naijar 2022). Johnson's studies emphasised academic achievement, but Springer, Stanne, and Donovan (1999) are concerned that assessment scores are reported more frequently than attitude to indicate positive outcomes. This focus on achievement results can obscure the relationship between student accomplishments and teachers' instructional practices (Martinez, Schweig and Goldschmidt, 2016). It means that teaching methods may not lead to students performing better academically. Hence, there are shortcomings in using quantitative studies to understand the impact of cooperative learning on students. Moreover, the association between teaching and learning outcomes demonstrates cause-and-effect influence. Research studies view learning as a cause-and-effect relationship between impartation of knowledge and learning outcomes such as academic results (Johnson and Johnson, 2009; Tsay and Brady, 2010), positive students' relationship with peers (Roseth, Johnson and Johnson, 2008) and students' esteem. The cause-and-effect relationship suffered the "black box" effect (Peterson and Mills, 2004, p. 123). It remains unclear how teaching practices impact students' learning. This study argued that contextual factors affect students learning and entailed teachers adjusting practices to circumvent context made a significant difference in how teachers adapt teaching practices. Hence, the significance of conducting the current study to examine how context could affect teachers' development differently when they acquire varied experiences.

> Black box studies compare the effects of different instructional methods on learning outcomes will not explain why effects arise. To understand why cooperative learning works or works better for some students than others, it is necessary to examine students' experience in collaborative group setting.
>
> Peterson and Mills (2004), p. 123

Furthermore, academic achievement is influenced by numerous factors, including complex sociocultural contexts. The use of quantitative studies and analysis to objectively interpret findings is unable to provide sufficient detail to comprehend teachers' and students' experiences with cooperative learning. The learning context exacerbated the learning conditions further since each learning situation brings unique sets of varieties that impact how teachers and students interact (Al-Sinani, Al-Kaff and Al-Naijar (2022). Educational contexts such as subject discipline, discipline level, class size, and tight curriculum schedule affect cooperative learning as a teaching approach (Lindblom-Ylanne, Trigwell, Nevgi and Ashwin, 2006; Tadesse and Gillies, 2015). Furthermore, students' perceptions, prior learning experiences, and preferred learning styles affect how students learn (Richardson, 2005). To uncover more details about students' learning experiences, qualitative research such as case studies could yield intricate information (Byrne, 2022) to gain a piece of richer and more in-depth information. The use of qualitative data also facilitated the collection in greater detail of teachers' and students' views, opinions, or attitudes, with cooperative learning offering rich information to comprehend the context in a dynamic social setting.

This section has analysed the key cooperative learning frameworks. Although there is much research conducted based on the frameworks, there were shortcomings in terms of the adoption of meta-analysis in deriving the outcome of using cooperative learning which did not uncover the intricacies and nuances in the teaching and learning environment. In addition, academic achievement is a key learning outcome in measuring the effectiveness of its usage with lesser priority on other aspects of outcome.

2.2.4. Comparing cooperative learning and collaborative learning.

Cooperative learning and collaborative learning are two terms that have been used interchangeably since they share a common focus on students' construction knowledge. Yet there are fundamental differences in terms of concepts, how learning occurs, and the role of teachers in facilitating learning. Hence, differentiating cooperative learning from collaborative learning is imperative. Table 3 highlights key differences between the two forms of learning.

Table 3 Comparison between cooperative learning and collaborative learning

Cooperative learning	Collaborative learning
Originated from educating school-level students. Based on the social interdependence theory (Johnson and Johnson, 2005).	Originated from educating college and university students. Based on social construction theory (Panitz, 1999).

As teaching methods, teachers involve students to work interdependently. Team effort is essential. Students' participation is more organised. Students assume distinct roles (Johnson and Johnson, 2009)	A learning philosophy in a learning community to exchange ideas and information. Students' participation is less organised. Students do not assume roles (Dillenbourg, 1999).
Teachers' roles assume multiple roles such as learning facilitators, designing and assigning tasks and monitoring students (Gillies, 2016 and Tran, 2013).	Teachers' roles intervene minimally and encourage students to discuss within themselves (Panitz, 1999, Yan, 2019).

The first difference involved how cooperative learning and collaborative learning evolved. According to Bruffee (1984), cooperative learning originated in schools, whereas collaborative learning emerged in colleges and universities. Thus, students learn how to interact socially to build and gain knowledge in cooperative and collaborative learning, which is necessary for advanced learners' preparation when working in groups (Panitz, 1999). The approach to use is contingent on students' sophistication levels. Cooperative learning is more appropriate for students familiar with didactic learning. On the other hand, collaborative learning is better suited to students who interact well with peers. According to Panitz (1999), cooperative learning is structured interaction where students work together to accomplish specific end goals. Hence, the main theory guiding cooperative learning is Deutch's (1949) social interdependence and Piaget's (1964) cognitive and Vygotsky's social constructivism (Yang, 2019). On the other hand, collaborative learning is a philosophy of interaction based on consensus building through group members cooperating (Panitz, 1999). In addition, cooperative and collaborative learning represent different poles in a spectrum of collaborative learning, encouraging students to work together. Kauffman, Sutow and Dunn, 1997) elucidate that cooperative learning represents one end of the spectrum of collaborative learning, whereas Brody (1991) indicates that teachers' implementation of cooperative learning was influenced by their beliefs about learning, amongst other things. Depending on their beliefs, cooperative learning could be perceived and thus implemented in three approaches. The first was the transmission approach whereby cooperative learning was seen to be teaching methods to manage group work. Teachers were the authority source (Brody, 1991). In the transaction approach, cooperative learning was used as a platform that fostered students in problem-solving and discussion, which mentally stimulated them. In the transformative approach, teachers and students come together as a learning community to engage in discussion.

The second difference between cooperative learning and collaborative learning is how their approaches to learning. Cooperative learning is regarded as a teaching strategy or method of engaging students to work towards common goals (Johnson and Johnson, 2009; Yang, 2019).

Students cooperate for various purposes, including task completion, to accomplish learning objectives, and solution generation (Panitz, 1999). Students work interdependently where they exchange ideas, help each other and solve problems collectively to complete given tasks (Baloche and Brody, 2017; Felder and Brent, 2007). Moreover, Gillies (2016) and Jacobs, McCafferty and Iddingset (2006) assert that cooperative learning is a social process where students co-construct meaning and knowledge in which team effort is essential. Furthermore, it enhances the quality of the completed task when they exchange information (Onwuegbuz, Collins and Jiao, 2009). Cooperative learning is structured to promote information sharing and interaction among students with a specific objective in mind. Interdependence is important in cooperative learning (Gillies, 2016; Johnson, Johnson and Smith, 2013). This contrasts with collaborative learning, a learning philosophy where students come together in a community to share ideas and information. Students explore ideas and construct knowledge freely (Dillenbourg, 1999). Moreover, students respect one another's views and opinions (Panitz, 1999). According to Bruffee (1984), the construction of knowledge occurs via student-to-student dialogue. Dillenbourg (1999) elucidates that the process of exchanging information is a cognitive process as they agree or debate issues to help them gain knowledge. Students work independently despite being in a team. Students worked on distinct tasks independently and subsequently came together to assemble the individual tasks as a whole. Students are expected to assume learning responsibility (Panitz, 1999). Significantly, collaborative learning fosters an environment in which students exchange, develop, and evaluate diverse ideas. According to Bruffee (1984), the distinction between students and teachers is less apparent, with teachers considered learners. Knowledge is constructed throughout the process of explaining concepts.

The third difference relates to the role of teachers in fostering students to work together. In cooperative learning, teachers take up enlarged roles in organising tasks to encourage students to participate (Johnson and Johnson, 2009; Slavin, 2014). Teachers design, assign learning tasks and monitor students' learning (Barkley, Cross and Major, 2005; Gillies, 2016). In addition, they allocate students to assume complementary roles such as timekeepers or spokespersons (Johnson, Johnson and Smith, 2013; Shimazoe and Aldrich, 2010). Furthermore, students are encouraged to help one another to complete tasks. Teachers intervene in guiding and monitoring students in cooperative learning (Bähr and Wibowo, 2012) by assuming the role of facilitator of learning. Hence, cooperative learning is perceived as a directive (Panitz, 1999) to encourage active student learning (Seyoum and Molla, 2022). On the contrary, within the context of collaborative learning, the role of teachers is to promote the

formation of learning communities where students discuss ideas freely. Therefore, teachers vary to students' judgement regarding the completion of tasks (Barkley, Cross and Major, 2005) and prefer students to take learning responsibility. As a result, diverse knowledge is created rather than limited by course parameters.

Sections 2.2.1 and 2.2.3 discussed above are connected to the foundational knowledge of cooperative learning. Theories of constructivism, social interdependence theory and Johnson and Johnson (2009) cooperative learning frameworks outline the key principles of how students should work together. Students actively construct knowledge in small groups as they interact and assume different roles to contribute knowledge, which is the premise of cooperative learning. Teachers establish a conducive learning environment that encourages students to cooperate in building knowledge. According to Chen and Liu (2017) and Chang and Brickman, (2018), there are varied outcomes when cooperative learning is applied at higher education and multicultural classrooms. The next section in this literature review will analyse and examine the use of cooperative learning in these areas which align with the current investigation. Reviewing the literature on cooperative learning in higher education could reveal nuance and subtle differences in how teachers engage students in learning and challenges.

2.3. Application of cooperative learning

This section examines how cooperative learning is being applied to several contemporary teaching and learning contexts. This relates to using cooperative learning in higher education and multicultural classrooms which may produce diverse learning outcomes due to a variety of reasons. Furthermore, the roles adopted by teachers and forming groups to engage students will be looked at in detail. Uncovering the benefits and challenges the contexts posed helps relate to how the finding in the current investigation reinforce and differ from the literature.

2.3.1. Applying cooperative learning in higher education

Cooperative learning has progressively been adopted in higher education, with a rise in research conducted at university levels in recent years (Herrmann, 2013; Mendo-Lazaro et al., 2022). Henneby and Fordyce, (2018) and Silva et al. (2023) argue that cooperative learning provides opportunities for students to develop problem-solving, negotiation and critical-thinking skills. Exposure to diverse perspectives broadens students' knowledge (Shimazoe and Aldrich, 2010). In addition, learning is more meaningful and engaging when students construct

knowledge (Johnson and Johnson, 2014). It stimulates students to question and re-organise their cognitive skills when they integrate the ideas and perspectives of peers. Recently, Mendo-Lazaro et al., (2021) carried out a quasi-experimental pre-test-post-test study involving over five hundred undergraduate students and concluded that cooperative learning motivated students to acquire knowledge and skills as they had autonomy in learning. Implementing cooperative learning in higher education enhances students' higher-order skills, such as problem-solving and critical thinking. Despite teachers playing crucial roles in engaging students in discussions to improve knowledge, Hennebry and Fordyce, (2018) argue that a significant aspect of learning in higher education did not adhere to Johnson's cooperative learning principles since teachers focused on content rather than on fostering students' collaborative skills. Hence, teachers and students miss out on the advantages of cooperative learning of using it to promote student interaction. This highlighted a gap between teachers' knowledge of cooperative learning and practical application in lessons. Practical application allows teachers to grasp the nuances of how cooperative learning functions in classroom dynamics and refine their understanding of the knowledge. Tadesse and Gillies (2015) conducted an empirical mixed-method study including fifty-eight undergraduate students and two teachers. Teachers received training on cooperative learning methods before implementing it in lessons. They feedback that cooperative learning nurtured a favorable learning atmosphere for students to engage in small group interactions. However, students experienced conflicts due to clashes in personalities in mixed groups. Moreover, it was a time-consuming process when students engaged in lengthy discussions. Teachers also had to handle multiple student inquiries resulting in them to be overwhelmed (Tadesse and Gillies, 2015). As a result, teachers preferred using lectures over cooperative learning as a more effective method to foster student learning. Teachers' familiarity with cooperative learning is crucial when facilitating students' engagement (Tadesse and Gillies, 2015). Hence, using cooperative learning leads to varied teachers and students' experiences.

To compound the challenge further, Cecchini et al. (2021) assert that teachers who fail to engage and promote students' learning diminish the effectiveness of cooperative learning. Teachers who do not deliver timely feedback cause students to question the purpose of engaging students to learn (Ghaith, 2018). Furthermore, teachers are concerned about losing class control when students participate in learning work, uneven participation of students in group activities and the ability to meet learning outcomes (Veenman, van Benthum, Boosma, van Dieren and van der Kemp, 2002). As such teachers are unsure of implementing cooperative

learning to engage students to learn. Letina and Vasilj, (2021) indicate that inadequate competencies affect their ability to implement cooperative learning. Moges (2019) argues that the lack of opportunities and insufficient training result in knowledge gaps on cooperative learning affect teachers' ability to manage students' group dynamics and behaviour. Teachers with incomplete knowledge of cooperative learning affect their implementation (Beiki, Raissi and Gharagozloo, 2020). Hence, it burdened teachers using cooperative learning instead of appreciating its benefits. Teachers are required to learn a different teaching method when they are not prepared.

Establishing a conducive learning environment demands dedication and hard work (Mendo-Lazaro et al., 2022). Weinberger and Shonfeld (2017) and Tadesse, Asmare and Ware (2021) argue that teachers' reluctance to shift from their traditional roles to facilitators of learning creates barriers to cooperative learning implementation. It explains why some teachers were less committed to cooperative learning as they were inclined to adopt teaching methods they were familiar with. As a result, teachers face difficulty in encouraging knowledge construction due to reasons highlighted limiting their use of cooperative learning. Knowledge experts and experienced teachers with hard-to-change routines made teachers prefer lecture-based teaching (Chakyarkandiyil and Prakasha, 2023; (Kelly, 2009). Tadesse and Gillies (2015) highlighted that teachers oppose using it as they perceive it to be imposed by higher education institutions' management, resulting in less receptivity. It underscores the importance of teachers receiving training to equip them with the knowledge and skills of using cooperative learning. Teachers encountered numerous challenges using cooperative learning in higher education. In addition, other contextual factors included time-compressed courses coupled with sizable classes that reduce cooperative learning (Vreven and McFadden, 2007). As class size increases, Yelkpieri, Namale, Esia-Donkoh, and Ofosu-Dwamena (2012) profess that teacher-focused is a more appropriate approach to managing students' learning and group dynamics (Chang and Brickman, 2018; Svinichi and Schallert, 2016). Ghufron and Ermawati (2018) argue that implementing cooperative learning exerted much more preparation time for teachers before and during engagement with students when implementing it. Hence, teachers are less committed to conducting cooperative learning and are inclined towards the transmission mode and lecture method of teaching, which significantly affects the implementation of cooperative learning (Moges, 2019). Due to various challenges implementing cooperative learning in higher education, it affects teachers' development differently when they are less committed to using it. The significance of the current investigation is to examine how context affects

teachers and their responses. How teachers overcome context could impact on their development differently.

From the students' perspective, cooperative learning demands greater effort, as they must actively engage with their peers. Moreno (2009) argues that methods like jigsaw learning in cooperative learning impose a significant cognitive load on students, requiring them to invest substantial time in explaining, clarifying, and considering alternate perspectives. In a recent study, Hennebry and Fordyce (2016) acknowledge that students experienced cognitive demand when applying new knowledge in learning. Felder and Brent, (2007) recognise that despite the efforts of teachers, some students refused to use cooperative learning due to the variety of learning styles and those who were accustomed to learning through didactic lectures. Limited learning experience in cooperative learning and lower levels of language proficiency exacerbated the difficulties students faced. This added demand can be particularly challenging for some students. Opal (2022) advocate a balanced approach between active engagement and lectures rather than favouring one method. Moreover, students who resist working collaboratively prefer to work alone due to doubts about their peers' knowledge (Cavanagh, 2011; Herrmann (2013). Elmassah, Bacheer and James (2019) argue that previous students' group experiences affect their willingness to engage in group discussion. Hence, it is crucial for teachers to consider previous students' learning experiences when using cooperative learning. Furthermore, students' inability to communicate clearly and task completion of tasks at the last minute before submission meant that ideas were not reviewed which eroded trust among group members (Chang and Brickman, 2018). Moreover, Altun (2015) and Johnson and Johnson (2014) argue that high-level cognitive talks are of low frequency due to students rarely elaborating on information in higher education. Students are hesitant to collaborate with peers due to varied learning styles (Chakyarkandiyil and Prakasha, 2023) hinder students' collaboration. Hence, students faced numerous challenges learning with cooperative learning.

The preceding discussion demonstrates the opportunities to engage students to be more active when they collaborate with peers during cooperative learning. Conversely, there are a number of challenges when adopting it empirically in higher education. Teachers' competencies, familiarity and willingness to engage students to learn differently pose significant challenges when using it. Students similarly encounter difficulties due to their resistance to active learning in favour of individualistic approaches and trusting peers when sharing information. The review of cooperative learning literature is important since the current study involved a group

of teachers in Singapore private higher education to incorporate cooperative learning which impact students learning and teacher development as well knowledge, practices and beliefs about teaching and learning. Reviewing literature provide divergent insights into how teachers implemented it in a variety of educational setting. Complementing with empirical study is of greater importance to understand in how teachers translate knowledge into practices to engage student learning. Moreover, teachers acquire knowledge of what it means to incorporate cooperative learning.

2.3.2. Teachers' and students' roles during cooperative learning

Teachers played a pivotal role in cooperative learning. Among the roles include teachers being helpers, facilitators, mentors, and guides (Bhattacharjee, 2015; Keiler, 2018). Moreover, they structured group learning tasks (Gillies, 2016; Johnson and Johnson, 2014; Seyoum and Molla, 2022) to promote student interaction and form small group learning which foster students working collaboratively (Felder and Brent, 2007; Kelly, 2009; Tadesse and Gillies, 2015). Furthermore, Johnson and Johnson (2018) posit that at different stages of cooperative learning, pre-implementation, during, or post-implementation, teachers performed distinct roles that were distinct. During pre-implementation, some of the roles consist of specifying the lesson objectives for the lesson, deciding on the structuring of the learning groups, determining group sizes and allocating of roles to groups (Johnson and Johnson, 2018). Biggs (1996), however, underlines that the task teachers establish should promote opportunities for students to engage in higher-order metacognitive activities, such as problem-solving to foster deep learning. Furthermore, teachers had to decide on the types of groupings to form, group size, and roles for students to contribute (Shimazoe and Aldrich, 2010).

The roles played by teachers were essential even though it was at the pre-implementation stage. During the implementation stage of cooperative learning, Goodyear and Dudley (2015) and Keiler (2018) argue that although students were given a larger role in their learning, this did not imply that students were left on their own. Instead, teachers provided facilitation, behavioural modelling, and direction for student learning (Johnson, Johnson and Smith, 2013). Teachers perceive their facilitation role as encompassing students' engagement, creating a safe, participatory environment that is conducive to the acquisition of knowledge (Goodyear and Dudley, 2015). While Kobbe Weinberger, Dillenbourg, Harrer, Ham¨ al¨ ainen, Hakkinen and Fischer (2007) attest that teachers' role is limited to planning cooperative learning, in contrast, Letina and Vasilj (2021) believe that teachers' role incorporates monitoring students'

interaction as well to ensure quality interaction. However, there are different interpretations regarding the extent to which teachers intervene when students engage in more independent learning. Bähr and Wibowo (2012) assert that teachers should intervene only when necessary whereas Goodyear and Dudley (2015) suggest teachers play an active role in guiding on the side. To help students to make connections between concepts, teachers posed questions. Goodyear and Dudley (2015) state that the use of both open-ended and closed-ended questions is an effective method for developing students' understanding and fostering their independence so that they become less dependent on teachers. Bähr and Wibowo (2012) suggest that when students face difficulties in answering questions, how questions are posed to be modified. As a result, learning facilitators employ different ways of how they engage students. The discussion shows that assuming the learning facilitators entail, teachers perform diverse roles. It indicates that the roles of learning facilitators demand teachers to be attentive to how students learn and know students' prior knowledge. Moreover, teachers' roles did not dissipate towards the end of cooperative learning activities. During post-implementation, teachers summarise the key points of the lesson, engaging students to self-reflect and suggest areas of improvement (Johnson and Johnson, 2018). Moreover, teachers' role in modelling and guiding enhanced students' learning and comprehension. In contrast, Moges (2019) asserts that teachers were ineffective due to the absence of key responsibilities such as facilitating and controlling diverse groups. The roles of teachers in cooperative learning are essential to engage students 'active learning.

Similarly, students adopt different roles with the shift from passive to more active roles, therefore, they play a larger role in being involved in learning (Felder and Brent, 2007). This shift in their roles means that students learn differently as they interact with peers. Malatji (2016) echo that when students assumed the role of peer learning, peer sharing assisted students in learning from peers' perspectives which helped to broaden their knowledge. Onwuegbuzie, Collins and Jiao (2009) suggest that group members performed roles reviewing peers' contributions to the assigned task. In the process of collaborating with peers, they developed more supportive relationships with peers. To promote role interdependence, group members performed complementary roles including leader, recorder, writer, checker, summariser and timekeeper (Felder and Brent, 2007; Shimazoe and Aldrich, 2010). They learn and assume learning accountabilities and acquire a variety of skill sets, thereby cultivating their self-development. As active participants, they learn to engage cognitively and emotionally with their peers, the designated task, and the materials (Johnson and Johnson, 2018). On the other

hand, Chen and Liu (2017) recognise that students seldom engage in sufficient discussion among students. Moreover, students struggle to allocate roles to more passive students, and some jobs are underutilised due to the difficulties in hearing ideas from classmates. Furthermore, ideas were not reviewed because peers submitted work at the very last minute (Chang and Brickman, 2018) suggesting that students did not appear to perform their roles as expected. Hence, the roles of teachers in engaging students actively are crucial. It seems that the interaction between teachers and students causes them to take on different roles. When students are inactive, teachers respond by monitoring and encouraging students to participate and vice versa. Therefore, students assume important roles as well.

During cooperative learning, teachers and students shift their roles. Teachers' roles are wide-ranging and change at different stages of implementation, suggesting that the roles undertaken are not static. Significantly, the shift in roles impacts teachers' teacher development differently. Students engage with peers and take on more learning responsibilities when they actively engage with peers and contribute by assuming varied roles. The shift in teachers' and students' behavior could potentially affect teaching and learning with cooperative learning underlines the importance of this study.

2.3.3. Teaching and learning in multicultural classroom

This section examines what happens when students from diverse cultures cooperate, learn and participate in cooperative learning. Acquiring knowledge in multicultural classrooms is crucial in this study since international students make up a majority of the population with explanation in chapter three. Hence, the present study which provide rich information of the important role of teachers to involve students with diverse backgrounds to work together impact on the development of teachers.

The proliferation of international students in educational institutions resulted in the formation of diverse classrooms (Kelly, 2009; Keramati and Gillies 2021). Diverse classrooms consist of students from at least two different cultural groups, creating a multicultural learning environment, exposes students to a variety of ideas and learning experiences, broadening their perspectives and knowledge (Poort, Jansen and Hofman, 2022). However, contentious issues surface for teachers and students. Teachers face unfamiliar inherent norms and values due to differences in students' learning preferences (Kelly, 2009) lead to teachers adopt a variety of teaching methods, including teacher-centred and student-centred learning. Portera (2008)

asserts that teachers leverage students' diversity to widen perspectives rather than perceiving it as an issue and Sharan (2010) argue that cooperative learning is an effective way of promoting the exchange of diverse ideas. To get an insight into teachers and students using cooperative learning in multicultural classrooms, Keramati and Gillies (2021) presented a case study of teachers in Iran and Australia who used cooperative learning with mixed classes of international students. The qualitative study involved faculty members from the University of Tehran (UT) and the University of Queensland (UQ), and it was conducted to gain insight into how students from these culturally diverse backgrounds implemented cooperative learning. Keramati and Gillies, (2021) uncovered several benefits and challenges when delivering cooperative learning including students exposed to various cultures due to the large proportion of international students in the classrooms, which enhanced their perspectives and knowledge. However, rigid curriculum structures and insufficient time to involve students in discussion led to teachers not being able to engage as much as they would like, impacting learning. Furthermore, students were cautious when commenting to avoid offending and antagonising relationships among peers. Students lacked academic motivation and did not know how to collaborate. Hence, teachers encountered challengers when engaging students from different nationalities in learning collaboratively. This could inform the current study require a considerably shift in teaching practices which may impact on their development.

In multicultural classrooms, culture significantly influences teachers and students, as it is intertwined with the learning behaviour of students, which can affect learning. In the current study, there was a large population of students from Asia, including China and Vietnam. Thus, it is important to gain insight into teaching and learning practices. Penfold and van der Veen (2014) and Thanh-Pham (2014) classify several countries in East and Southeast Asia, including China, Singapore and Vietnam, known as Confucian Heritage Culture (CHC). There is a misconception of stereotyping the characteristics of CHC students as passive and relying on teachers to provide them with information (Penfold and van der Veen, 2014). Teachers in CHC societies are the primary authoritarian figures, regarded in high esteem and rarely questioned (Chen and Liu, 2017). This can be problematic when CHC teachers perform the role of learning facilitators since they are entrenched in imparting knowledge which they doubt students' ability to learn by themselves, argued Chen and Liu (2017). Furthermore, CHC teachers' familiarity with knowledge transmission face challenges when using cooperative learning to engage students as they control over how students interact with peers and learning. From students' perspectives, their preference for learning to be organised as opposed to unstructured learning

means that teachers limit students from engaging in open discussions. In addition, students tend to value teachers' feedback more than peers (Hu and Lam, 2010), affecting students' interaction with peers when asked to share information during cooperative learning. Thanh-Pham (2011) conducted a study on higher education students in several tertiary institutions in Vietnam and indicated they did not value cooperative learning highly as they considered teachers to focus on lecturing, which reinforced the belief that teachers should be the main source of knowledge instead of interacting with peers during lessons. Hennebry and Fordyce, (2016) assert that silence is essential in learning that causes misunderstanding. In constructivist learning, active participation but non-participation indicates failure to learn. However, silence is recognised as a part of communicative purpose (Hennebry and Fordyce, 2016). Hence, conflicts surface when non-CHC students blame CHC students for not participating orally, while CHC students prefer to participate as listeners hinder students' interaction. Another reason students adopt a more submissive attitude in the classroom is that they prefer not to pose questions during lessons to avoid becoming disruptive (Wang, 2009; Chen and Liu, 2017). Students are concerned about entering discussions and being judged by their peers, which could lead to losing face if they make mistakes (Penfold and van der Veen, 2014; Thanh-Pham, 2016). To avoid conflicts with peers, students refrain from communicating with their classmates, which affects their involvement with that group (Poort, Jansen and Hofman, 2022). Hence, students preferred to be passive rather than reveal knowledge gaps (Chen and Liu, 2017; Hennebry and Fordyce, 2018). Moreover, it is uncommon for teachers and students to interact during lessons (Chen and Liu, 2017) due to respect for teachers and as the authoritative figureheads. Wong (2004) disagrees and argues that CHC students engage in one-on-one interactions with teachers and peer discussions outside classrooms. Engaging CHC students in active learning yields diverse outcomes due to varying interpretations of how students learn.

Hennebry and Fordyce (2018) conducted a study on the perceptions and experiences of cooperative learning to a cohort of Eighty-five master's degree students using questionnaires and focus groups. A total of seven focus groups were formed, with each group comprising a mix of different nationalities from four countries, predominately from Asia. The findings outcomes reported a mix of positive and negative experiences of engaging students from multi-nationalities. Non-CHC observed that CHC students were inactive and lacked the confidence to contribute information. Moreover, CHC students' lessons to have more lectures rather than group discussions. The outcomes of Hennebry and Fordyce's study showed the characteristics of CHC students engaging openly with peers.

A crucial aspect of cooperation is the communication styles in which students transmit messages. Hall's low-context and high-context models argue the clarity with which the message was conveyed to students (Hall and Hall, 1990). Due to differences in communication styles, complications could surface when low-context and high-context students engage in cooperative learning and exchange or share information. While students in low-context cultures expect peers to communicate clearly, those in high context prefer to communicate in an indirect manner, which could lead to conflict in communication (Hall and Hall, 1990). Furthermore, with an indirect communication style, students from diverse cultures interpret meaning differently, thus causing miscommunication. This may undermine team cohesion and engagement due to unclear communication. Hofstede's (2003) cultural dimension examines different dimensions that influence students' learning behaviour. Differentiating individualistic and collectivist societies while individualistic societies value independence and critical thinking, conversely, conformity to group norms is prevalent in collectivist societies (Hofstede (2011). A collectivist culture fosters robust interpersonal ties, trust, and harmony (Hofstede, 2003), which facilitates students to share information more readily (Penfold and van der Veen, 2014); Phuong, Terlouw, Albert Pilot and Elliott, 2009).

In addition, Hofstede's (2003) uncertainty avoidance concept examine how members of a culture react to uncertain or unfamiliar situations. Students with high uncertainty avoidance preferred a structured learning environment (Phuong-Mai, Terlouw and Pilot, 2006). Conversely, students with low uncertainty avoidance are receptive to an unstructured learning environment in which their opinions and contributions valued. In the uncertainty avoidance dimension, although students who hold a different uncertainty avoidance seem to be in opposition as they view learning to be organised, it is beneficial to CHC students as they value harmony. CHC students will not oppose peers who subscribe to peers who hold a different degree of uncertainty avoidance. Consequently, it can result in unequal student participation when students of different cultures are combined. Kee and Wong (2004) found that CHC learners in an Australian higher education institution preferred working individually to retain control over the outcome. Empirically, students varied in their learning behaviour, which contradicts the argument that culture influences students' learning. Similarly, Poort, Jansen and Hofman (2022) argued that there are limited opportunities for higher education students to collaborate due to insufficient time allocated for students involved in discussions impacting students' relationships with peers. Moreover, CHC students' desire to maintain group harmony affects the nature of group interaction. In a more recent study by Tran, Nguyen,

Van De, Soryaly and Doan (2019) on higher education Vietnamese students, involving students in cooperative learning resulted in students spending time explaining and summarising information to peers. However, only positive outcomes were indicated that the researchers in the Vietnam study did not raise any difficulties when using cooperative learning.

The role of multicultural classrooms influences teaching and learning. Culture influences how teachers teach and how students learn. Placing students of diverse cultural backgrounds in classrooms affects students' participation and contribution to learning. Differences in expectations regarding students' roles may give rise to conflicts. Likewise, students' learning preferences can enhance learning and help address challenges in collaborating with peers. The multicultural classroom, as applied to the current study of teachers engaging students with cooperative learning, may provide insights into how it affects teachers when engaging students from varied backgrounds. Consequently, teachers may develop differently.

2.3.4. Types of students group formation in cooperative learning

A key feature of cooperative learning is group formation, which promotes students' collaboration according to Gillies (2016), Johnson, Johnson and Smith (2013) and Keramati and Gillies, (2022). In higher education, students working together in small groups to achieve a common goal is essential (Sridharan, Tai and Boud, 2019). The various ways in which group formation significantly affect students' learning outcomes (Ghanbari and Abdolrezapour, 2020) underlines teachers to gain a comprehensive understanding of group formation. Heterogeneous, or mixed and homogeneous grouping are the dominant types of group formation. Heterogeneous groups consist of mixed students' abilities, while homogeneous groupings are based on similar abilities (Ghanbari and Abdolrezapour, 2020; Kelly, 2009; Thanh-Pham and Gillies, 2010). The discussions to follow will examine how placing students in different groups affects students' cooperation. Teachers played a pivotal role in placing students in various group formation influence on how they interact and learn.

There have been mixed perspectives regarding the formation of heterogeneous groupings. Johnson and Johnson, (2009) argue that heterogeneous grouping encourage students' engagement and foster students' collaboration in cooperative learning. Student learning is enhanced when they assist one another, cultivating mutual support and improving students' learning (Barkley, Cross and Major, 2005). Jacob, McCafferty and Iddings (2006) underline those high and average-ability students benefitted when mixing students of different abilities. Conversely, grouping students with different abilities present intricacies of students interacting

with peers. Although teachers desire students to assist one other, Herrmann (2013) and Kelly and Fetherston (2008) argue that weaker students are often reluctant to accept assistance from peers due to low levels of trust among peers. Phuong-Mai, Terlouw and Pilot (2006) indicate that students are unwilling to receive assistance as they may perceive it to be a sign of weakness. In addition, students' language abilities impeded interaction and effective communication among their peers. This may have consequences on knowledge transfer (Baker and Clarke, 2010). Moreover, Hennebry and Fordyce, (2018) indicate that diverse cultural groups could cause misunderstanding owning to varying expectations. On the other hand, Gebremariam, Kidana, and Gillies (2023) attest that tolerance and respect for peers' ethnic differences are crucial to improving collaboration. In a recent study by Keramati and Gillies, (2022), students tend to avoid expressing their honest opinions to preserve a harmonious relationship with their peers. In addition, according to Malatji (2016) and Tadesse and Gillies (2015), conflicts and free riding frequently happen when students work together. Despite the initial promise of creating mixed groupings, it appeared that teachers were unable to fully capitalise on the advantages of having varied students in these groups, primarily due to the reasons listed. Limitations in mixed group formation that affect peer interaction. Hence, homogeneous grouping provides an alternative approach of grouping students.

Teachers form homogenous groups to foster a more conducive learning environment when students are more comfortable sharing information (Chapman, Meuter, Toy and Wright, 2006). However, Felder and Brent (2007) argue that the formation of homogeneous groups do not benefit students much since placing weak students could lead to students reinforcing each other's misconception, worsening learning outcomes. Sharing the same vein, ideas and perspectives are likely similar, which does not cause a shift in students' ideas, according to Poort, Jansen and Hofman (2022). Within groups comprising academically proficient students, questions are allocated to individual students for independent completion, rather than engaging in collaborative efforts to generate collective answers. Research demonstrated compelling outcomes in creating homogeneous groups, where students significantly outperformed those in heterogeneous groups. Homogenous grouping benefit both high and average-achieving students, according to Baer (2003). Zamani (2016) found that high-ability students performed better in homogeneous groups, while low-ability students showed more significant gains in heterogeneous groups. Saleh, Lazonder, and De Jong (2005) recognise that low-ability students performed better in mixed groupings than those with average ability, who learn better in homogeneous groupings. Ghanbari and Abdolrezapouret (2020) examined two strategies,

homogeneous and heterogeneous grouping, and found no difference between them regarding ability. Due to mixed outcomes, it remains unconvinced regarding the benefit of grouping students in homogeneous groups as it may benefit only certain distinct groups of students.

Groups can be formed by teachers assigning students to groups to ensure group heterogeneity, or by allowing students to form groups on their own. Barkley, Cross and Major (2005) attest that a more efficient method for group formation is to let students choose their group members, as this increases their comfort and motivation to work. Chapman et al., (2006) assert students tend to choose group members with whom they have previous collaborated when given the option. Sharing the same vein, Poort, Jansen and Hofman (2022) contend that it is easier to engage in dialogue with peers with whom they are familiar. When students form their own groups, it can create friendship groups comprised of peers with comparable backgrounds and interests. More meetings enhanced the information exchanged when peers were able to get along well. However, they are less focused on tasks compared to other group formation methods. According to Gillies and Boyle (2010), a drawback of friendship groups is that some students may be excluded from interaction especially when invited to join a group with unfamiliar members. According to Poort, Jansen and Hofman (2022), the willingness of peers to provide critical feedback may decrease if group members believe it is impolite to criticise their peers' perspectives. Conversely, Kelly (2009) asserts that mixing students of diverse cultures could promote student interaction, help students learn from one another, widen their perspectives, and encourage creative ideas, leading to high-quality learning outcomes. In addition, knowing one another in terms of each of the group member's strengths and weaknesses enable tasks to be allocated according to complementary strengths (Phuong-Mai, Terlouw and Pilot, 2006). It improves students' learning outcomes as they learn from one another. In group work, students depend on each other, and their learning, grades, and ability to achieve their goals partially rely on the other group members. In a research study by Poort, Jansen, and Hofman (2022) concluded that developing trusting group members encourages students to share information openly. Hence, the establishment of trust among students is critical (Poort, Jansen and Hofman, 2022). However, in higher education, students collaborated on projects for a limited duration leaving insufficient time to develop trust (Poort, Jansen and Hofman, 2022). Developing trust is critical in encouraging students to communicate information with group members, and students should be given the opportunity to do so. Students face challenges when placed in culturally diverse groups due to different communication styles, language proficiencies and anxiety issues (Moore and Hampton, 2015).

Students from cultures that prioritises direct communication may regard an indirect style as lacking transparency and perceive it to be unreliable (Hofstede, 2003). Students expose themselves to vulnerability by expressing their thoughts, embracing diverse cultural perspectives, and engaging in critical examination. Poort, Jansen and Hofman (2022) assert that students trust in their group members encourages them to share ideas willingly and being vulnerable becomes easier. Hence, it underscores the importance of students to cultivate trust among diverse students.

The discussions underscore benefits and challenges in group formation. Teachers would need to contemplate the formation of various groupings to encourage students' interaction as it could have significant on students' learning and interaction. In the process, teachers develop a nuanced understanding placing students foster teachers to adopt more participative teaching practices impacting the development of teachers differently.

2.4. Conclusion

Chapter two examines thorough discussions of the main underlying principles of student collaboration. Cognitive and social constructivism concepts evaluate how students construct knowledge individually and collaboratively. Johnson's cooperative learning, although elucidating how students' cooperation can be enhanced, encounters significant issues when applied in higher education and in a multicultural context. Some of these challenges include their perception that cooperative learning is not suitable at higher education and that learning styles are entrenched and difficult to change. Moreover, compressed syllabi and tight semester schedules meant teachers were caught between using cooperative learning and completing the syllabus coverage. During cooperative learning, teachers and students adopt diverse roles, resulting in teachers engaging students to learn differently. However, due to diverse learning preferences and cultures, teachers and students may not necessarily be inclined to embrace cooperative learning when they are familiar with didactic teaching and passive in learning. The review underscores the intricate nature of cooperative learning and emphasises significant benefits while addressing potential implementation challenges. Importantly, teachers incorporating cooperative learning could impact on their development differently when require engaging active learning. Hence, further research is needed to examine the implementation of cooperative learning in higher education.

Chapter 3: Review of teachers' development

3.1. Introduction

The concept of teachers' development is complex as diverse theories have been developed to understand how development occurs. This chapter aims to analyse the complexities surrounding teachers' development which is a key focus in this research. This review chapter will examine what teachers' development entails, how it occurs and factors that influence it. Table 4 outlines several sections. Section 3.2 examines on the difference between academic development and teachers' development as the terms relate to changes on their roles. Section 3.3 provides a composition of teacher development including changes in conceptions of teaching, approaches to teaching or teachers' knowledge, skills, and identity. Section 3.4 examines several theoretical models for teacher development and how it occurs, either linearly or non-linearly. Furthermore, Section 3.5 discusses factors that affect teachers' development including engagement in reflection, professional development and teachers' collaboration with fellow teachers. Studying on teachers' development and it impact them underline the importance of conducting the present study in the private higher education context.

Table 4 A review of teachers' development

3.1 Introduction

3.2 Understanding what teacher development entails.
- 3.2.1 Distinguishing academic development and teachers' development.
- 3.2.2 Changes in teachers' conceptions of teaching.
- 3.2.4 Changes in teaching approaches.
- 3.2.4 Changes in teachers' knowledge, skills, and identity.
- 5.2.5 Conclusion

3.3 Models of teacher development.
- 3.3.1 Introduction
- 3.3.2 Teachers' development occurred linearly and progressively.
- 3.3.3 Teachers' development in a non-linear manner.
- 3.3.4 Other models in teachers' development.
- 3.3.5 Conclusion.

3.4 Factors influencing teachers' development.
- 3.4.1 Introduction
- 3.4.2 Teachers' engagement in reflection
- 3.4.3 Teachers' engagement in critical reflection
- 3.4.4 Challenges faced by teachers in reflection.
- 3.4.5 Using professional development to promote teacher development.
- 3.4.6 Teachers' collaboration with peers to improve practices.

3.5 Conclusion

3.2. Understanding what teachers' development entails.

3.2.1. Distinguishing academic development and teachers' development

In this literature review, academic development and teachers' development will be examined as they have been applied within this current study but in different areas. Academic development supports teachers in two aspects: first, providing the teachers with a more formalised course on cooperative learning and second, supporting them as facilitators of learning in their implementation of cooperative learning through observing lessons and clarifying their teaching practices. Within the cooperative learning implementation context, the focus of the present study is on how teachers developed regarding changes over time as they engage different students' groups. Hence, learning academic development and teacher development enhance the understanding of their roles in supporting the development of teachers. Distinguishing academic development and teacher development terminology is necessary as the terms have been ill-defined and used interchangeably. Table 5 provides a summary of the key differences between academic development and teacher development.

Table 5 Comparison academic development and teachers' development.

Academic development	Teachers' development
Applies to higher education context.	Applies to teachers from pre-secondary to post-secondary education.
Seeks to improve a broad spectrum in teachers' roles including teaching, research, curriculum development, or teaching	Focus mainly on improving teachers' roles in teaching and learning.
Academic developers play an important role in supporting teachers in their development.	Teachers' development is supported either by attending training on their own or arranged by educational institutions.

Sources: Eggins and MacDonald (2003), Leibowitz, 2014), and Evans (2002).

Academic development is understood in a variety of ways. Eiggs and MacDonald (2003) recognise that the definition of the term has been contentious due to a lack of understanding of what it involves. Evans (2024) argues academic development varies on a continuum, ranging from broad to narrow focus. In broad terms, academic development involves the creation of conditions supportive of teaching and learning (Leibowitz, 2014). Boud and Brew (2013) argue that academic development is multi-dimensional, encompassing teaching, research and public engagement. Blackmore and Blackwell (2006) broaden the meaning of academic development to include knowledge transfer, leadership and management, indicating diverse academic roles. Eggins and MacDonald (2003) contend that academic development entails teachers'

participation in examining teaching practices and disseminating information that qualifies as scholarly work. As a result, academic development supports teachers in higher education. Conversely, in a narrower scope, academic development emphasises enhancing teaching learning and research (Kneale, Winter, Turner, Spowart, Hughes, McKenna and Muneer, 2016); Field, 2015) to support academics to promote students' learning. Due to the diversity of students and the organisational desire for the development of personnel, Boud and Brew (2013) emphasise teachers improving on knowledge impartation to engage students. Rowland (2003) perceives academic development as a process involving teachers' continuous learning to develop skills and gain familiarity with Jones, Lygo-Baker, Markless, Rienties and Napoli (2017) assert teachers' involvement in formal and informal learning. As such, it is essential teachers be provided with face-to-face workshops to help them acquire practical skills and knowledge to manage classroom situations (Bautista, Schussler and and Rybczynski, 2014). Academic development is crucial as higher education institutions promote quality teaching and learning (Evans, 2024). Although there are varied interpretations of academic development, supporting teachers to broaden their roles is essential.

Defining teacher development remains a challenge as well. Despite considerable research conducted in the last two decades on teaching in higher education, teacher development remains ambiguous due to the lack of clarity and consensus on how teachers' development occurs (Justi and van Driel, 2006). Teachers' development is understood as an ongoing process of teachers' enhancement in their profession teachers to both pre-secondary and post-secondary education (Evans, 2002; Darling-Hammond, Hyler and Gardner, 2017). Training plays an important role in helping teachers learn, and as they learn, they change. Teachers' development according to Kaendler, Wiedmann, Rummel and Spada (2015) deals with the acquisition of competence and skills in improving students' performance. In addition, informal learning occurs when learning takes place unintentionally by performing different work activities or when teachers exchange knowledge and classroom practices with peers. Darling-Hammond, Hyler and Gardner (2017) and Korthagen (2016) consider teachers' development is important as it impact teachers' learning resulting in changes in their knowledge, and teaching practices adopted. Teacher development is diverse as it occurs across different educational settings including academic subjects (Nevgi, Postareff, and Lindblom-Yla¨nne, 2004), class sizes, teaching experience (Mladenovici, llie, Maricuțoiu1 and Iancu, 2022), and dynamic learning environment which affects teachers (Norton, Richardson, Hartley, Newstead and Mayes, 2005). A reason for the lack of clarity in teacher development is that it is a gradual process that happens

implicitly and is not evident explicitly (Evans, 2002). As a result, discerning changes can be challenging. Despite the variation, it is crucial to understand teachers' development as it influences teaching and learning.

A comparison between academic development and teachers' development reveals similarities and differences. The first is both terms connects to improvement of teachers who are involved in teaching and learning. Academic development applies to teachers in higher education whereas teachers' development relates to an improvement in teachers in pre-secondary, post-secondary and tertiary education as a generic term to teachers in various educational levels. Another difference is academic development encompasses wide-ranging areas of development that may include curriculum development that may not necessarily engage with students learning directly on one end of the spectrum to teachers involved in teaching and learning at the other end. Teachers' development focuses on the improvement of teachers' conceptions of teaching (Degago and Kaino, 2015), knowledge (Asghar and Ahmad, 2015), and teaching practices (Postareff and Lindblom-Yla¨nne, 2008) that impact students' learning. The narrower aspect of academic development falls under teachers' development when applied to higher education. Thirdly, academic developers play an important role in partnering with teachers to improve teaching practices and changes. They promote the development of teachers through training, counselling, supervision of innovative projects, teaching and learning (Daele and Joos, 2016). In addition, academic developers observe, critique teaching, research and publish articles on effective teaching and learning, amongst others (Anderson, 1996). Hence, academic developers are an integral part of academic development. In contrast, teachers take charge of self-improvement or participate in educational institutions-led initiatives to enhance their development (Asghar and Ahmad, 2014). Despite differences between academic development and teachers' development, they play different roles to enable teachers to develop in the manner that aligns knowledge, context and students underscore the importance of the present study. The following review in this review will highlight several concepts which explain in the development of teachers.

3.2.2. Changes in teachers' conceptions of teaching.

Teachers' development varies including changes in teachers' conceptions of teaching. Conceptions of teaching entails teachers' beliefs (Lim, Tondeur, Nastiti and Pagram 2014) while Kember and Kwan (2000) understand it as ways of thinking about teaching. Noben, Deinum, Douwes-van Ark and Hofman (2021) explain conceptions of teaching as teachers'

views about teaching and making sense of teaching. However, Hughes et al. (2023) argue that there is no definitive way to describe it. According to Kember and Gow (1994) and Noben et al. (2021), conceptions of teaching can be categorised into transmission-oriented and learning-oriented. Within the transmission-oriented conception of teaching, the focus is on teachers transmitting knowledge to students who are passive recipients (Vilppu, Södervik, Postareff and Murtonen 2018). Conversely, higher education teachers adopt learning-oriented conceptions of teaching under learning-oriented conceptions of teaching with students adopting active learning (Noben, et al., 2021). The involvement of collaborative knowledge is at the centre of the activity with teachers supporting students' learning process (Vilppu et al., 2018). On the other hand, Kember (1997) categorised teaching conceptions into five types including imparting information, transmitting structured knowledge, delivering organised knowledge, engaging in teacher-student interaction, promoting understanding, and enabling conceptual change. There are diverse interpretations of conceptions of teaching which causes confusion in its understanding, and it impact teaching practices.

In addition, there are multiple perspectives about conceptions of teaching of whether it can be arranged hierarchically and changeable constructs. González (2011) indicates that conceptions of teaching are arranged hierarchically, with information transmission being at the lowest level in terms of teachers delivering information and facilitating students' understanding at the highest levels conceptions. Hence, teachers adopting facilitating students' learning conceptions of teaching are aware of a combination lower and higher levels leading them to use a variety of teaching practices to enhance students learning. For those who embrace information transmission teaching conceptions, their awareness is restricted only to the lower level (Akerlind 2004). Therefore, teachers' engagement with students in learning depends on whether they focus on transmitting knowledge or facilitating students' understanding of conceptions of teaching preferred as it actively engages students (Colak, 2015; Uiboleht, Karm and Postareff, 2018). In a phenomenological study, research was conducted that involved participants from four universities. The outcome of Uiboleht, Karm and Postareff, (2018) revealed teachers who held a higher-level category of conceptions of teaching were aware of the lower-level category, whereas those with a lower-level category were oblivious to beyond their category. Hence, the change in the conceptions of teaching from the transmission of information to facilitating learning constitutes a development for teachers (Degago and Kaino, 2015). This implies that teachers adopting different conceptions of teaching could impact on their development differently. Although conceptions of teaching can be measured to determine

development had occurred, Fullan (2007) asserts that conceptions of teaching developmental processes are implicit and using it as an indicator of development could be tricky which influences the understanding of teachers' development.

Furthermore, there were varying interpretations regarding whether the conceptions of teaching constructs are stable or changeable over time. This has implications for using training to change teachers' conceptions of teaching (Malik, Nassim and Tabassum, 2015). Virtanen and Lindblom-Ylanne (2010) assert that conceptions of teaching remain stable for higher education teachers who are teacher-focused, while Akerlind (2004) argues that conceptions of teaching are changeable due to context. Experience of teaching at higher education and active students influence conceptions of teaching. Furthermore, Vilppu et al. (2018) elucidate that teachers with more teaching experience are less likely to experience a shift in conceptions of teaching compared to those with two years or less experience. This means that teaching experience influences teachers to change their teaching conceptions. According to Ginns, Kitay and Prosser (2008) and Stes, Min-Lelieveld, Gijbels and van Petergem (2010), training is effective in shifting toward facilitating learning teaching conceptions; thus, teachers' participation is essential. Noben et al. (2021) conducted a year-long longitudinal study on the impact of training intervention in tertiary universities on thirty-nine tertiary teachers from various academic disciplines. Noben's research showed varied results; some teachers shifted from a teacher-centred approach to a student-centred one, while others remained focused on teacher-centred methods. Noben et al. (2021) concluded that due to English not being the native language, teachers had difficulty reflecting and clearly expressing their teaching experience. In addition, teachers struggled to produce reflective reports due to the heavy workload, which impeded data collection. Hence, the Noben et al. (2021) study highlights the challenges of using teacher development in empirical research due to diverse outcomes which exacerbate the challenge of understanding of teachers' development over time.

The significance of the studying of conceptions of teaching is the belief that it affects their teachers' approaches to teaching. Kember and Kwan (2000), Degago and Kaino (2015), and Stes, Petergem and Doche (2015) assert that conceptions of teaching influence the teaching approaches. Kember (1997) and Trigwell and Prosser (2004) argue that teachers with transmission-oriented conception employ a unidirectional lecture approach, whereas those who adopt learning conception of teaching fosters a student-focused approach (Biggs, 1996; Lasry, Charles and Whittaker, 2014; Trigwell and Prosser, 2004). Teachers engage students to learn

either passively or actively (Asikainen and Gijbels, 2017) which impacts students' learning. However, the claim that conceptions of teaching influence teaching approaches is inconclusive since there were opposing stances. Stes and Van Petegem (2014) observed gaps suggesting that conceptions of teaching influence teaching practices. Due to limited evidence, Pedrosa de-Jesus, Guerra and Watts (2017) remain unconvinced that the change in the conception of teaching preceded teaching practices. Gusky (2002) posits that teaching practices influence conceptions of teaching when teachers notice that students are learning differently, contradicting the stance of conceptions of teaching that influence teaching practices. Hence, it is unclear of how conceptions of teaching influence teaching approaches when there are conflicting claims. Significantly, changes in either conception of teaching, teaching approaches or both are indicators of teachers' development vary among teachers.

The discussion highlights the various perspectives on teaching held by teachers. Teaching conceptions vary from information transfer to influencing students' understanding. Changing students learning teaching conceptions is more desirable with the awareness of lower and higher-level categories and enhances students' learning. The ongoing debate regarding the variability of teaching conceptions has implications for teachers' development and the use of professional development to influence teachers' practices which can impact their development. The uncertainty of measuring changes can be challenging; nonetheless, conceptions of teaching play a crucial role in shaping approaches to teaching.

3.2.3. Changes in teaching approaches.

The approaches to teaching concepts provide an alternative means of measuring the development of higher education teachers. This section will uncover the types of teaching approaches, contextual factors that affect teaching approaches, academic emotions, and the connection between approaches to teaching and learning approaches reiterating the argument regarding teachers developing differently.

Approach to teaching vary from either content-focused or learning-focused teaching approaches (Cao, Postareff, Lindblom-Ylanne and Toom, 2019; Kember and Kwan 2000; Uiboleht, Karm and Postareff, 2018). In content-focused teaching approaches, the emphasis is on transmitting content from teachers to students (Prosser and Trigwell, 2014). Conversely, in the learning-focused approach to teaching, teachers intend to enhance students' learning processes (Postareff and Lindblom-Yla¨nne, 2008; Prosser and Trigwell, 2014). Prosser and Trigwell (2017); Trigwell, Prosser and Taylor (1994) assert that there were five teaching

approaches higher education teachers adopt. This includes the first and second approaches being content-focused. In contrast, the third approach involves teachers maintaining a teacher-focused strategy to help students acquire subject content while the fourth and fifth approaches to teaching consist of a learning approach with teachers encouraging active student participation in the learning process to foster a more profound comprehension of learning (Kember, 1997; Prosser and Trigwell, 2017). According to Gibbs and Coffey (2004), higher education teachers who focus on learning approaches tend to use a wider range of teaching methods compared to those who are more teacher focused. Teachers in higher education should priortise the roles of facilitating students' learning of engaging students in learning actively instead of transmitting knowledge (Vilppu et al., 2018). Furthermore, Postareff, Lahdenpera, Hailikari and Parpala (2023) assert that the approaches to teaching impact how teachers plan and organise their lessons. Higher education teachers holding content-focused approaches to teaching adopt didactic lectures build around the teachers' interests. Conversely, in learning-focused approaches to teaching, teachers' lesson planning is more flexible to consider students' prior knowledge and foster active students' learning (Postareff et al., 2023). This suggests that approaches to teaching can be considered as an indicator of development when there is shift towards learning-focused approach (Gibbs and Coffey 2004; Nevgi and Lofstrom, 2015; Postareff, Lindblom-Yla¨nne and Nevgi, 2008).

A recent large-scale study by Ödalen, Brommesson, Gissur, Erlingsson, Schaffer, 2018) revealed limited changes in teachers shifting towards learning-focused teaching approaches when exposed to pedagogical training of up to five weeks. A key reason was the majority of higher education teachers held a learning-focused teaching approach at the beginning of Ödalen's et al. (2018) study. This implies the awareness of teachers' stages of development is crucial to determining the effect of training on teachers' as it can affect development. Therefore, there are varied discussions relating to the approach to teaching. In addition, there are varying interpretations regarding whether higher education teachers adopt only one or a combination of teaching approaches. Whereas Kember and Kwan (2000) and Prosser and Trigwell (2014) advocate the use of only one teaching approach, Postareff and Lindblom-Yla¨nne (2008) and Uiboleht, Karm and Postareff (2016) argued that higher education teachers to adopt a combination of approaches to teaching. In contrast, a small-scale study conducted on three teachers in universities in Estonia showed that teachers switched between using content- and learning-focused teaching approaches Uiboleht, Karm and Postareff, 2016). Hence, teaching approaches seem to be flexible rather than teachers adhering to a single, specific approach

Postareff and Lindblom-Yla¨nne (2008) rationale for teachers using a distinct approach to teaching is the lack of motivation to develop their approach to teaching further towards a learning-focused approach. Hence, perspectives vary on whether teachers should adopt a single approach or integrate multiple teaching strategies, impact student engagement, learning outcomes, and the teaching effectiveness which could shape teachers' development differently.

Moreover, several factors, such as academic subjects, gender, and class size, have a notable impact on teaching approaches. According to Nevgi, Postareff, and Lindblom-Yla¨nne (2004), teachers tend to use content-focused teaching methods for subjects such as Science or medicine, while for "soft" subjects such as humanities and social sciences, the learning-focused approach is usually adopted. In addition, larger class sizes can impact teachers' adoption of a content-focused approach (Mladenovici et al., 2022). Nevgi, Postareff, and Lindblom-Yla¨nne (2004) discovered that male teachers tend to adopt a more content-focused approach than women espoused using a learning-focused approach that encourages students in critical thinking. In addition, according to Singer (1996), an increase in class size influences teachers to adopt teaching method that prioritises content transmission. On the other hand, Stes, Maeyer, Gijbels and Petegem (2012) reported that there was no relationship between teachers' characteristics such as gender and class size and the adoption of learning-focused approaches to teaching. Perspectives regarding the role of context that influences the adoption of approaches to teaching vary. It implies the importance of acknowledging the role of context in research on the approach to teaching.

Teachers' teaching approaches are crucial and impact higher education students' learning approaches. Lim et al. (2014) and Uiboleht, Karm and Postareff (2018) assert the association between the approaches to teaching and learning approaches. Teachers adopting a learning teaching approach influence students to use a deep learning approach in which there is increased engagement in learning, thereby enhancing students' learning (Asikainen and Gijbels, 2014; Colak, 2015; Uiboleht, Karm and Postareff 2018). Furthermore, teachers set aside time and space to encourage students to discuss and interact with peers (Postareff, Katajavuori, Lindblom-Ylänne and Trigwell, 2008). This contrasts when teachers who adopt a content-focused teaching approach impact students using a surface learning approach (Prosser and Trigwell, 2014; Uiboleht, Karm and Postareff, 2018) as there are limited student engagement and reliance on memorisation to achieve course requirements (Asikainen and Gijbels, 2017; Vanthournout, Doche, Coetjens, Gijbels, and van Petegem, 2014). Hence,

teachers affect students' learning through the teaching approach they adopt. However, the correlation between the learning approach and deep learning is challenged by Quinn and Stein (2013) argue for a lack of clarity in explaining the connection. Similarly, Uiboleht, Karm and Postareff (2018) found no substantive evidence to support the claim that the adoption of the deep learning approach was influenced by a learning-centred approach. As a result, the extent to which the approach to teaching influences the approach students adopt is uncertain due to inconclusive outcomes.

Furthermore, there is a direct relationship between the approaches and higher education teachers' emotions. Emotions affect both teachers and students according to Trigwell (2012). Both positive and negative emotions influence the approaches to teaching (Postareff and Lindblom-Ylanne (2011); Trigwell (2012). Positive emotions include joy, satisfaction and increased motivation of the teachers to adopt a learning approach to teaching (Trigwell, 2012). Conversely, negative emotions are associated with high levels of anxiety and nervousness (Sutton and Wheatley, 2003) with teachers likely to adopt a content-focused teaching approach (Trigwell, Prosser and Waterhouse, 1999). A study on a hundred and seventy-five Australian higher education teachers showed a positive connection between the emotions they experienced and approaches to teaching (Trigwell, 2012). Furthermore, the same research indicated no connection between positive emotion and the content-focused teaching approach, and negative emotion shows a learning-focused teaching approach. This suggests positive emotion is present in teachers who adopt a learning-focused approach. Although Kordts (2017) found consistency between positive emotion and a learning-focused teaching approach, however, negative emotion is unrelated to a learning-focused and content-focused teaching approach. Hence, teaching approaches adopted influences teachers and students' learning.

The discussion surrounding teaching approaches shows that there are different types of teaching approaches and divergent perspectives of teachers adopting distinct teaching approaches or a combination. While using approaches to learning is a viable method for determining teachers' development, context influences the type of approaches adopted. Moreover, teachers' emotions can impact how they engage students and approach teaching. The approaches to teaching, in turn, affect the learning approaches adopted by students. Hence, the selection of using approaches to teaching is important which could impact their development differently.

3.2.4. Changes in teachers' knowledge, skills, and identity

Teachers' development involves changes in their knowledge, pedagogical skills, and identity that impact their ability to enhance student learning. According to Shulman (1987), there are seven types of knowledge of which content knowledge, general pedagogical knowledge, and pedagogical content knowledge are associated with knowledge. Teachers acquiring teaching experience (Van Driel, de Jong and Van Der Loop, 2002), form the basis of general pedagogical knowledge. Content knowledge and general pedagogical knowledge are distinct knowledge which may not necessarily connect to impart adequate knowledge that is beneficial for students to learn. As a result, higher education teachers possess pedagogical content knowledge which consists of a combination of content knowledge regarding subject discipline and pedagogy knowledge of how content can be organised to promote students' learning (Shulman, 1987). Moreover, teachers organising and adjusting content knowledge to engage diverse students is crucial in the development of pedagogical content knowledge and is unique to teachers' understanding of delivering content (Shulman, 1987) and classroom experience according to Shing, Saat and Loke (2015). The combination of teachers' knowledge interacts in a complex manner that determines how teachers impart knowledge to students. Shulman (1987) argues that teachers acquiring curriculum knowledge is important as it involves understanding the connection between content knowledge and teaching methods.

Teachers' understanding of context, such as knowledge of students, curriculum and educational context, is important and affects teachers' activities. Conversely, Dijk et al. (2022) assert that teachers develop pedagogical content knowledge as it is crucial in helping students comprehend knowledge. Moreover, Dijk et al., (2022) argue that it was not sufficient to convey subject-specific content knowledge to students. Teachers acquiring a deep understanding of the subject is essential as this enables them to present knowledge to students that helps them to understand a subject in a new and insightful way presented by teachers (Shulman, 1987). Dijk et al., (2022) coin such knowledge to be disciplinary knowledge to create the curriculum related to the subject area. Conversely, Shulman (1987) asserts that teachers focus more on presenting knowledge to students, which helps them gain insightful ways of learning (Shulman, 1987). Furthermore, teachers are responsible for selecting, presenting, and structuring lessons that facilitate students' learning (Dikj et al., 2022). This has been emphasised by researchers such as Dijk et al. (2022) and Geerstema (2021). Chalmers and Gardiner (2015) emphasise the importance of enhancing teachers' disciplinary knowledge to effectively change their behaviour

instead of relying on generic teachers' preparation programmes. Although professional development can be used to improve disciplinary knowledge, teachers must exercise caution when choosing professional development programmes that enable them to meet their academic obligations (Chalmers and Gardiner, 2015 and Dikj et al., 2022). In addition, teachers acquire practical knowledge to enable students to establish the connection between theoretical subject knowledge and its practical application (Dijk et al., 2022). Dikj et al., (2022) observed that professional development programs in universities overlook equipping teachers with disciplinary knowledge. Yet, Chalmers and Gardiner, (2015) profess that developing teachers' disciplinary knowledge was imperative as it was more effective in influencing changes in teachers' behaviour than generic teachers' preparation programs. Therefore, it was crucial to support teachers' development with enhancement of disciplinary knowledge, which the current investigation placed emphasis. The discussion underscored the crucial role teachers assumed in conveying knowledge to students.

Teachers' skills and competencies vary, with Kaendler et al., (2015) describe professional competency as the ability to apply knowledge in a specific or task situation. Teachers' skills are important in facilitating learning. Teachers' improvement in teaching skills is related to enhancing students' mastery of knowledge (Malik, Nasim and Tabassum, 2015). Higher education teachers' adjustment in their teaching practices in response to classroom context can lead to a shift in pedagogical skills (Chalmers and Gardiner, 2015) and Velle, 2023), which enhances teachers' effectiveness in fostering students' learning (Inamorata, Gaušas, Mackevičiūtė, Jotautytė and Martinaitis 2019). However, Guskey (2002) argues that unless the acquired teaching skill sets interest teachers, it is less effective to change their skill sets. Malik, Nassim and Tabassum (2015) suggest that teachers' participation in professional development is vital to sharpening their skills and with Kneale et al., (2016) argue that an enhancement of teaching skills could bolster teachers' self-efficacy. In addition, the increasing growth of international students indicates the importance of improving teachers' ability to facilitate learning (Inamorato et al. 2019). Furthermore, Chalmers and Gardiner (2015) suggest that teachers develop higher-order learning skills to foster students' development of problem-solving and social skills. Hence, the enhancement of teaching skills in any of these areas could be considered a development for teachers which vary when they acquire diverse experience.

Furthermore, teachers' teaching experience and their roles as facilitators of learning to shape their identity (Keiler, 2018; Tratwein, 2018). While teachers' identity is involved in how

teachers think about themselves (Keiler, 2018), Tratwein (2018) believe that teachers' identity includes knowledge and emotional attachment that guides behaviour. However, teachers' identity is not a stable construct but evolves as teachers gain experience (Basu, Barton, Clairmon and Locke (2009). Remmik, Karm and Lepp (2013) underscore that the development of teachers' identity and their desire to be good teachers motivates changes in their engagement with students effectively. In contrast, Nevgi and Lofstrom (2015) and Tratwein (2018) argue that changes in teachers' roles influence their identity. As such, Nevgi and Lofstrom (2015) and Lankveld, Schoonenboom, Volman, Croiset, and Beishuizen (2017) assert that teachers' identity is a complex process that develops over time. Supporting teachers in their development of identity was thus essential. To examine the impact on teachers' identity, Tratwein (2018) outlined small-scale exploratory qualitative research of eight higher education teachers enrolled in a master's course. Multiple interviews were conducted over two years. Tratwein's (2018) research showed that teachers' identities were impactful as it changed in their roles, they assumed being initially novices and subsequently gained clarity on their identity as they settled down, but then again, there were adjustments in their identities as they assumed additional roles. The research highlights the significance of teachers being aware of their identities, as it can have an impact on their teaching and students' learning. It emphasises the importance for teachers to have a clear understanding of themselves and their roles which could impact on their development.

3.2.5. Conclusion

The above discussion underlines various viewpoints and arguments regarding the development of teachers. It encompasses modifications to conceptions, teaching practices, skills, knowledge, and attitude. Asghar and Ahmad (2014), Chalmers and Gardiner, (2015), Clarke and Hollington (2002) and Evans (2014) discussed how development in teaching involves multiple aspects of change, making it a complex process. Despite the lack of consensus on what development entails, the learning development of teachers is essential for teachers to be developed towards a student-centric focus.

3.3. Models of teacher development.

3.3.1. Introduction

This section will analyse a variety of theoretical models to elucidate how teachers' development occurs. The development of teachers can be conceptualised either following a linear or non-

linear progression. To provide a clearer perspective, an overview of the models is presented in Table 6 which shows different information, starting with the names of the models on the left. Subsequently, the developmental pathways may manifest in diverse configurations either linear, unidirectional, interactive, or non-linear. In addition, the components column shows the elements of the different models. Furthermore, the role of context refers to the influence of external factors on teachers' development. The table's rightmost column shows the relevant models in this current research and the discussion of these models in subsections 3.3.2 to 3.3.4.

Table 6 Summary of models depicting teachers' development indicating the pathways, components, and context influences.

Teachers' development models.	Developmental Pathways	Components	Role of context on teachers' development (a)
Stage models (Kugel, 1993) and Fuller (1969)	Linear and unidirectional	Teachers' instructional skills and beliefs about teaching and learning.	Influence
Gusky (1986)	Linear and unidirectional	Teachers' classroom practices, beliefs and attitudes, and students' learning outcomes.	Limited influence
Desimone (2009)	Linear and interactive	Teachers' classroom practices, knowledge, skills, beliefs and attitudes, and student's learning outcomes, professional development components.	Influence
Meyer and Land (2003, 2005)	Non-linear	Teachers' cognitive process, practices, reflection and transformation.	Influence
Clarke and Hollingsworth (2002)	Non-linear	Knowledge, beliefs, attitudes, teachers' practices, external information sources and reflection.	Influence
Opher and Peddler (2011)	Non-linear	Teacher, school system and learning activity system.	Influence
Evan (2014)	Non-linear	Behavioural, attitudinal, and intellectual development.	Context is not taken into account

(a) Context refers to teacher and student characteristics, professional development programs, and school context including curriculum.

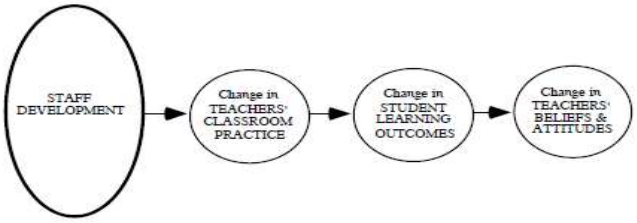
Source: Adapted from Boylan, Maxwell, Coldwell and Jordan (2018), p. 124 and Clarke and Hollingsworth (2002).

3.3.2. Teachers' development occurred linearly and progressively.

Teachers' development occurs linearly across different stages of development or involves changes in teachers' beliefs and teaching practices. The stage models are characterised by the

progression of teachers' development from one level to the next in increasing levels as teachers evolve from teacher-focus to student-focus. Fuller's (1969) model examines the progression pathway of pre-teaching to late teaching in three successive stages gradually focused on student-centred teaching. In this literature review, the Kugel's (1993) model is reviewed as it aligns more closely to the current research as teachers who participated in the cooperative learning were already in-service. Kugel's (1993) model depicts teachers' development in five stages, beginning in stage one, from teacher focus with emphasis on delivering lectures, to stage five, student focus, which prioritises students' learning since the teachers in the current study are those with several years of teaching experience. As teachers know students better, they differentiate them as individuals in adjusting teaching to engage them to be active and independent learners (Hughes et al., 2023). Furthermore, teachers engage students in active learning to construct knowledge collaboratively (Hughes et al., 2023). According to Vermunt, Vrikki, Warwick and Mercer (2017), a manifestation of high-quality teaching is the involvement of students in self-regulated and collaborative learning when students exercise independence in learning. Hence, involving students in active learning is a development for teachers. When teachers shift from knowledge transmission to student-centred learning. However, since there are different stage models, understanding teachers' development in stages is a critique as teachers develop differently. Hence, teachers may not experience a shift from teacher focus to student focus. Understanding teachers' development in stages is a critique.

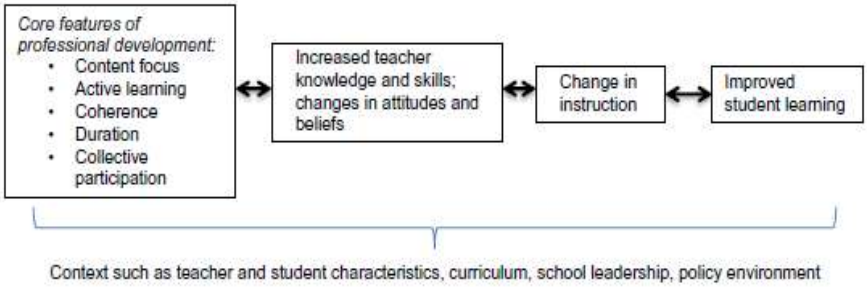
Other models, including Guskey (2002) and Desimone (2009), analyse progressive changes in teachers' teaching practices, knowledge, skills, and beliefs. Although these models analysed teachers' development from school-based contexts, how the models give insight into changes within teachers can be useful in comprehending teachers' development. Guskey's (2002) model, Figure 2 explains development as linear and unidirectional relationships between the components (Boylan et al., 2018). This means that teachers progress with an initial change in teaching practice. Changes in teaching practices influence students' outcomes. Observing change in students' learning impacts teachers' beliefs and attitudes. It implies that changes in beliefs take a longer time than teaching practices. Although the model portrays development in a linear and logical progression, the context is considered static and not taken into consideration in teachers' development.



(Source: Guskey (2002), p. 383.)

Figure 2 Guskey's path model

Desimone (2009) presents an alternative development model, refer to Figure 3. Contrasting the models between Desimone (2009) and Guskey (2002) indicate there are several differences. While both models show linear changes, Guskey's (2002) model, being uni-directional, depicts limited influence on their development. This contrasted with Desimone's (2009) model, showing the interactive relationship between the components. There are multiple factors which affect teachers' development. Changes in teaching occur after changes in knowledge, skills and teaching. However, changes in teaching practice are influenced when they notice students learn differently (Kang, Cha and Ha, 2013). Context in terms of teachers, students, and curriculum plays a vital role in influencing teachers' development. As a result, Desimone's model is more dynamic in which there are diverse ways teachers develop including learning from their classroom experience, professional development and the school environment. The manner in which the models indicate changes in different aspects of teachers could potentially be applied to the current investigation on teachers' development when introduced to cooperative learning.



Source: Desimone (2009), p. 185.

Figure 3 Desimone Core conceptual framework for studying the effects of professional development on teachers and students.

Portraying teachers' development linearly, though easy to understand, has shortcomings. One is the assumption that teachers progress in the same trajectory and sequence, which is unrealistic as teachers vary in their learning with some experiencing forward progression while

others experiencing backward progression or remaining stagnant (Raduan and Na, 2023). Moreover, context factors can impact the development of teachers, including the roles teachers assume, the cohort of students and the subjects they are teaching influence development (Raduan and Na 2023). On the other hand, Dall' Alba and Sandberg (2006) argue that teachers' experiences impact their knowledge and skills as they are better able to adapt teaching practices to changing educational contexts. Thus, the omission of context factors in explaining teachers' development linearly is a critique. As a result, using a linear approach falls short of capturing development since multiple factors affect teachers. The non-linear approach presents an alternative perspective in explaining teachers' development differently.

3.3.3. Teacher's development in a non-linear manner.

The non-linear approach perceives development to be complex in that there are multiple pathways to explain how teachers develop. As such, development is dynamic and challenging to predict. To comprehend teachers' development, the threshold concepts and the interconnected model will be examined. The threshold concepts emphasise teachers taking a transformed view of interpreting information to change knowledge comprehension, contrasting with the focus on reflection and application of knowledge to change teaching practices.

The threshold concept provides a fresh perspective in examining teachers' development in higher education. Although the concept is used in understanding higher education students' learning, Meyer and Land (2005) assert the threshold concept can be applied to explain teachers' development with a focus on critical thinking in understanding information. Meyer and Land (2003) argue that when teachers reinterpret known knowledge content, teachers gain a different perspective. It leads to a change in their comprehension. However, teachers must be open to obtaining knowledge. The extracts explain threshold concepts further.

> a "new and previously inaccessible way of thinking about something" is opened up representing "a transformed internal view of subject matter, subject landscape". This transformed view may furthermore "represent how people 'think' in a particular discipline, or how they perceive, apprehend, or experience particular phenomena within that discipline".
>
> Meyer (2016, p. 464)

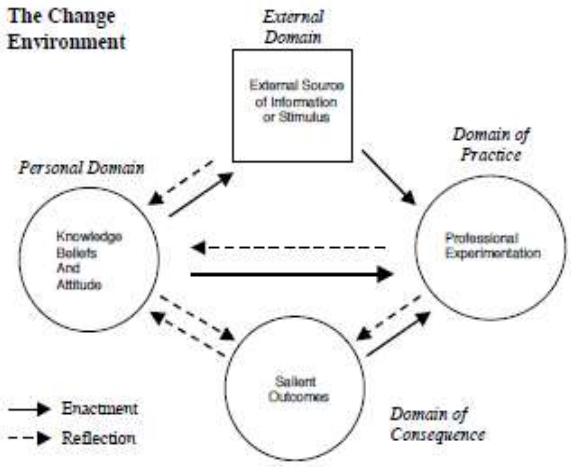
The threshold concept differs from the previously discussed concepts in that the development of teachers is accompanied by a shift in their thinking and perception. It argues that the development of teachers is profound rather than incremental changes. An avenue which leads to gaining different knowledge and perspectives is teachers' participation in professional

development, which challenges existing beliefs (Meyers and Land 2005). Therefore, teachers' engagement in transformative learning is essential. According to Bain and Bass (2012), adopting the threshold concepts uncovers a variety of perspectives that affect teachers changing teaching practices in engaging students to learn differently. It leads to the development of teachers when teachers engage students in learning differently when they gain different perspectives and knowledge. However, teachers develop differently since the shifts in their perspectives occur suddenly or gradually over time. As a result, the development among teachers differs and is unpredictable when the change in their perspectives occurs. In addition, Meyer and Land (2005) assert that teachers undergo an irreversible change, suggesting that the change in teachers' behaviour, which can be teaching practices is permanent rather than temporal. Adopting the threshold concept is, therefore, crucial for the development of teachers. However, there are several criticisms regarding the threshold concepts. Barradell (2013) argues that Meyer and Land (2003) did not offer a sufficient explanation for the necessary number of features needed to fulfil the criteria for threshold concepts. Moreover, there is a lack of clarity regarding the distinction between core and threshold concepts due to varying interpretations (Stopford, 2021) which impacts the comprehension of threshold concepts. Since it is uncertain concepts that are threshold, there is ambiguity. Hence, there are limitations. Nonetheless, the threshold concept offers novel insights into teachers' development.

Another framework that investigates teachers' development is Clarke and Hollingsworth's (2002) interconnected model, refer to Figure 4. In this model, teachers actively engage in reflection and changing teaching practices as helpful in shaping teachers' practices. The model consists of four domains that influence teachers' professional environment. It encompasses the personal domain (knowledge, beliefs, and attitude), the practice domain (professional experimentation), the consequence domain (students' outcome) and the external domain (information or stimulus from outside the teacher). Moreover, changes in the four domains are mediated by teachers' changes in teaching practices and reflecting their actions. When teachers encounter new information as they participate in professional development as an information source, instead of putting their knowledge into practice hastily, they reflect on how students learn before changing their practices. It enhances teachers' knowledge when teachers reflect and act on teaching practices (Clarke and Hollingsworth., 2002). In addition, observing students' learning strengthens teachers' knowledge and beliefs. However, since teachers differ in priorities on how they desire to engage students to learn differently (Chan, Clarke, Roche, Clarke and Clarke, 2019), it affects their teaching practices. The interconnected model shows

the combination of teaching practices, knowledge, beliefs, and students' learning outcomes impact teachers' development.

In conclusion, while both threshold notions and the interconnected model provide useful frameworks for comprehending teacher growth, they pose distinct obstacles and constraints. The threshold concept emphasises deep and transformative learning in contrast to the gradual changes emphasised in the linked approach. An in-depth analysis of these approaches underlines the intricate and diverse nature of teacher development, emphasising the importance of continuous research and improvement of these theoretical models.



Source: Clarke and Hollingsworth, (2002), p. 951.

Figure 4 Clarke and Hollingsworth interconnected model

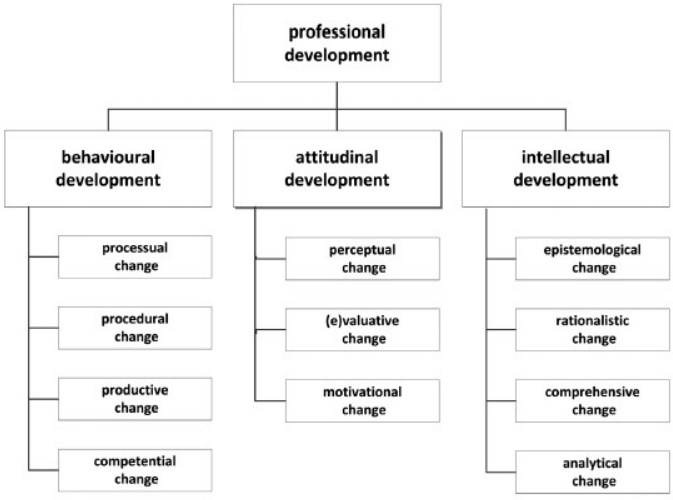
Understanding the development of teachers in a non-linear manner indicates multiple factors influence development in unpredictable ways. The threshold concept asserts the importance of adopting a new way of interpreting information that uncovers hidden perspectives that affect teachers' knowledge. Consequently, they approach teaching and learning differently with different perspectives. The interconnected model demonstrates the complex interplay that influences teaching practices. Therefore, the two models present diverse ways teachers develop. It implies that even though teachers attend professional development, there are various ways in which they deliver teaching practices, which in turn affects their development.

3.3.4. Other models of development

The other development models in depicting teachers' development include Opfer and Peddler (2011) and Evans (2014). Opfer and Peddler (2011) present multiple influences that affect

teachers which differ from Evans's (2014) model. While these models may not be directly applicable to this research, as they do not fully explain the process of teachers' development and primarily focus on the school setting, they do provide alternative perspectives for understanding teachers' development.

Opfer and Peddler (2011) recognise teachers' development as complex, whereby three key factors influence teachers in school settings. It includes teachers, education institutions and school systems that dynamically interact with one another. A distinctive feature is the impact of fellow teachers encouraging each other to shape their teaching practices (Opfer and Peddler, 2011). While the model acknowledges the interconnections between factors and systems, it does not sufficiently explain how these impact teachers' development (Boylan et al., 2018). In addition, various layers of systems interact within the context, posing challenges for teachers to understand how it impacts them. In contrast, Evans (2014) adopts micro-level analyses of teachers' development that involve behavioural, attitudinal, and intellectual development components, refer to Figure 5. Changes occur in teachers as part of self-development when they engage in informal learning as a better way of teaching (Boylan et al., 2018). Changes occur in one or more dimensions across more than one component. Significantly, Evans (2014) recognises attitudinal and intellectual changes as essential to improving teaching practice. However, behavioural change alone does not result in attitude and intellect change since it is externally imposed, which teachers may not have the desire to change in the first place.



Source: Evans, (2014), p. 191.

Figure 5 Component structure of professional development

Although the model offers an in-depth look at teachers' intellectual and attitudinal aspects, the

exclusion of social structure context that includes teachers' relationship to students' outcomes partially explains teachers' development (Boylan et al., 2018). Hence, Evans's model has limitations when applied to higher education teachers' development, with the social and relational aspects of teaching and learning being crucial to influencing teachers' development. Hence, these models do not offer comprehensive description regarding teachers' development occurring. It highlights the complexity in understanding teachers' development.

3.3.5. Conclusion

To encapsulate, the discussion examines two categories in which teachers develop, linearly and non-linearly. Linearly, development is understood to be progressing hierarchically. Kugel's (1993) stage model suggests that development involves shifting from teacher to student-centred. Conversely, Guskey's (2002) and Desimone's (2009) models hold different views on whether a change in teaching practice proceeds before a change in teachers' beliefs or after in a linear manner. Since development is complex, representing teachers' development linearly is inadequate. Meyer and Land (2003, 2005) adopt a transformed shift in interpreting experience that enhances their perspectives. Development happens when teachers' beliefs and practices change, leading to a different way of learning for students. The interconnected model suggests that a shift in teaching practices is achieved by implementing teaching methods and reflecting on them rather than making a direct change. Understanding teachers' development in a linear and non-linear manner could affect changes in teaching beliefs, knowledge, and teaching practices underscoring the complexity of comprehending the development of teachers.

3.4. Factors influencing teacher development.

3.4.1. Introduction

This section will analyse three factors that impact teachers' development: involvement in reflection, professional development, and teachers' collaboration. Gibbs and Coffey (2004) and Piedrahta (2017) assert that the developmental process is intricate, indicating multiple factors that influence teachers. The analysis of reflection and professional development seeks to enhance comprehension of how these factors affect teachers' development.

3.4.2. Teachers' engagement in reflection.

The active involvement of teachers in reflection is crucial for enhancing teaching practices. According to Brooksfield (1995), reflection is essential for effective teaching and development.

There are varied interpretations of reflection: it involves teachers thinking about something (Mathew, Mathew and Peechattu, 2017) and reflection in action during lessons (Schon, 1983) or after class as a less hurried look at the day's events (Tight, 2023). Moreover, reflection requires active engagement and experimenting with experiences (Rogers, 2001) which is a complex process. However, confusion arises due to the myriad perspectives and terminology used. Bharuthram (2018) and Rogers (2001) underscore that reflection lacks a definitive definition and not a single homogeneous idea (Tight, 2023) as there are many ideas. Moreover, various terms have been introduced, such as reflection, reflective practice, critical thinking, and critical reflection (Beveren, Roets, Buysse and Rutten (2018). In addition, over fifteen different terms have been used, resulting in diverse understandings of reflection (Rogers, 2001). Hence, this reflection review will examine two main types of reflection and critical reflection as there are distinct differences, yet it is essential to promote teachers' development. Table 7 compares the difference between reflection and critical reflection with a detailed discussion to examine how reflection impacts teachers' development.

Table 7 Differences between reflection and critical reflection.

Reflection	Critical reflection
To keep informed and tackle classroom situations.	Understand deeper underlying issues that affect teachers.
Enhances teaching practices.	Evaluate teachers' assumptions and beliefs.
Perceive teaching practices in a broader social-cultural context.	Reval fresh insights for teachers to improve on teaching.

Sources: Cole, Hinchcliff and Carling (2022), Saric and Steh (2017)

Teachers are able to obtain numerous benefits when they reflect. This includes teachers can stay informed about classroom situations when they look back to engage in reflection on action (Schon,1983). Garrido (2023) and Mathew, Mathew and Peechattu (2017) argue that acquiring classroom experience is insufficient; instead, teachers to participate in reflection to examine their teaching practices to improve. Importantly, reflection leads to pedagogical awareness of teaching practices and classroom context (Postareff et al., (2023) and enables teachers to consider carefully how situations can be effectively handled, especially if they have adequate time to do so during lessons (Huang, 2015). Hence, reflection enhances teachers' abilities and competencies to manage classroom situations. Moreover, unanticipated events necessitated teachers to take action to address the situation (Russell, 2018). The discussion shows teachers' involvement in reflection is crucial as it helps them remain attentive and take appropriate

actions to address classroom situations. According to Bharuthram (2018), reflection enhances teachers' effectiveness in teaching and students' learning. When teachers reflect, they evaluate what worked well and what did not well (Garrido, 2023), enabling teachers to learn from everyday experience to improve teaching practices (Saric and Steh, 2017; Seitova, 2019). As a result, teachers become more focused on their students when they improve their teaching practices. In addition, teachers in multicultural classrooms analyse and adjust their teaching methods to adapt to their students' social and cultural backgrounds, (Liu, 2015) when teachers integrate cultural diversity into lessons (Cole, Hinchcliff and Clarling, 2022). Reflection improves their effectiveness when engaging with students from diverse cultural backgrounds (Liu, 2015; Saric and Steh, 2017). Furthermore, reflection enhances teachers' ability to understand the context that impacts teaching and the perspective of their students. It facilitates teachers' perception of their actions in a broader social and cultural context, adapting their teaching and engagement with students, thereby enhancing teachers' experience (Thompson and Pascal, 2012; Saric and Steh, 2017). In multicultural classrooms where there are students with diverse learning preferences teachers to take on multifaceted roles such as diagnosing, challenging, monitoring, and evaluating students' learning process during cooperative learning (Vermunt, 2014). Hence, teachers vary as they respond differently when they reflect and take several roles engaging students in learning. Reflection to prepare teachers to accept teachers assuming enlarged roles more readily. In a more recent study that involved 289 Iranian English university teachers who had several years of lecturing experience, they participated in a survey study to assess the impact of reflection on teachers' work engagement and academic optimism (Li, Mohammaddokht, Hosseini and Fathi, 2023). The results of the Iranian study indicated that work engagement and reflective teaching were positively correlated. Significantly, an attributable reflection was teachers questioned about their teaching beliefs. Furthermore, reflection led to problems being identified and solutions developed, enhancing teachers' work engagement and commitment (Li et al., 2023).

The preceding discussion indicates a connection between reflection and action, that is, teachers' engagement in reflective practices, they gather evidence about their teaching practice to analyse, interpret, and evaluate their experiences to enhance their future teaching (Farrell, 2016). Mathew, Mathew and Peechattu (2017) argue that reflective practice involves teachers in ongoing learning, equivalent to experiential learning, as it differs from formal learning as it generates fresh perspectives that lead to a modification and enhancement of teaching practices (Korthagen, 2017). Crucially, reflective practices allow teachers to enhance their self-

awareness and explore the connections between the answers they have acquired and other experiences and ideas (Mockler, 2011), improving teachers to balance solutions that reflect teachers' views and sentiments (Korthagen, 2017). Although Ciampa and Gallagher (2015) contend that engaging in reflective practice leads to ineffective teaching techniques, unlearning familiar teaching strategies might be complicated. Malkki (2010) is unconvinced that there was a definitive link between reflection and action due to insufficient concrete evidence. Sharing the same vein, Malkki and Lindblom-Ylanne (2011) state that there are knowledge gaps in how reflection could be translated into actual practice. This demonstrate the complexity in understanding teachers' development due to lack of clarity regarding reflection and action is unclear. Hence, teachers' continuous learning is an effective way to improve teaching practices.

3.4.3. Teachers' engagement in critical reflections.

Teachers' engagement in critical reflection is essential as it enhances teachers' deeper comprehension, which affects them, evaluating underlying reasons, re-examining their beliefs and assumptions, and unveiling new insights and consequences of actions taken (Russell, 2018). Fook, White and Gardner (2006) assert that critical reflection takes on a critical pedagogy perspective. Gaining insights explaining their actions in the classroom enables teachers to understand themselves better. A key characteristic of critical reflection is teachers delve deeper into issues that affect them (Kember, Mckay, Sinclair, and Wong, 2008). This involves uncovering hidden issues that influence teachers, thereby improving their understanding of teaching practices (Saric and Steh, 2017; Beveren et al., 2018). Sipos, Battisti, and Grimm (2008) underline that change in teaching practices would not occur unless teachers acknowledged and reflected on issues that were embedded in classrooms. In addition, teachers review assumptions that shape their actions taken in class (Mohamed, Rashid and Alqaryouti (2022) and challenge the dynamics that frame teaching practice (Mezirow, 1991). Furthermore, by stepping back from their experience and asking themselves questions, higher education teachers gain a deeper understanding of the significance of specific events (Cole Hinchcliff and Carling, 2022). Hence, teachers' involvement in critical reflection is essential to acquiring a firmer understanding of issues and assumptions that shape teachers. Fook, White and Gardner (2006) underscore the importance of carefully analysing the cognitive, emotional, and experiential beliefs that underlie our actions before we create different approaches. Re-evaluating these assumptions is essential as it ensures that any planned actions do not replicate those of the past. Therefore, fostering critical thinking skills is vital for enabling teachers to question existing perspectives and develop more effective, responsive approaches to teaching.

Moreover, engagement in critical reflection involves teachers examining their conceptions of teaching since it influences teachers' practices (Degago and Kaino, 2015; Stes, Petergem and Doche, 2014). Teachers' involvement in professional training encounters fresh ideas, and insights that are inconsistent with existing beliefs. Adjusting teachers' beliefs requires engagement in reflection to reshape the understanding of the experience and align new concepts with their beliefs (McAlphine and Weston, 2000). Therefore, teachers gain varied perspectives to improve their teaching. Kreber (2005) suggests that teachers should prioritise engaging in critical reflection that challenges their teaching conceptions for teacher changes to occur. This means evaluating, questioning, and even challenging assumptions and beliefs that could alter the assumptions held by teachers (Bharuthram, 2018). Bergman (2016) asserts teachers are receptive to questioning previously held beliefs and presumptions. Through contemplation, it has the potential to reshape the understanding of the experience when teachers reflect critically. It underscores teachers' involvement in critical reflection as it unveils beliefs that shape teaching practices and the potential to change them. Furthermore, Beveren et al. (2018) and Saric and Steh (2017) argue that reflection enables higher education teachers to be receptive to new ideas that may lead them to uncover fresh insights and perspectives that enhance their teaching practices. Teachers gain a retrospective insight into the lessons conducted when they reflect which improves their understanding of teaching and how it influences students' learning. Chan and Lee (2021) assert that teachers evaluate experiences planned for future actions, recognising that they take time to adopt constructive action rather than implement a quick-fix solution. Hence, reflection facilitates teachers to carefully consider planned actions that may improve tackling classroom situations and teaching practices. Saric and Steh (2017) reiterate the significance of higher education teachers developing critical thinking skills to discern the consequences of actions and be sensitive to their teaching environment. Critical reflection unveils insights, and teachers carefully consider the actions they plan to take to enhance their teaching effectiveness and engagement with students. Significantly, it affects their development when teachers engage in critical reflection and respond differently.

3.4.4. Challenges faced by teachers in reflection.

Despite the advantages of teachers engaging in reflection and critical reflection, they encounter challenges. This includes institutional context such as curricular structure and organisation conditions that impose barriers to changes in their teaching practices (Malkki and Lindblom-Ylänne, 2011). Moreover, a packed curriculum schedule leaves teachers with little time to reflect. McAlpine and Weston (2000) argue that teachers who do not engage in reflection due

to a lack of motivation and awareness of how reflection could benefit them in gaining a deeper understanding of their teaching profession and alternative teaching McAlpine methods. Another set of difficulties is the fear of taking actions, which reflection informs them of. McAlpine and Weston (2000) argue the fear of taking risks discouraged teachers from engaging in reflection. Embracing change entails risk, and when teachers engage in reflective thinking to recognise the necessity for change, they accept the risk of implementing alternative approaches (Le Fevre, 2014). Echoing, Guskey (2002) assert that change induces anxiety when teachers are uncertain about students' learning outcomes. Brookfield (1995) underlines the risks of being excluded from the academic community when they question shared experiences, and the concern of being judged by peers discourages teachers from engaging in reflection (Tight, 2023). Another type of fear was relinquishing previously held norms and beliefs. In a collectivistic culture, the importance of maintaining amicable relationships discouraged frank opinions from being transpired (Hofstede 2003). Unless teachers address and accept changes in their beliefs, changes will not happen. Chan and Lee (2021) highlight that promoting reflective practices required institutional-wide support, which may need to overcome resistance from stakeholders, including students, teachers and management. It underscored the difficulty of promoting reflection among teachers. To portray the challenge that teachers encountered in reflection. Beauchamp (2015) and Malkki (2010) emphasise that the multifaceted nature of reflection, encompassing cognitive, affective, and social dimensions, complicates separating affective and social aspects from cognitive elements. This suggests the complexity of reflection to be more than a cognitive process and affects development in the process. Furthermore, Kreber (2005) emphasise that teachers lacked knowledge regarding how to engage in reflection and how to demonstrate reflection; consequently, they were incapable of expressing themselves explicitly. These challenges recognise the challenges teachers face when engaging in reflection instead of making the presumptuous that it was without risk. This implies the need for teachers to be given the support to help them cope better.

To encapsulate, teachers' engagement in reflection for teachers is imperative as it enables them to examine their lessons, enhance their pedagogical approaches and tackle classroom issues. In addition, involvement in critical reflection reveals hidden assumptions and uncovers biases that shape their teaching practices. Therefore, engaging in reflection enhances teachers' effectiveness and understanding of themselves. However, barriers to reflection constrain the use of reflection. Despite the difficulties, the practice of reflection would facilitate teachers in effectively engaging with students while implementing cooperative learning strategies.

3.4.5. Using professional development to promote teachers' development.

The importance of the present study is to comprehend how teachers receiving training could affect cooperative learning implementation and development. Hence, examining on the effects of professional development is essential. According to Kneale et al., (2016), professional development refers to learning activities that involve teachers participating to enhance their skills and knowledge. Malik, Nassim and Tabassum (2015) define professional development activities to include engaging participants in formal assignments and attending conferences and informal learning opportunities to improve knowledge. The goal of professional development is to provide teachers with the support to enhance their pedagogical abilities and remain updated with recent knowledge (Fernandes, Araújo, Miguel and Abelha, 2023) in improving teachers' knowledge, skills, and practices. Professional development impacts teachers in several areas. This include improving teaching quality, bolsters teachers' self-confidence, subject knowledge (Fabriz, Hansen, Heckmann, Mordel, Mendzheritskaya, Stehle, Schulze-Vorberg, Ulrich and Horz, 2020) and student outcomes (Fernandes et al, 2023). Moreover, Gusky (2002) indicates that professional development increases teachers' pedagogical knowledge and skills to improve students' learning. Gibbs and Coffey (2004) and De Vries, Van De Gift, and Jansen (2014) conclude that it is an effective intervention strategy for changing higher education teachers' conceptions and teaching practices towards student focused. To have an impact on the teaching practices, professional development contextualised to facilitate teachers to translate knowledge into classroom practices (Darling-Hammond, Hyler and Garner, (2017). Hence, it goes beyond providing teachers with content knowledge to prepare them for cooperative learning; it provides opportunities to incorporate innovative practices or pedagogies into their lessons to enrich their knowledge. The transition from theory to practice require sufficient time to develop, absorb, discuss, and apply new information. Ödalen et al. (2018) assert that the positive effects of pedagogical training take time for higher education teachers to change their teaching practices. Similarly, Jolliffe (2015) acknowledge that teachers' confidence in untested teaching strategies must be gradually acquired and moulded into teaching practices. Teachers applying knowledge and skills in lessons is crucial although they vary which can impact on diverse development.

To examine the effects of pedagogical training on teachers, Light, Calkins, Luna, and Drane (2009) examined the impact of formal faculty development programmes on teachers' approaches to teaching in a research study. The study lasted over eight months and involved

fifty-two higher education teachers in various subject disciplines. Light et al. (2009) concluded there were positive changes in higher education teachers' approaches to teachers being student-centred. Notably, a significant part of the change was teachers' teaching approach to using student-focused activities in lessons. However, changes in their approaches to teaching were limited since the study did not provide extensive development and evidence regarding the depth and breadth of changes across key dimensions of courses. Recently, research conducted by a private higher education institution in Portugal assessed the impact of professional development on teachers' satisfaction, perception of teaching practices and conceptions (Fernandes et al, 2023). Thirty-six teachers from various disciplines participated in several professional development programs ranging from two to six hours in pedagogy and curriculum development. Teachers were encouraged to reflect on changes and the outcomes showed higher education teachers were more confident in assuming their roles, positively impacted teaching practices. However, teachers expressed they faced challenges in implementing changes (Fernandes et al., 2023), echoing the argument of teachers' assuming risk by altering their practices. Providing teachers with support was required to assist them. Fernandes's study showed that teachers were less satisfied with the activities carried out in professional development to be less useful in helping teachers translate into teaching practices. Moreover, teachers did not have sufficient time to apply what they learned during professional development. As a result, peers could serve as role models to encourage teachers to apply knowledge. Fernandes's study demonstrates that professional development alone is insufficient to prepare teachers to translate into practices, and teachers' reflection is beneficial in becoming aware of the changes they have made.

To be effective, teachers are encouraged to attend professional development sessions for an extended period. Boyle, While, and Boyle (2004) discovered a positive correlation between a sustained period of professional development, a change in teaching practices, and the potential for enhanced student achievement. A lengthy process of pedagogical training is crucial to shift from a teacher-centred to a student-centred approach to teaching since change takes time (Postareff, Lindblom-Ylanne and Nevgi, 2007). Furthermore, Gibbs and Coffey (2004) reiterate that the gestation period for a change in higher education teachers' conceptions to transfer to practice is longer. Teachers holding a teacher-centred approach to teaching are more resistant to change than student-centred ones (Gibbs and Coffey, 2004). As such, longer professional development will have more impact on teachers. Moreover, it offers teachers opportunities to engage in learning, increasing for change to occur. According to Darling-

Hammond et al., (2017), a fragmented approach to professional development is less effective as it inhibits the accumulation of knowledge. Desimone (2009) suggests that professional development activity should last a minimum of one semester and involve a minimum of twenty hours of participant contact time. Hence, there is consensus for professional development to be offered for a lengthy period, however, there are differing views.

Professional development is essential for teachers to enhance their knowledge and skills as they progress in their academic careers. Instead of a one-off activity, professional development can be extended for a longer duration. Besides exposing teachers to updated pedagogy knowledge and skills, providing teachers with the opportunities to apply knowledge to classroom practices increases teachers' effectiveness in influencing students to learn. However, variations in teachers' involvement in professional development led to them developing differently in knowledge, competencies, attitudes and readiness to adopt varied roles.

3.4.6. Teachers' collaboration with peers to improve practices

Academic development involves the promotion of a network of teachers working collaboratively to share and exchange knowledge, seek improvement or even challenge the status quo, beyond teaching to student-centric learning. According to Goddard, Goddard, Kim and Miller (2015), collaboration encompasses teachers sharing information with peers and participating in formal and informal collaborations. McCune (2018) acknowledges informal conversations about teaching can lead to pedagogical development. Teachers could relate with each other in day-to-day practices (Noben, Brouwer, Deinum and Hofman, 2022; Steinert, Mann, Anderson, Barnett, Centeno, Nasmith, Prideaux, Spencer, Tullo, Viggiano, Ward, and Dolmans (2016). The involvement of collaborative work in higher education teachers leads to an important discussion on core issues (Gerken, Beausaert and Segers, 2016) and the ability to analyse reflectively (Santagata and Guarino, 2012). In addition, it also builds teachers' confidence, promotes research ability and minimises competition that can be a barrier to development (Hökka and Anneli, 2014). Noben et al. (2022) found that teachers with five years of experience were more likely to collaborate with colleagues. There are numerous benefits when teachers collaborate. This includes dialogue with colleagues, which leads to a wealth of ideas and diverse perspectives, which promote new knowledge creation and understanding (Bergman, 2016). Meirink, Imants, Meijer, and Verloop (2010) assert that collaborating with fellow teachers could change pedagogical perception, improve teaching methods, and foster closer peer relationships. Hence, collaborating with colleagues boosts morale when working,

helping, and learning from each other. Importantly, teachers' development varies depending on collaboration with peers. Hargreaves and O'Connor (2018) underline that teacher collaboration is essential to move away from outdated practices and to develop new, effective ideas and methods. Similarly, Goddard et al., (2015) assert collaboration among teachers leads to pedagogical improvement. Hence, teachers' involvement in collaboration is essential. Romeu, Guitert and Sangra (2016) profess that teachers' collaboration goes beyond the sharing of information and coming together to create joint knowledge. Moreover, it can strengthen collective ownership of the curriculum by improving curriculum development and its practical implementation (Voogt, Pieters and Handelzalts, 2016). It enhances social interactions among colleagues (Quardokus and Henderson, 2015). Furthermore, in higher education, teachers' participation in the learning community positively impacts teachers and students as the improvement in pedagogical culture places more attention on students' learning (Nistor, Daxeejer, Staneiu and Diekamp, 2015). Hence, collaborating with colleagues increases teaching confidence, job satisfaction, classroom experiences and development.

At the department level in higher education, increased autonomy in course creation promotes the formation of cohesive units that foster collaboration among teachers. Desta, Gedefaw, Tefera, Abate and Ayenalem (2023) examined teachers' cooperation in public universities in an Ethiopian university to examine the impact of collaboration among teachers. The study revealed that collaboration was more prevalent at the departmental level compared to the institutional-wide level due to the proximity of teachers' offices, which facilitates contact among teachers. Furthermore, the shift from individual teachers' teaching and learning abilities towards emphasising teachers' collaboration fosters the development of a socially interactive and dynamic learning environment (Steinert et al, 2016). Importantly, teachers experienced reduced isolation with fellow teachers coming alongside when they collaborated (Noben et al., 2022). The discussion highlights a significant change in perspective from viewing teaching as an individual activity to recognising the potential benefits of teachers collaborating to enhance their teaching methods. Nevertheless, there are several obstacles when teachers collaborate. Although higher education teachers share information, there was less engagement in team teaching and the area of the teaching-learning process (Desta et al., 2023). Plauborg (2009) argued that teachers prioritising practical matters demonstrate less engagement in deep-level teacher collaboration. This may exacerbate relationship tensions among teachers. Therefore, the level of collaboration among teachers remains shallow. The discussion surrounding teachers' collaboration underscores the significance of teachers' dedication to working together,

as it can result in enhanced knowledge and teaching methods and foster a collaborative work atmosphere.

3.5. Conclusion

Chapter three examined the development of teachers in three main areas. First, teachers' development is conceptualised to be either linear or non-linear. Non-linear development implies changes that vary and are less unpredictable than linear development. In addition, the development of teachers entails changes in conceptions about teaching, teaching approaches, or their knowledge, skills, and identity. Holding the stance of conceptions about teaching is variable implies professional development can be used to shift conceptions of teaching, unlike when it is stable. Similarly, teachers adopt distinct categories of teaching approaches, either content-focused or learning-focused. However, there are views teachers adopt both content-focused and learning-focused approaches to teaching. Furthermore, increasing teachers' identity will likely influence teachers to perform diversified roles. The discussion shows that teachers' participation in reflection is imperative in enabling teachers to tackle classroom situations. Crucially, as they look back on lessons conducted, teachers improve their teaching practices when they are aware and adjust practices to enhance students' learning in diverse classrooms. In addition, teachers' involvement in critical reflection enables them to evaluate and question the beliefs and assumptions shaping their teaching. Furthermore, teachers gain novel insights into the underlying reasons why actions are taken and facilitate teachers to change their teaching practices. However, there are several challenges teachers face when engaging in reflection, including fear of recommending changes that go against institutional norms and work practices. Teachers' involvement in professional development and collaboration with colleagues are crucial in fostering the development of teachers when they gain new insights into different teaching practices and knowledge. The present study in supporting teachers' development with academic development underscore its significance to comprehend on how cooperative learning impacted them.

Chapter 4: Research methodology

4.1. Introduction

This chapter outlines the research process, detailing the steps involved, including data collection design, procedure, and analysis (refer to Figure 6). The diagram establishes connections with findings presented in subsequent chapters. This chapter is divided into several sections which cover the research context to data collection procedure, analysis, thematic writing and case development.

Section 4.2 provides an overview of the private educational institution where this study is conducted. It includes brief biographies of the research participants, highlighting their backgrounds, specialisations, and teaching experiences, along with details on how teachers were recruited into this study.

Section 4.3 outlines the research implementation process to provide an overview of the data collection phases, in which the current study employed several research methods conducted for an extended period. Sections 4.4 and 4,5 detailed the research philosophy and design in longitudinal and case study research. Understanding the interpretative stance is essential as it guides the research methods in section 4.6, including semi-structured interviews, focus groups, and class observations, to guide the data to be collected. Section 4.7 will explain how the data collection is being conducted. The diverse qualitative data collected will be analysed in section 4.8, detailing the themes and codes and thematic writing and case development in section 4.9, to be discussed in more detail the thematic writing and case study of chapters five to Seven.

A distinction between “participants” and “teachers” is made to differentiate the terminology. The term “participants” is used generically to refer to informants in literature review and conceptual discussion (Bell, Bryman and Harley, 2022 and Bingham, 2023). On the other hand, ' teachers’ refer to individuals who participated in the current research. Another term is “researchers” and “the researcher”, in which “researchers’ is used in a generic sense to refer to individuals who conducted research (Naeem, Ozuem, Howell and Ranmgfagni, 2023) and “the researcher” is used as a third-party reference to the author who conducted the study.

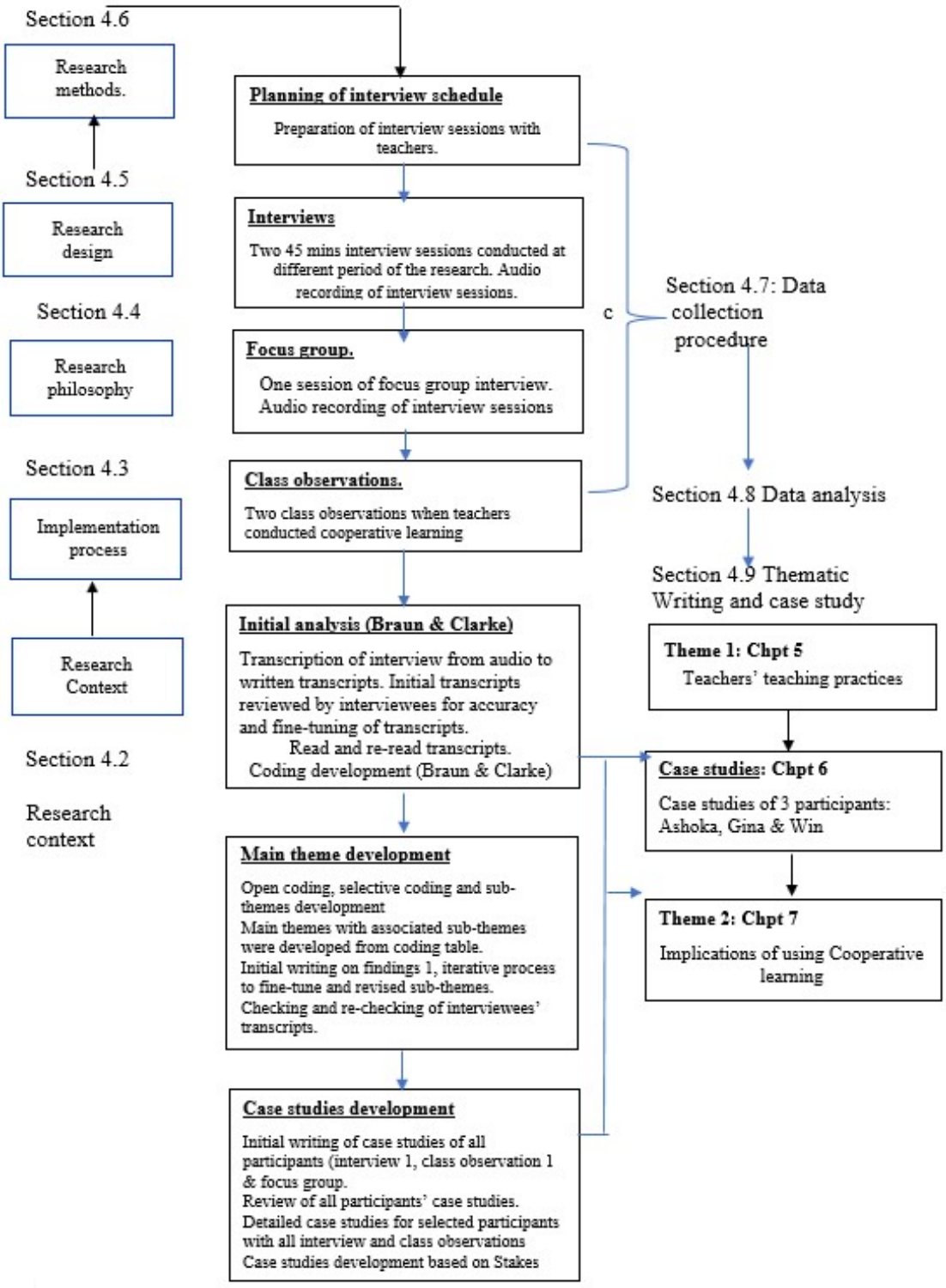


Figure 6 Overview of data collection and analysis process

4.2 Research context: Educational institution

The current research was conducted at Shine Academy, a private educational institution (PEIs) in Singapore. The academy offered a wide range of courses at various levels, including "O" levels, higher diplomas, and undergraduate degrees. Qualitative data was collected among teachers and students pursuing higher diplomas and degrees. Higher diploma courses were included in the study because they are recognised as pathway programmes leading to bachelor's degrees in partnership with United Kingdom universities. “Across the UK, higher education is generally understood to mean undergraduate and postgraduate degrees taken by students aged 18 years of age (or in Scotland, 16) and older” (UK Parliament, 2024, p. 12). The Quality Assurance Agency (QAA, 2024) classifies qualification level five as a foundational degree and level six as an undergraduate degree. This means the higher diploma courses at PEIs are equivalent to the first and second years of university study. Upon successful completion of the higher diploma, students are admitted directly into the final year of a bachelor’s program at a partner university in the UK. These "top-up" degree courses are taught on Shine Academy’s campus by accredited teachers approved by the partner university. In addition, assessments are set by the partner university, and they moderate graded scripts to ensure quality standards are aligned. While the research primarily focused on teachers’ experiences with implementing cooperative learning, students’ perspectives were also collected to provide additional insights. The students involved in the study were 18 years old or older and were pursuing foundation or final-year degree courses. To maintain clarity, the terms “teachers” and “students” will be used throughout the study instead of participants.

4.2.1. Profile of teachers

Table 8 summarises the eight teachers' background, knowledge expertise, and pedagogy training, along with other characteristics. Gaining their knowledge of their background is important as it may influence their teaching approaches adopted, receptivity of cooperative learning, and development. The teachers varied in gender, country of origin and subject specialities. This diversity enriched the research by offering a broader range of perspectives, deepening the analysis of how various contexts and backgrounds shape teaching practices. To protect the anonymity and confidentiality of the participants, pseudonyms names were assigned and are used throughout this thesis.

Table 8 Participants' profile at a glance

Participant names	Gender	Country of origin	Subject speciality	Highest qualification	Educational training	Corporate experience (years)	Accumulated years of teaching
Gina	Female	Poland	Tourism & Hospitality	Masters (Tourism)	No, exposed to Western education	5	6
Patrick	Male	India	Tourism & Hospitality	Masters (Hospitality)	No	>5	8
Regina	Female	Malaysia	Psychology	Masters (Psychology)	No	<3	> 10
Beng	Female	Malaysia	Economics	Masters (Economics)	Yes	<3	10
Win	Male	Malaysia	Finance, Management	Masters in Business	No	>10	8
Tee	Male	Singapore	Information Technology	Masters (Technology)'	No	<5	5
Ashoka	Male	Singapore	Statistics & Accounting	Degree + ACCA	Yes	5	4
Rajoo	Male	Singapore	Management & Marketing	Masters (Marketing)	Yes	>10	>10

Qualifications and work experience —The teachers held master's degrees and professional qualifications in their respective fields of expertise and had several years of corporate experience prior to their transition into teaching. This allowed them to bring both practical work experience and in-depth subject knowledge to their teaching practices.

Teaching experience —The teachers who participated in the current research had between four and over ten years of teaching experience. As experienced teachers, their deeply ingrained teaching practices may have influenced how they responded to the introduction of cooperative learning.

Educational training — More than half of the teachers had limited or no formal pedagogical training. The academic development sessions on cooperative learning provided new perspectives on teaching and learning. These sessions served as a refresher course for those with prior pedagogical training.

4.2.2. Students' characteristics

Majority of students enrolled at Shine Academy were international students pursuing higher diploma and degree courses in various disciplines, including Business, Hospitality, Information Communication Technology, and Psychology. The proportion of international students varied by faculty, with information communication exhibiting the largest share and psychology the lowest. Refer to Table 9 for a breakdown of international students by faculties.

Table 9 International students (as %) by faculties

Schools (faculty) within Shine Academy	**International students (%) average**
Business	80%
Hospitality	80%
Information communication Technology	90%
Psychology	70%

Source: Darm (2024)

The classroom consisted of students from several overseas countries. The majority of students were from China, Indochina, and India, with a minority from other countries, such as Uzbekistan and Russia. A diverse mix of students within classes was a norm at Shine Academy. Refer to Table 10 for the breakdown of international students.

Table 10 Proportion of international students

Nationality	**Percentage (%)**
China	50%
South Korea	5%
Indochina (Thailand, Vietnam & Myanmar)	20%
India	10%
Uzbekistan	10%
Others	5%

Source: Darm (2024)

Students from varied backgrounds and learning experiences brought opportunities and challenges. One was that international students received their foundational education in various overseas countries, and engaging students to work together. Due to differences in educational

systems in overseas countries and mediums of communication, students' English language proficiency varied significantly. These variations in students' language proficiencies and backgrounds could impact how students cooperate and in the implementation of cooperative learning, which will be discussed further in chapters five to seven in the research findings.

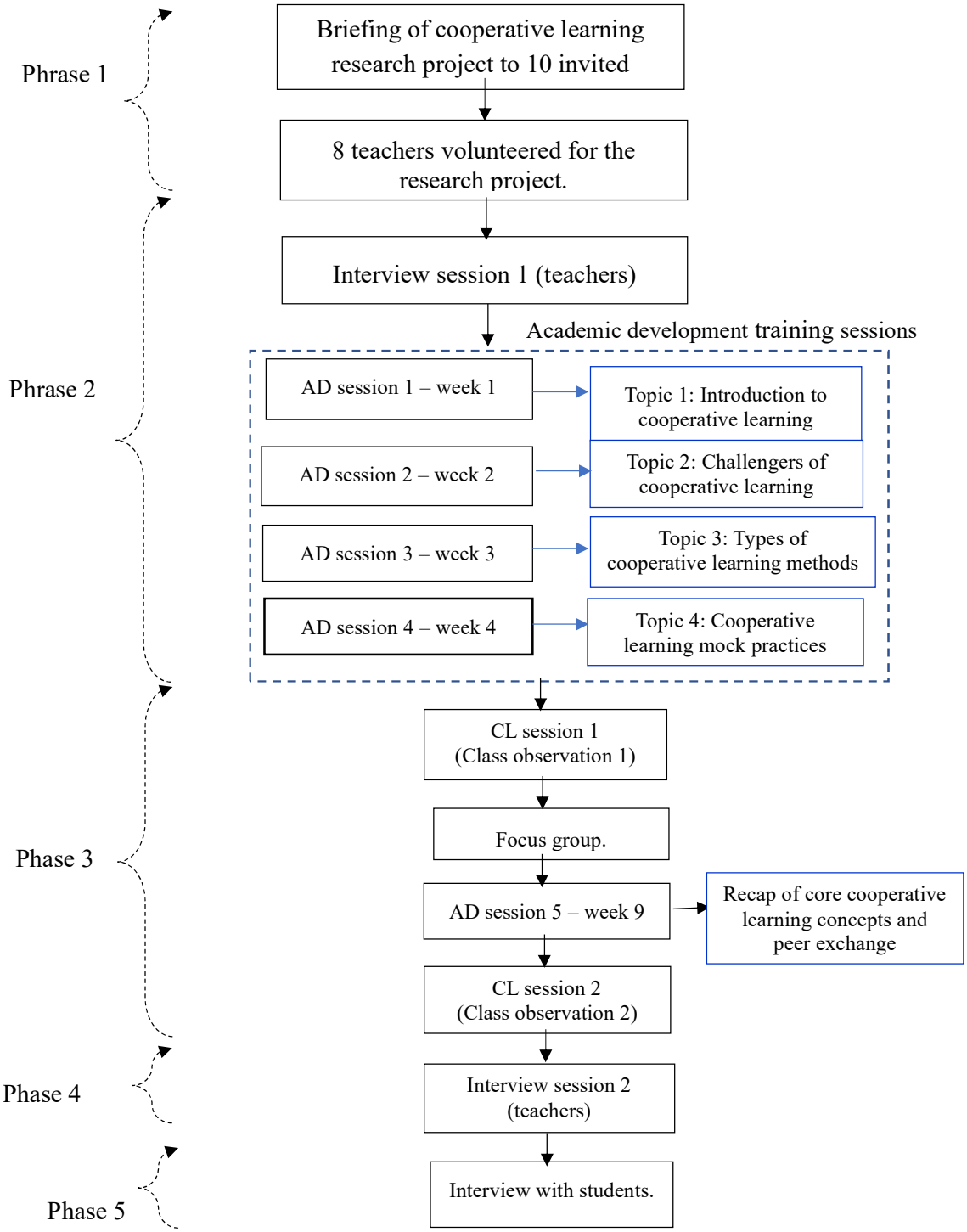
To obtain information on teachers' delivery of cooperative learning, a total of twenty-two students were chosen for interviews. These students were predominately from the same classes that the teachers taught. The purpose was to augment and reinforce the information from teachers, thereby providing greater clarity on the cooperative learning experience. Interviews were collected with students from four faculties —Business, Hospitality, Psychology and Information Technology —after they had experienced at least one round of cooperative learning, with most having completed two rounds. This gave students sufficient class experience to share their learning experiences.

4.3. Implementation of the research process

4.3.1 Phases in the research implementation process

To understand how the current research was implemented, Figure 7 provides an overview of the different data collection phases. This will help clarify the selected research design and methods employed in the study. The current research has four phases, see Figure 4.2 for a flowchart of data collection.

In brief, phase 1 involved the recruitment of teachers. Phase 2 focused on academic development training sessions and the first set of interviews. Phase 3 included class observations while phase 4 comprised the second round of teacher interviews. Phase 5 involved students in the current study. These phases were designed to align with the teachers' implementation of two cooperative learning sessions. Moreover, the two semi-structured interviews and class observations enabled the comparison of teachers' opinions and perceptions and revealed possible changes, which were crucial in understanding how the delivery of cooperative learning impacted the teachers.



Note: AD denotes academic development training session

Figure 7 Data collection process flowchart

Phase 1: Before being recruited to participate in the research on using cooperative learning in the classroom, all teachers who taught diploma and degree modules in a variety of academic disciplines (Business, Hospitality, Information technology, and Psychology) were invited to a

cooperative learning briefing session. Teachers were asked to volunteer to participate in the research project. A brief description of the research project, the tasks they were required to complete, and their participation in data collection were provided to the volunteer teachers. Teachers were also given a consent form to confirm their participation.

Phase 2: Before data collection began, arrangements were made with the teachers to schedule semi-structured interviews. Then, teachers were introduced to cooperative learning through a series of academic development training sessions. The sessions covered the fundamentals of cooperative learning, including various methods that teachers could implement in their classrooms to engage students. Teachers participated in small-group activities and familiarised themselves with cooperative learning. Refer to Appendix 1 for details of the academic development sessions, including content and activities.

Phase 3: In this phase, teachers were invited to plan and implement cooperative learning activities in their classroom instruction. During the middle of the first term of using cooperative learning, a class observation was arranged to observe how the activities were implemented and to take note of the teacher's behaviour. Towards the end of the first semester, a focus group was conducted for teachers to share their perspectives and classroom experiences. This session allowed teachers to learn from one another. In addition, a fifth academic development training session was conducted before the next cooperative learning to review and recap the key concepts.

Phase 4: A second interview was conducted with all teachers who had used cooperative learning for at least two sessions. The purpose of the interview was to gather feedback on their experience with cooperative learning. Teachers were also asked how cooperative learning had impacted their teaching practices, and questions relating to their perception of students' learning were posed. These four phases were designed to collect a range of data at different stages of their cooperative learning experience, providing detailed information about their experiences. Phase 5 consisted students' interviews to collect cooperative learning experiences and how they cooperated with peers during learning.

In the present study, detailed planning was essential at the onset of research since the research implementation process occurred over periods. Diverse information was collected from teachers and students to understand their experiences and how the use of cooperative learning impacted them during lessons.

4.3.2 Relating research questions to the research implementation process

Research questions are formulated to provide answers to achieve research objectives. Cohen and Manion (2007) argue that the process is operationalised as it moves from general, which contains aims and objectives, to specifying the specific areas to research. Creswell (2013) asserts that the research philosophy determined the research questions. Although research questions vary from broad to concrete coverage that guides the data to be collected, Flick (2010) argues that research questions should be concrete to have a clear idea of the data to be collected and yet be open to new information to surface. Research questions that are too broad make data analysis challenging, as there is a wealth of information to analyse whereas Bell, Bryman and Hartley (2022) suggest that research questions should neither be too broad nor too narrow. Importantly, research questions should offer the potential to seek out answers that contribute to new knowledge, conceptually and logically be linked. Hence, there is a delicate balance between the data collected within a specific boundary and insights that reveal unexpected revelations is essential. Creswell (2013) asserts that designing one general research question and several follow-up sub-questions is a more effective way to gather data. However, it may result in disjointed data collection, which undermines hidden data behind complex and interrelated social processes (Bhattacherjee, 2012). To be receptive to hearing from participants, Creswell (2013) caution against researchers adopting an expert mindset to be receptive to hearing from participants' experiences and data. Formulating research questions requires researchers to be attentive to issues which hinder data collection. Table 11 outlines the research questions that determine the data to collect in the current study, which dealt with cooperative learning and development of teachers. Together with the research philosophy and design, these research questions guided the research methods and data collection processes. As a result, conducting qualitative longitudinal studies to examine how teachers adopted cooperative learning was significant to comprehend their development and distinguish in this study.

Table 11 Methodology framework in relation to the research questions

Research question	Type of data to collect	Research methods
RQ1: How do teachers implement cooperative learning with diverse student groups?	Participants' understanding of teaching and learning is based on their previous and current teaching practices. Several types of data were collected to provide insights into how participants engaged with students during cooperative	Focus group, interview 1 and 2, focus groups and class observation

	learning sessions and the classroom context.	
RQ2: What are the impacts of cooperative learning implementation?	To capture details of the implications on participants, diverse sources of data including interviews with students were collected.	data captured qualitatively and included students' interview.

4.4. Research philosophy

This section outlines the central philosophical position underpinning the study. Choosing the philosophical stance is crucial because it informs how the research was conducted (Creswell, 2009). This involves decisions about the research design, the type of data to collect, and the methods of data collection and analysis. Collins and Hussey (2009) assert that the researcher's philosophical position serves to unify the various components, elements, and stages of the research process to create consistency. However, the research philosophy process has varying interpretations of how it impacts the different elements. Kamberelis and Dimitriadis (2005) and Crotty (1998) conceptualise four analytic strata: epistemology, theory, approach and strategy, and research method, hierarchically. This differs from Creswell (2009), who develop a more simplified research structure consisting of philosophical stances as strategies of inquiry and methods that inform the research approaches and guide the research process. These researchers described differently how the research elements and process support one another.

For this study, the interpretive research philosophy was selected to provide rich information about the phenomena (Saunders, Lewis and Thornhill, 2012). A key aspect was to extract meaning from the teachers' stories about their teaching experiences, unveiling more insights and the underlying causes of complex, interconnected, or diverse social experiences and facilitating deeper insights (Bhattacherjee, 2012). Reality is subjective and constructed, meaning emerging through sense-making and description (Denzin and Lincoln, 2011). As such, multiple realities are generated to gain in-depth comprehension (Gichru, 2017; Stake, 1995). This is essential in understanding the development of teachers when they adopt cooperative learning. Njie and Asimiran (2014) assert that combining researchers' beliefs and assumptions in interpreting participants' actions. However, this may result in researchers' biases towards data interpretation (Gichu, 2017). Therefore, Gichru (2017) and Bhattacherjee (2012) highlight that engaging in critical reflection is essential when interpreting information with an awareness of how the research data was socially constructed through the interaction between researchers and participants. Going back between the data collection, writing and thinking process in an

iterative process was crucial to establish a better understanding of the teachers. Despite not being able to generalise the research outcome (Myers, 2008; Saunder, Lewis and Thornhill, 2012), a rich amount of data facilitates insight into participants' experiences based on the social context, which Njie and Asimiran (2014) argue to be worth the effort invested instead of seeking for a quick solution in answering research questions. Interpretative research involves naturalistic inquiry to facilitate the appreciation of the context in which participants are situated (Sharan, Merriam and Tisdell, 2015). Researchers' enthusiasm for understanding the social reality is imperative (Njie and Asimiran, 2014). Conducting class observations on-site enhances the understanding of context. Moreover, due to the complex, multiple, and unpredictable nature of reality, adopting a more personal and flexible research approach is necessary to be receptive to new knowledge that may emerge throughout the research period (Punch, 2014). Hammersley (2013) argues that embracing diverse ways to understand social reality in different contexts is essential in seeing things from participants' perspectives instead of predetermined expectations (Bell, Bryman and Hartley, 2022). The current study is important as it is uncommon for research in a private higher education institution in Singapore of how teachers engaged students to learning collaboratively when they adopted different teaching practices. Engaging students to learning collaboratively impacted teachers' rethink and adapting teaching approaches affecting development. It was essential for the researcher to be receptive towards new information to emerge inductively from data analysis in order to acquire unexpected insights and information. Moreover, knowledge will change as more information is discovered, thereby enhancing researchers' understanding of participants' experiences. Since the goal was to investigate the teachers' experience with cooperative learning, capturing opinions, perceptions, behaviour, and interactions in the context they encountered was essential. Adopting an interpretive stance was crucial to gaining the whole experience of teachers' perspectives, opinions and interactions with students using cooperative learning.

4.5. Research design

4.5.1. Introduction

Establishing the research design is essential as it determines the data collection type. Bhattacherjee (2012) considers research design a "blueprint" when conducting empirical research to answer specific research questions. Research design informs how the research is to be carried out, shaping the rest of the process, including identifying data sources, data

collection and analysis (Creswell, 2007; Saunders, Lewis and Thornhill, 2012). Denzin and Lincoln (2005) argue that qualitative research design is associated with interpretative philosophy. Since the current study sought to uncover the development of teachers, collecting data over time was essential. Hence, longitudinal and case studies were chosen as the research designs to uncover changes clearly. Moreover, being time- and place-bound (Creswell, 2009) enhances insight into how teachers implement cooperative learning and the contextual factors that affect them. Bhattacherjee (2012) underlines that case studies are appropriate for investigating real-life settings over an extended period with Yin (2009) adds clearly defined boundaries. Longitudinal studies and case studies collectively enhanced the data collection process in this research, facilitating a more profound understanding of teachers' experiences with cooperative learning to be explained in greater detail in subsections 4.5.2 and 4.5.3.

4.5.2. Longitudinal studies

Longitudinal studies involve data collection at different points in the research process, to gather data over several phases to track changes in a given variable over time (Bryman, 2014; Gray, 2014). Bryan (2014) and Flick (2014) assert that the same data collection methods are repeated to document for prolonged periods and analyse changes to reveal new experiences or uncover causal influences. Adopting a longitudinal study facilitates the chronological identification and correlation of events pertinent to the research (Caruana, Roman, Hernández-Sánchez, and Solli, 2015). Conducting a longitudinal study was crucial as it offered richer insights into comprehending teachers' development over time which could be subtle. Data collected is organised clearly across specific intervals to compare over time and enhance analysis to interpret changes (Cauana et al., 2015). To showcase the impact of training on teachers, Fernandes et al. (2023) conducted a study on the effects of pedagogical training courses on a group of private higher education teachers. Thirty-six volunteered teachers were asked to complete two sets of close-ended and open-ended questionnaires. The first set of questionnaires was given to the teachers immediately after teachers attended pedagogical training, and the second set a year later to determine the impact of training courses based on self-assessment regarding benefits and challenges and changes in teaching practices. Teachers were encouraged to reflect on changes in open-ended questions as part of the questionnaires (Fernandes et al., 2023). The overall findings positive effects of training on teachers. Fernandes's research underscores the use of longitudinal studies in evaluating the impacts on teachers for an extended duration of implementing teaching practices. Adopting longitudinal studies required

researchers to deliberately plan data collection points sequentially from the outset of the study. (Bryman, 2014). Furthermore, Hollstein (2021) argues that qualitative longitudinal studies could be used to anticipate future changes over time. Time and careful planning are crucial to schedule data collection points in longitudinal studies. Despite its strength, longitudinal studies face several challenges, such as participants withdrawing due to leaving the organisation (Bryman., 2014) or incomplete and interrupted follow-up over time, affecting incomplete conclusions (Caruana et al., 2015). Coordination and communication with participating teachers were crucial from the researchers' perspectives and participants' commitment. Hence, Flick (2014) argued that longitudinal studies demand considerable time and participant availability for observation. Moreover, the data collection systems should be durable to support the study throughout the study period. The present study employed longitudinal research to investigate the impacts of cooperative learning and to discern patterns of developmental changes among teachers. Spacing data collection between periods was crucial in allowing changes to emerge between two data collection points.

The current investigation employed a cohort design, which consisted of teachers from different faculties who examined their experiences with cooperative learning over an extended period. Data collection was conducted across time to allow for data comparison, including interviews one and two, as well as first- and second-class observations to uncover differences of opinion regarding cooperative learning, leading to necessary changes being identified. Planning data collection ahead of time is important to set aside time for interviews and focus groups to alleviate disruption due to the teachers' packed curriculum term structure. Analysing the impact on teachers could have implications on teachers' development in their use of cooperative learning and understanding of teaching and learning in chapter eight.

4.5.3. Case study

Case study research seeks to provide a detailed account of the experience of a subject or set of events. Denscombe (2010) and Punch (2014) advocate that case studies offer an in-depth account of informants' experiences, uncovering the complexities of phenomena in their natural settings and contexts. There are several purposes for using case studies. Yin (2003) suggests that a case study can be used to explore, explain, and compare phenomena, whereas Stake (1995) argues for a detailed examination to comprehend and answer questions regarding the case, which he terms an intrinsic case. An important aspect of case studies is the identification of a case that is distinguishable by certain parameters, including being place- and time-bound

(Creswell, 2009). Yin (2003) and Stake (1995) offer contrasting views: Yin (2003) adopts a positivist stance, while Stake's (1995) approach is qualitative. Knowing the differences between these approaches is crucial for selecting the appropriate case study method. Since this study aims to understand how teachers incorporate cooperative learning, Stake's qualitative case study approach is more suitable for providing detailed insights into their experiences. According to Hyett, Dickson and Dickson-Swift (2014) and Yazan (2015), an interpretative approach was adopted to develop and understand the case study. The use of qualitative case studies, as noted by Creswell (2013), required in-depth data collection from multiple sources. This is essential due to the complexities and relationships within a given situation or subject matter (Bell, Bryman and Harley, 2022; Denscombe, 2010). The qualitative case study was crucial for understanding complex phenomena. Boblin, Ireland, Kirkpatrick and Robertson (2015), along with Njie and Asimiran (2014), argue that case studies provide a holistic inquiry, establishing an entrenched understanding of processes and interactions within complex social phenomena. This makes case studies useful for examining the complexities of different factors influencing the phenomenon.

In case studies research, acknowledging context is imperative. Yazan (2015) emphasise the connection between context and phenomena. Similarly, Hyett, Dickson and Dickson-Swift (2014) recognise the importance of describing the setting in which a case study is based. Stake (1995) note that information about institutional and community settings enhances the understanding of the case. Thus, context must be considered to comprehensively understand case studies, especially when applied to teaching and learning. To establish this in-depth understanding, it is crucial to collect diverse data (Njie and Asimiran, 2014). Using various data collection methods at different stages of research improves data triangulation, as suggested Creswell (2009). Bhattacherjee (2012) also emphasise that case studies are appropriate for investigating complex and time-dependent processes. Recent educational case studies included those by Chan, Sidhu and Lee (2015) on active learning and Uiboleht, Karm and Postareff (2016) on teaching approaches in higher education. While Chan, Sidhu and Lee (2015) argued that case studies are appropriate for engaging active students, Uiboleht, Karm and Postareff (2016) suggested that varied teaching approaches may be more effective. In addition, Tadesse et al. (2021) conducted a study at an Ethiopian university to examine teachers' experiences with cooperative learning, using reflection and semi-structured interviews to collect information. Their research revealed that teachers gained a better understanding of how to engage students in practical learning through cooperative methods.

There are different types of case studies, such as single and multiple cases (Gray, 2014; Stake, 2005). Although single case studies may be straightforward to interpret, especially when multiple units of analysis are involved, they are not always reliable (Gray, 2014). Multiple case studies are preferred for comprehending phenomena in their entirety. Cross-case examination can also enable comparisons and relationships to surface (Creswell, 2013). Merriam (2007) suggests that case studies should be selected based on their interest and their ability to provide sufficient detail to comprehend the phenomenon. The context experience by each teacher is crucial in determining case selection. In this research, three case studies of teachers were chosen to explore their cooperative learning experiences. They were selected based on contextual factors that influenced them. Case studies allow researchers to track participants' trajectories, from their initial enrolment in the research to their development as they implement cooperative learning. Understanding the contextual factors integrated into teachers' practices is essential. Case studies play a vital role in this research by providing evidence-based insights into the phenomenon. Although case studies offer several advantages, they require significant time to develop a deep understanding of the subject. Njie and Asimiran (2014) asserted that the richness of the case depends on the skill and dedication of the analysis. Yin (2003) advocates collecting large amounts of data for qualitative case studies can require considerable effort. Importantly, diverse data sources provide concrete evidence to support analysis and recommendations. Yin (2003) also noted the rigorous nature of the case study process, though this can be mitigated by using multiple data sources to uncover diverse perspectives and strengthen the credibility of the evidence.

In this study, the use of a case study as a research design was essential when examining the impact of cooperative learning experiences on teachers' practices, thinking and development in a real-world context. This approach improve the comparison the experiences of individual teachers, providing valuable insights into their cooperative learning practices.

4.5.4. Sampling and sample size

Sample sizes is a key component in qualitative research, which guides the number of participants to recruit in data collection. According to Hong and Cross Francis (2020), the goal of qualitative research is to explore a phenomenon in depth rather than to represent the study population. However, due to differing perspectives, determining sample size remains a debated issue (Hennink, Kaiser and Marconi, 2017). As a result, a straightforward guideline for sample size determination in qualitative research does not exist (Bell, Bryman and Harley, 2022).

While reaching saturation point is a critical aspect remains a debated issue (Hennink, Kaiser and Marcon, 2017). Guest, Bunce and John (2006) also note that there are insufficient guidelines for achieving saturation in purposive sampling, meaning that a specific sample size is less critical in qualitative research. Instead, several factors, such as the type of data needed and participants' ability to contribute knowledge, determine sample size (Bryman, 2014). Sharma1, Mudgal, Gaur, Chaturvedi, Rulaniya1 and Sharma (2014) assert the scope of the study and whether the longitudinal study is used. The narrower scope and usage of the longitudinal study warrant a small sample size. Young and Casey (2018) emphasise the importance of sample size is adequate to yield comprehensive and significant results while reducing undue strain on participants and conserving limited resources, including time and funding for the study. Parallel in this argument, Sharma et al. (2014) argue that the sample size is large enough to yield a rich amount of data to give an insight into the phenomenon in the study and yet small enough not to hinder analysis. Moser and Korstjens (2018) and Bryman (2014) assert that sampling consists of individuals who can provide in-depth insights and rich knowledge of the phenomenon. Hence, rather than being overly concerned about the minimal sample size, qualitative research prioritises the availability of participants who can provide data that is helpful to uncover findings that are crucial in the research. Hence, determining the sample size to be sufficient demands attention from researchers rather than treating it to be unimportant.

Despite the sample size of lesser concern in qualitative research, sample size varies among researchers. Padgett (2013) indicates that sample size varies depending on the type of qualitative study, with case studies typically adopting a smaller size. Creswell (2013) suggests a minimum sample size of three to ten, which is wide-ranging. Other researchers propose for a narrower range of sample size, including Hennink, Kaiser and Marcon (2017) argue that six to nine participants to reach code saturation, while Young and Casey (2018) recommend that a sample size of between seven to ten participants is required for a complete theme and codes to be developed. As a result, purposive sampling is predominantly used in participant selection (Bell, Bryman and Harley, 2022; Moser and Korstjens, 2018). Selecting participants with relevant knowledge and experience (Flick, 2014) is crucial for contributing valuable data and aiding in analysis.

In this study, although ten teachers were initially invited to participate, two teachers left the institution even before the project began. As a result, eight teachers remained throughout the

study. It underlined the previous point of teachers leaving the organisation prematurely. However, the teachers who departed did not have much impact since they left at the beginning stage of data collection. Hence, the research had a minimal impact. Using a small sample size fosters close relationships between the researcher and participants, allowing for a deeper understanding (Berger, 2013). Importantly, the availability of teachers who qualify for the study, as mentioned previously, limits the sample size. Although determining sample sizes in qualitative research is inconclusive, the selected teachers play a crucial role in providing the knowledge necessary to understand the impact of cooperative learning on teachers. The next section will discuss the quality criteria for the research process.

4.5.5. Credibility, transferability, dependability and confirmability

In qualitative research, establishing trustworthiness is critical for ensuring confidence in the findings, building trust with the participants, and developing conclusions based on the collected data. According to Lincoln and Guba (1985), trustworthiness is evaluated through four key criteria: credibility, confirmability, dependability, and transferability These criteria, as applied to the current research, are outlined in Table 12. The following discussion elaborates on each of these concepts in more detail.

Table 12 Descriptions of data quality criteria adopted in the research process

Quality criterion	Strategy	Description
Credibility	Prolonged engagement	Spending extensive time with the teachers including interviews, class observations and focus groups (Lincoln and Guba, 1985). Familiar with the research environment.
	Triangulation	Multiple data sources using three qualitative methods (Korstjens and Moser, 2018), participants (mainly teachers, supplemented with students' opinions) and across different semesters.
	Regular de-brief session	The supervisory term one every two months on the research project progress (Lincoln and Guba, 1985). Minimise bias through triangulation from multiple sources and utilising research methods.
Confirmability	Audit trail	Acknowledging inherent bias in data interpretation. Minimise bias by using multiple data sources and participants. Keeping proper records of data collected (Lincoln and Guba, 1985) including interviews, focus groups and class observations. Cross-checking of the teachers' descriptions between the interviews and class observations.

		Iterations between transcripts, codes, extracts, themes and developed case studies. Interpretation of data based on grounded data by reading and re-reading transcripts (Korstjens and Moser, 2018) to draw out hidden meaning.
	Reflexivity	Cross-checking different data sources (Lincoln and Guba, 1985). Extended time spent in data analysis over several years to minimise against implicit assumptions (Lincoln and Guba, 1985). Seeking feedback from the lead supervisor.
Dependability	Audit trail	Changes in research design from mixed-method research to qualitative research. Changes from the search focus from teachers and students to predominately teachers focus. Evident from the initial research proposal to the current research. Safekeeping of files. Records of the supervisory meeting over the years "eDoc" LJMU student portal.
		Kept the supervisory team updated on the research progress, team meetings and discussions.
Transferability	Thick description	Thorough descriptions of the research context (Lincoln & Guba, 1985). It includes Singapore private education, teachers, and research methods adopted. Detailed accounts of the teachers' implementation processes in the fully developed case studies provide confidence in the findings.

Credibility aligns with the teachers' constructed realities and perspectives (Lincoln and Guba, 2005). Several strategies are employed to establish credibility, including triangulation, which involves collecting data from various sources, participants, and context. Punch (2009) indicates that triangulation is essential for reducing ambiguous interpretations and confirming findings. This study adopted three qualitative methods: semi-structured interviews, focus groups, and class observations over six to nine months. These methods collected diverse data, including opinions and practical applications, thus reinforcing credibility through supporting articulated ideas with in-class implementation of cooperative learning and minimising bias. In addition, teachers from four academic facilities and teaching various educational levels enhanced the perspectives. Researchers spending extended time with participants during data collection, including interviews, improve trust to encourage participants to share information openly (Creswell, 2007). Students' opinions were also included to provide alternative perspectives. The close relationship between the researcher and participants is a characteristic of qualitative research (Berger, 2013). Furthermore, data were collected from various venues, including

meeting rooms and classrooms across different semesters, clearly demonstrating data and methods of triangulation. To facilitate the open sharing of information, prolonged engagement in the field allowed for a deeper understanding of teachers' practices. Hence, the involvement of teachers, students and across different platforms enhanced the credibility.

Confirmability relates to ensuring that the findings are derived from the research investigation rather than influenced by researchers' bias (Lincoln and Guba, 1985). Miles and Hubermann (1994) argue the critical nature of acknowledging bias in data analysis. Establishing an audit trail is crucial for strengthening conformability. In this current study, being part of the same academic team posed potential biases in data interpretation and analysis. To mitigate this, multiple data collection methods were employed, involving different teachers from various subjects and educational levels, along with prolonged engagement in analysis and regular review of data sets by supervisory team members. Moreover, it strengthened the understanding of teachers' practices drawn from opinions and actions. This rigorous process of revising findings and cross-checking with diverse data sources helped to minimise biases. The creation of comprehensive case studies further bolstered the credibility of the findings. Furthermore, the supervisory team had access to all data sources, and findings were supported by extracts from both teachers and students, facilitating the verification of confirmability. Miles and Huberman (1994) recommended involving a colleague in verifying data sources. In this study, teachers were asked to confirm the recorded data, strengthening confirmability.

Dependability refers to the consistency and reproducibility of findings (Lincoln and Guba, 1985). This can be strengthened by clearly detailing the research process. To support dependability, Bingham (2023) asserts researchers to connect research findings with existing literature to expand the application of findings. In this research, various steps were outlined to describe the data collection process, as illustrated in Figure 4.3, which presents a flowchart of the data collection. Additionally, recording the dates for each data collection session helped establish a timeline. Shenton (2004) argued that providing an overview of research practices is necessary for understanding the processes followed. The recorded data were organised into different folders with time stamps on various drives to create traceable audit trails. Feedback from the lead supervisor was also obtained and documented in the student portal on the "LJMU eDoc" intranet.

Transferability relates to the applicability of findings to other contexts. Applying research outcomes can be challenging due to differing contexts; therefore, a thick description providing

substantive information about the context is important (Merriam, 2009). In this present research, extensive information regarding the research context and detailed profiles of the teachers including their teaching practices. Moreover, the detailed case studies in Chapter Six illustrated the teachers' implementation of cooperative learning, revealing important contextual details.

The four criteria outlined the measures taken to ensure research quality in this study. The rigorous documentation of the research process, the iterative nature of deriving the findings, and the use of multiple data collection methods all contributed to enhancing the trustworthiness of the research.

4.6. Research methods

4.6.1. Research methods as academic development for teachers

It is important to highlight that collecting data through interviews, focus groups, and class observations is an academic development process, besides being a research method. As discussed in Chapter Three under Section 3.2, teacher development involves reflecting on teaching practices, engaging in collaborative dialogue with peers, and participating in academic development. In the current study, during the data collection process, teachers reflected on their practices during interviews, including how they conveyed learning tasks to students. Consequently, this may lead them to change their teaching practices to engage better with students. Additionally, they revised their beliefs about teaching and their understanding of teaching and learning. Similarly, teachers sharing classroom practices during focus groups helped them gain insights into how their peers engaged in active student learning, including group formation and managing student interactions. Moreover, class observations and follow-up interviews engaged teachers in the reflective process. Garrido (2023) asserts that reflection improves teachers' comprehension of experiences and awareness of classroom phenomena (Postareff et al., 2023). Data collection gathered concrete information was essential for data transcription and analysis, providing detailed knowledge of how the teachers implemented cooperative learning and revealing possible changes. Figure 7, page 81 showed that academic development and data collection were distinct processes; the academic development sessions equipped the teachers with knowledge of cooperative learning, followed by a series of data collection activities carried out at different points in the research process. However, within the interpretative research framework, the intertwined research methods and academic

development make it exceedingly difficult to separate them as distinct processes. This integration of development and research represents a unique aspect of the study, blurring the boundaries between data collection and ongoing teacher learning. As a result, the data collection process extended beyond merely gathering data and formed an important component of the teachers' developmental process, which is the focus of the current study.

Data collection during teachers' and focus group interviews served several purposes. Firstly, interviews and class observations concretised to make teaching practices. Tangible data enhanced the understanding of cooperative learning delivery, discerned changes that occur, and supported teachers' development. Secondly, teachers reflecting on their practices improved their understanding of the actions taken to improve their delivery of cooperative learning and engage students more actively (Bharuthram, 2018). Moreover, classroom observations captured teachers' cooperative learning and student engagement delivery, providing an alternative perspective. Data collected from different data sources presented diverse perspectives on teachers' classroom experiences. Selected students from the classes where teachers delivered cooperative learning captured not only students' views but also validated, supplemented, or enhanced the understanding of teachers' implementation of cooperative learning.

4.6.2. Semi-structured interview

Semi-structured interviews are an important step in obtaining the teachers' experiences in their implementation of cooperative learning. Interviews involve two persons engaging in cooperative inquiry to gather information (Gray, 2014) as primary means of gathering information, including the opinions, perspectives, and experiences of participants (Cohen, Manion and Morrison, 2000; Gray, 2014). Blandford (2013) asserts that interviews are an effective means of eliciting information when self-reported facts are limited, as they may involve missing steps and details. As respondents reflect on their experiences without committing them to writing, they may be more willing to share additional insights (Gray, 2014). In addition, the response rate tends to be higher because the interviewer can prearrange the interview schedule (Denscombe, 2010). Moreover, Cohen, Manion and Morrison, (2000) elucidate that interviews facilitate the gathering of participants' experiences apart from their knowledge. This approach allows the interviewer to understand the perspectives, attitudes, and experiences of respondents (Flick, 2009; Cohen, Manion and Morrison, 2000). Researchers delve deeper for more data and seek clarification on answers provided, minimising guesswork

and expanding their ideas by explaining and identifying crucial factors (Denscombe, 2010). Thus, complex issues can be compiled to gain a comprehensive understanding of how things operate. More profoundly, interviews present opportunities for participants to reflect on events and encourage them to share more information without committing in to writing (Gray, 2014). Hence, the strength of using interviews lies in their ability to gather participants' information and experiences. Uiboleht, Karm and Postareff (2016) conducted a small-scale study on three higher education teachers in teaching a bachelor course to study teachers using varied teaching methods. Semi-structured interviews were used with a combined duration of 120 minutes, in which two of the teachers were interviewed twice, the first interview conducted before intervention and a follow-up interview after intervention. The third teacher was interviewed once after the intervention. Content analysis was conducted to analyse transcripts, which revealed several categories of teaching in the findings. Uiboleht, Karm and Postareff (2016) showed how interviews were conducted more than once to determine teachers' methods. Conversely, there are limitations to this form of data gathering. One limitation is that it can be time-consuming, requiring more effort to conduct the interview, and the interview data must be transcribed. The interviewer effect may also impact responses. According to Denscombe (2010), the interviewer's and interviewee's preferences and biases are likely to affect rapport during the interview. While it is not possible to independently verify the accuracy of each response, data gathered through other methods, such as observation, can be used to cross-reference the responses. Hence, interviews can be used with other research methods, such as broadening, reinforcing, or validating findings. To minimise misinterpretation, it is also possible to clarify questions with respondents.

Semi-structured interviews are utilised to elicit responses from the teachers. Although an interview guide is employed to guide the interview process, flexibility in the order and how questions are posed and framed (Bell, Bryman and Harley, 2022). This approach allows the researcher to respond to participants based on the data provided rather than adhering to a rigid set of questions. Furthermore, semi-structured interviews effectively probe for more detailed responses from participants (Gray, 2014). Hence, engaging in a dialogue inquiry provides an effective means to better understand participants' experiences. However, Flick (2014) argues that interviews require discretion and sensitivity in deciding which questions should be asked, and the depth of probing for more information is essential. Moreover, interviewers understand what has transpired during the interview process is important to collect the required information. Bell, Bryman and Harley (2022) highlight the importance of how participants

frame and understand issues and events, indicating the importance that affects them. Therefore, capturing nuanced, fine-grained details is important when conducting interviews. Gray (2014) asserts that audio recording is the interview process, which allows for playback in discerning how participants respond, however, Bell, Bryman and Harley (2022) caution against researchers' complacency when the interview is audio-recorded to be responsive to participants' replies to questions. Moreover, new issues may surface that were not anticipated at the start of the interview, allowing for additional questions to be asked (Gray, 2014). Besides gaining insights into the teachers' experiences, semi-structured interviews establish a closer bond with them, which is essential in qualitative research.

4.6.3. Observational research

During cooperative learning sessions, class observations were used to record the unfolding events and behaviour of teachers and students. This method recognises the importance of prolonged engagement in the study field and deepened participants' actions (Cohen, Manion and Morrison, 2009; Gray, 2014). Observations offer the benefit of capturing actual behaviour without relying on participants' willingness to respond during an interview (Patton, 2002). Moreover, observations provide onsite details that teachers might not freely disclose during interviews. Importantly, the class observations took place in a naturalistic classroom setting, where lessons were held, promoting authentic behaviour (Cohen, Manion and Morrison, 2009). A key benefit of class observation yielded first-hand information, rather than relying on second-hand accounts, which enhances understanding of participants' behaviour (Cohen, Manion and Morrison, 2009). Observation research enhances understanding of the context in which teachers and students interact, which can be difficult to describe through interviews alone. Furthermore, observation provides a complex combination of sensations, including sight, sound, and the surrounding environment, that contribute to and complement researchers' comprehension of participants' actions (Gray, 2014). Cohen, Manion and Morrison, (2009) add that researchers should focus on events as they happen, including the amount of teacher-student talk and group collaboration, as important information to record. No video recordings were used to fulfil research ethics requirements in this current investigation. However, it can be challenging to record conversations since students and teachers will be exchanging information. Nonetheless, audio recordings were useful for recording how teachers gave learning activities and probed students' response, which are easier to discern. To capture more information, sketches of classroom arrangements and jotted notes are utilised to complement audio recording. Moreover, Gray (2014) asserts that field notes should be written immediately

after observed events. In the present study, the field notes were written within a few days after each class observation, providing information for data analysis.

During observation field notes are used to capture details in classrooms. While Bailey (2007) outlines that researchers mentally capture and recall details as mental notes for producing jotted notes, this may lead to some details being omitted. Hence, writing field notes is essential during class observation. Field notes document actions and speech during observations (Gray, 2014). Blandford (2013) asserts that field notes should be written as comprehensively as possible to capture the essence of events. However, paying attention to details and recording information simultaneously can be challenging. On the flip side, a drawback of using observation was values and motivations of researchers could influence the interpretation of information (Gray, 2014), a challenge inherent in qualitative research. Hence, collecting diverse data, including observations, to portray the different aspects of research studies is essential.

4.6.4. Focus groups

Focus groups are a method for collecting data from multiple participants simultaneously. They involve a relatively unstructured but guided discussion centred on an engaging topic. As Braun and Clarke (2006) highlight, this is a more naturalistic way of gathering information, akin to conversation. It can reveal how the meaning of a topic, such as the use of "competition in cooperative learning," is negotiated among people and how accounts about a topic are developed. Focus groups are useful for eliciting a wide range of perspectives or understandings on a topic. A distinguishing characteristic of focus groups is that social interaction among group members is central to this technique. Participants interact with one another, ask questions, challenge, agree, or disagree, and thus discuss a topic in greater detail. The interaction element distinguishes focus groups from in-depth interviews, allowing participants more opportunities to explore, reveal, and clarify their perspectives (Blandford, 2013). Moreover, Patton (2002) asserts that listening to peers' responses facilitates recalling events, which is an added advantage. Bell, Bryman and Harley, (2022) contend that focus groups allow ideas to be built up progressively as participants hear from each other. Participants could even clarify or modify opinions they might have thought of. Hence, focus groups is considered as a form whereby knowledge is constructed in a social setting. In addition, focus groups can be experienced as empowering, as participants recognise they are not alone in their experiences or perspectives by sharing viewpoints (Braun and Clarke, 2006). Significantly, focus groups provide a check

and balance on differing views to minimise extreme variations (Patton, 2002). To showcase the use of focus groups,

In focus groups, the role of the moderator is significant in facilitating the interaction with open-ended questions (Gundumogula and Gundumogula, 2020). Bell, Bryman and Harley (2022) argue that the moderator is too structured, which hinders participants from sharing ideas that may be deemed important from their perspectives. Intervention was necessary when discussions deviate from the research topic, but it should not hinder the open exchange of ideas. Therefore, moderators to respond in a balanced manner based on the circumstances (Gundumogul and Gundumogula 2020). Moderating focus groups requires attention to subtle details. Moreover, the moderator plays an important role in minimising the effect of dominant group members. To encourage participants to share as freely as possible, focus groups need to be conducted in a non-threatening environment, ensuring that participants do not fear being judged by others. Bryman (2014) elaborate that focus groups can provide an open and supportive environment where participants talk in-depth about an issue, and the interaction between participants can result in elaborate and detailed accounts. One advantage of focus groups is that they place control of interactions and give voice to participants rather than the researcher (Blandford, 2013). Although Patton (2002) asserts the difficulty of taking notes during focus groups, Gundumogul and Gundumogula (2020) argue for the importance of audio recording focus group sessions to facilitate accurate information while remaining attentive to the participants' sharing. As a result, focus groups augment and enhance the understanding of teachers' enactment of cooperative learning practices.

4.6.5. Importance of research methods to gain deeper insights.

The three data collection methods collected diverse and rich data that reinforced and supplemented each other, enhancing the understanding of teachers' classroom experiences. The research methods were utilised to gain insight into participants' actions, thoughts and opinions. Importantly, it allowed for comparison among teachers of their implementation, engagement with students and effects on teaching practices from various data sources. This will deepen the understanding of how teachers develop differently. Hence, the importance of conducting research using different research methods. Collecting real-time information was essential for capturing data as it occurs while the teachers are conducting cooperative learning, allowing for the observation of how they engage students in the current study. The freshness of the collected data allowed the researcher to stay informed about the teachers' advancements in applying

cooperative learning and their encounters with obstacles. As teachers engaged in cooperative learning, collecting diverse data over time serves as a valuable educational resource. Rather than only collecting data after the research, the ongoing collection of data was another unique contribution to this study. Comparing the teachers' narratives over time revealed changes in their behavior, thoughts, and perspectives, a key aspect to gaining knowledge on how teachers develop. In addition, a variety of research methods provided evidence supporting the teachers' assertions of consistency, progressive change, or differing information as they engaged in activities such as focus groups or cooperative learning. This study's research took place in the classroom, where detailed data was gathered about how teachers conducted lessons and interacted with students. Themes will be presented in Chapters Five to Seven to provide details, including numerous extracts to indicate teachers' perspectives and opinions on teaching, learning, and cooperative learning.

4.7. Data collection

4.7.1. Preparation of data collection

A key aspect of this research was collecting various data, including semi-structured interviews, focus groups, and classroom observations, during teachers' implementation of cooperative learning. To capture and understand the process of teachers' development, a longitudinal research design was employed, which entailed collecting data over six to nine months. Refer to Figure 4.2 for a flowchart of the data collection process. Information regarding how the participants implemented cooperative learning was gathered through data collection, a crucial aspect of the research. Before the interviews and focus groups, the questions for both were prepared. The research questions guided designing the interview questions posed to participants. Refer to Appendix 3 to 5 for lists of interviews and focus group questions. During the research period, two sets of interviews were conducted. Due to the teachers' consecutive class sessions on a typical workday, prior arrangements were made for the interview sessions. Before data collection began, consent forms were distributed to all participants. To protect the identities of the participants, their real names were omitted from the report, even though the researcher was aware of their identities. The interview and focus group interview questions guided the conduct of the semi-structured and focus group interview. In addition, the field notes template guided the class observations. Refer to Appendix 6 for details.

4.7.2. Data collection

The data collection began with interviews based on arranged schedules with the teachers. Interviews were conducted in one of the classrooms instead of the academic office to minimise disruptions. The interviews were semi-structured, with some variation in the questions posed to teachers during the interview to encourage teachers to share and express their ideas and opinions, the researcher asked open-ended questions, followed by additional prompts. Follow-up questions were used to elicit more information. Not all teachers were questioned in the same order. Thus, flexibility allowed follow-up questions to be tailored to the teachers' responses. Bell, Bryman and Harley (2022) emphasise that adapting questions based on participants' responses is essential for encouraging richer insights. It was essential for the researcher to pay close attention to both what the teachers said and their facial expressions. The semi-structured interviews were conducted face-to-face, close to the teachers. In the current study, teachers who had adopted cooperative learning for at least a semester began to share their experience with peers who had undergone similar experiences, even though each participant offered different opinions, interpretations of cooperative learning, and other feedback, including challenges encountered. This provided a valuable opportunity to hear and learn from one another. To facilitate class observations, apart from the classroom layout, including furniture arrangement, the seating positions of students were also important to capture, as students in proximity were more likely to exchange information during cooperative learning (Gray, 2014). Moreover, variables monitored include the timing and order of cooperative learning activities, the classroom environment, the level of interaction, the exact timing of events and activities, and teachers' and students' body language. For ethical reasons, overt observation was chosen over covert observation so that participants were aware of being observed. Moreover, they were informed prior to the class observations. To minimise disruption, the observer was positioned at the side or rear of the room. Due to classroom size limitations, direct observation was utilised, allowing the observer to maintain independence and focus on the observation.

4.7.3. Transcription of data

The audio-recorded data was subsequently transcribed by hand within a week, which aided in recalling the interviewee's verbal responses and took context into account. To minimise bias, each audio recording was replayed, and the narrative text was read multiple times to familiarise the transcriber with the material. In addition to interviews, narratives were derived from focus group discussions and classroom observations. During the reading process, familiarisation with

the subject matter and identifying codes that emerged from the text was important. Refer to Appendix 7 for a list of codes developed from different sources. During the transcription of the verbatim, tracking data was recorded for future reference. The researcher performed the transcription process manually, allowing them to become familiar with the data, which would be useful during the coding and data analysis phases. This also helped relate to the context in which the teachers were placed, as the researcher conducted the interviews personally.

4.8. Data analysis

This section provides a detailed representation of the data analysis process, utilising Braun and Clarke (2006) theme analysis methodology. It elucidates the implementation of the framework and the shift from coding to the main topics, which then form the basis for analysis in Chapters Five to Seven.

The main aim of conducting thematic analysis was to identify recurring themes or patterns inherent in the qualitative data being examined. Patton (2015) cautioned against researchers' preexisting assumptions interfering with the identification of themes being developed. Reviewing codes, themes and literature reviews iteratively time and again was essential in the present study. The data analysis that led to the formulation of themes was supported by the six-phase analytic approach of Braun and Clarke (2006). Byrne (2022, p. 1391) asserts that the approach is "one of the most thoroughly described methods of analysis." A crucial aspect of the methodology involved the researcher's increasing familiarity with the data, which allowed for the possibility of revising or adjusting the initial coding (Braun and Clarke, 2006). This need arose during the examination of a substantial volume of data. Although the analysis processes adhered to phases in sequence, phase one followed phase two, the data analysis was iterative and recursive (Braun and Clarke, 2006). A rigorous review of themes derived from codes and data sets was essential in ensuring that the codes generated were representative of data sets. The initial themes served as guides, which could be revised during the writing and development of the chapters describing the findings, as the analysis process continued while analysing teacher extracts and writing up the findings. Although the six-phase analytic approach was highly adaptable, its flexibility could result in a lack of consistency when developing themes, according to some researchers (Holloway and Todres, 2003). Nevertheless, within the realm of qualitative data analysis, the researcher assumes a pivotal role in data interpretation, consequently leading to the formulation of codes and themes. This indicated that although formal procedures for data interpretation were employed, the researcher ultimately

bears responsibility for comprehending the data. A comprehensive understanding of transcripts facilitated inductive thematic analysis strongly linked to the data (Patton, 1990). Hence, the thematic analysis was data-driven instead of aligned to a pre-existing coding frame and analytic assumptions (Braun and Clarke, 2006), which may be connected to the participants' experiences.

4.8.1. Phase 1: Familiarisation of data

To fully grasp teachers' teaching strategies and cooperative learning encounters, reading and analysing the transcripts thoroughly was essential. Byrne (2021) suggests that playback and evaluation of the audio recording playback are necessary for gaining an in-depth comprehension of transcripts. This was important due to instances where details may have been possibly omitted during data transcription. Moreover, the researcher recorded timestamps for events as they unfolded chronologically. The significance of time stamps was that they allowed for the easy retrieval of specific segments of the recordings if needed. In addition, familiarity with the verbatim recordings enhanced comprehension of the teachers' experiences, providing an overview of their detailed perspectives. Naeem et al., (2023) argue that data immersion involves identifying significant data and quotations relevant to the necessary research objectives. However, this process may lead to distorted interpretation of transcripts at later stages of the data analysis. Hence, it was preferable not to draw premature conclusions but rather maintain a flexible and open-minded approach.

4.8.2. Phase 2: Generation of initial coding

The coding process aimed to uncover key attributes within the data that would be valuable for analysis, establishing crucial connections between data collection and its interpretation (Braun and Clarke, 2006). Flick (2014) explains that coding involves analysis, comparison, and data classification. Hence, Miles and Huberman (1994) argue that coding is part of analysis. Inductive coding facilitates the drawing out of data from transcripts (Bingham, 2023). This requires a thorough examination of the data from multiple perspectives, potentially revealing a range of possible codes instead of pre-determining codes in advance. The coding process involved reviewing recurring patterns and keywords to generate codes consisting of words that were meaningful in providing information regarding the phenomenon (Naeem et al., (2023). In the analysis, the researcher first adopted open coding to allow codes to emerge naturally from the data (Saunders, Lewis and Thornhill, 2012), indicating that the coding procedure was both

data-driven and inductive. Although data analysis software is more efficient than manual coding, being time-consuming and labour-intensive process, it was essential for producing codes that accurately reflected the data in qualitative analysis. Moreover, manual coding enhances the researcher's in-depth understanding of the data as it requires re-reading the transcripts, which triggers analytical ideas. The process of coding unintentionally introduces the splitting of data into disjointed elements. Hence, the researcher gaining a holistic perspective is essential. Revisiting the transcripts repeatedly is essential. Importantly, coding manually is an integral part of the data analysis process. Upon completing the initial round of coding of one transcript, the researcher proceeded to code the transcripts of other teachers. The second transcript was coded without referencing to previously coded transcripts, enabling a comparison of codes across the transcripts. This process occasionally required returning to the first transcript to reexamine the initial codes. This iterative process was repeated multiple times, allowing the researcher to become increasingly familiar with the codes that represented the data and had the potential to form subthemes. Refer to figure 8 for initial codes, subthemes and a theme on teaching practices.

After generating the codes, the next step involved importing them into a spreadsheet. Given the presence of multiple data sources, codes for each data source were differentiated, which proved useful when citing evidence in the findings' chapters. A separate spreadsheet was created for each teacher by repeating this procedure, resulting in a consolidated spreadsheet that contained the coding for all teachers, making it easier to locate codes for various participants. Each participant was assigned a unique worksheet. The coding process was then repeated for the verbatim recordings from different data sources, including interviews 1 and 2, classroom observations, and focus groups. The coding was systematically tabulated across the different data collection sources.

4.8.3. Phase 3: Search for themes

To aid in theme generation, the codes were analysed for relationships or similar patterns (Braun and Clarke, 2006; Creswell, 2013). Similar codes were subsequently grouped to form categories or subthemes, with several of these categories potentially comprising a theme. Braun and Clarke (2006) propose that thematic maps could provide valuable insights into the connections between different codes and help illustrate and comprehend the meaning of the themes. Themes represent the significant connection between research questions and data, requiring researchers' analytical judgement and thorough of the data sets (Naeem et al., 2023).

One such thematic map, titled "Teaching Practises" (refer to Figure 8), illustrated the primary theme, categories (subthemes), and codes across three distinct hierarchical levels, from level 1 to level 3. The themes generated at this stage were preliminary and subject to changes as further review of the themes and categories occurred in the later stages of data analysis. Generating themes involved going beyond the obvious; instead, is an abstract interpretation linked to the research questions (Naeem et al., 2023). In the current study, the eventual themes developed contained areas which the teachers shared in common that were meaningful representations of their actions as well as to be connected to the research questions. The themes were reviewed several times at periodic intervals to allow for insights to be revealed. Refer to Figure 8 with further explanations in chapter five of how the themes and subthemes were connected.

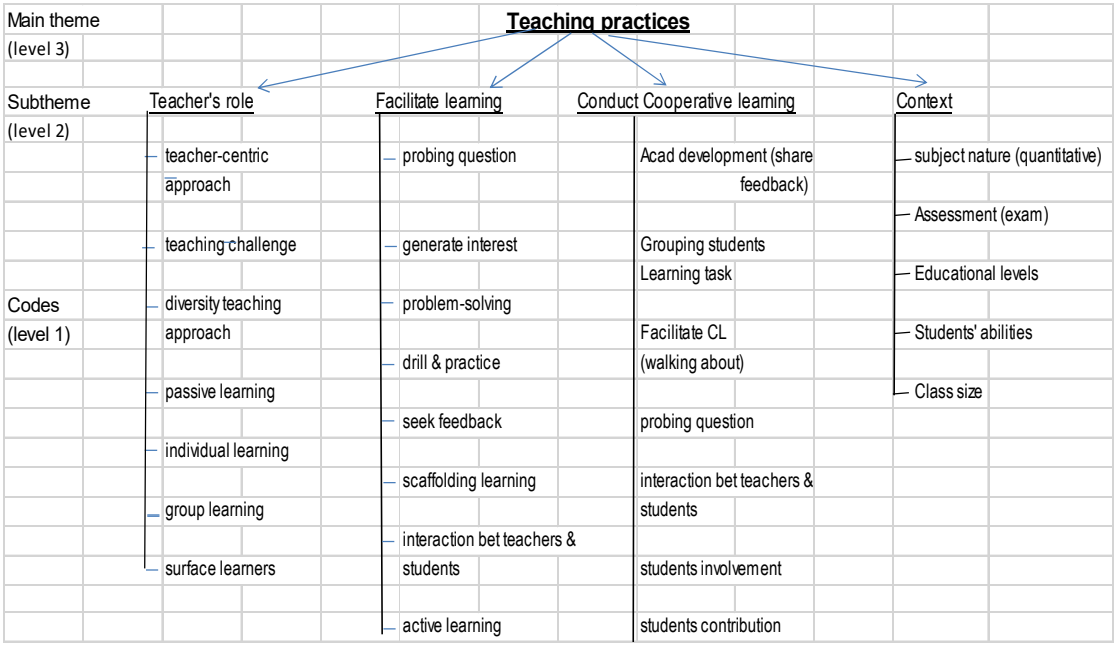


Figure 8: Grouping of codes that are related to one another

4.8.4. Phase 4: Reviewing the themes

Phase four involved refining the themes, focusing on whether the initial themes contained sufficient extracts to form a coherent pattern (Braun and Clarke, 2006). In addition, the relationships between subthemes and themes were clarified. The researcher began extracting data from various teacher sources as early as phase three when the preliminary written analysis was conducted. Progression to phase five required time due to multiple iterations involving analysis, review of codes and extracts, and synthesis of diverse data. During the initial stages of composing the detailed analysis report, major themes were revised multiple times. Refer to

Table 13 for details.

Table 13: Main themes and sub-themes preliminary

Main theme 1: How teachers think about teaching differently	
Sub-theme:	Change in the teaching process Students engaged in learning differently
Main theme 2: How teachers feel about teaching differently	
Sub-theme:	Teaching and learning interesting and enjoyable Negative emotions
Main theme 3: Relationship	
Sub-theme:	Between teachers-teachers Between teachers-students Between students-students
Main theme 4: Challenges in managing students	
Sub-theme:	Students exclude other students Students prefer not to cooperate Students' reluctance to participate actively in learning
Main theme 5: Challenges in using cooperative learning	
Sub-theme:	Perception of subject nature influences their use of cooperative learning Time constraint Multicultural classrooms

4.8.5 Phase 5: Refining the themes.

Upon further examination of the five themes, it became evident that too many major themes led to the decision to combine some. Two major themes related to "challenges" were merged into a single theme titled "challenges in cooperative learning." Furthermore, the initial themes of "emotions" and "relationship", though distinguishable constructs, were not prevalent among teachers. In addition, the theme of "teachers' thinking about teaching and learning" was revised to "teacher as a learning facilitator," as this is better encompassed several subthemes instead of focusing on a specific aspect of teaching. This indicates the researcher progressed from the semantic approach (Braun and Clarke, 2006), where themes were identified at the data's surface meaning and shifted to adopting latent themes with a more in-depth understanding of teachers' practices. Specific examples in the current study showed that reflection was latent in that the teachers did not explicitly mention that they reviewed their actions. It was uncovered when comparing teaching practices during cooperative learning and how they described how they engaged students in the learning process. Putting together varied data and, importantly, embracing an open mindset is critical to allowing ideas to shape the researcher's understanding

of the impacts of cooperative learning on teachers. Further modifications were made to the diagram to create a structural representation that guides the reader through the three-chapter detailed analysis. Refer to Table 14. As a result, adopting a constructivist mindset was crucial to uncover new insights and knowledge, which could generate unique contributions of the study conducted.

Table 14: Main themes and sub-themes finalised

Main theme 1: Teachers' adoption and adaption cooperative learning	
Sub-theme:	Teachers' knowledge of cooperative learning, involvement in lesson planning and forming student groupings. Examining the roles of teachers to engage students in active learning facilitators.
Main theme 2: Implications of teachers' use of cooperative learning.	
Sub-theme:	Enhancing teachers' ability to influence students' learning with cooperative learning. Teachers' engagement in reflection Impact on teachers in multicultural classrooms.

The fifth phase involved a lengthy procedure requiring numerous iterations and modifications to major and minor themes. This extensive process ensured that the main themes and subthemes were rigorously reviewed, proving a coherent and meaningful representation of the entire data set while addressing the research questions.

4.9. Phase 6: Thematic writing and case study

The research outcome chapters are presented in Chapters Five through Seven. In qualitative analysis, the write-up is integrated throughout the entire analysis process (Braun and Clarke, 2006), while in quantitative analysis, report writing typically occurs near the end of the data analysis (Braun and Clarke, 2006). The researcher discovered that themes and subthemes underwent modifications during the report writing, mainly while composing the findings chapter. This became evident only by drafting the initial sections, highlighting whether the subthemes and themes were aligned or needed further refinement. In addition, constructing subthemes supported by extracts and evidence required evaluating multiple data sources to ascertain if the extracts provided adequate support. Table 15 shows an illustrative example of codes, extracts and sources, creating a coherent and unified presentation. Significantly, it facilitated for comparison among teachers of implementation engaging students learning

actively affected varied development.

Table 15 Codes with extracts from different sources (sample)

Regina		
Generate interest in learning	Relationship	Intervene
I get students to discuss on some controversial topic, to prevent or avoid, what was the best method to prevent teenage pregnancy? I gave them a list of questions. They form groups and discuss. I also throw in a few questions and discuss as a group.	I think sometimes the relationship as well because the students don't really, they have their own friends. Like just one or two they have their partners and they only want to you know interact with their partners.	I moved around, I just observed what was being discussed. And then if one or two are very quiet, then I just asked them like a few questions to get them to actually interact.
Regina focus group, p. 3, paragraph 1	*Interview 1, p. 5, para 5*	*Interview 2, p. 5, para 21*

4.9.1. Case Studies Development

Case studies proved an effective method for capturing teachers' experiences with teaching and cooperative learning. While Chapter Five examined teachers' adoption of cooperative learning, the thematic organisation of the data limited a comprehensive understanding of their individual teaching experiences. This limitation arose because the focus was primarily on shared patterns among teachers. Hence, Chapter Six will present case studies to offer deeper insights into selected teachers' experiences. According to Creswell (2013) and Stake (1995), case studies are useful for exploring teachers' experiences within specific contexts, meaning that each case study is situated within a unique contextual framework. Instead of detailing all eight cases, three case studies will be presented in Chapter Six. The development of these case studies followed a three-step process, as illustrated in Figure 9. This process included the chronological compilation of case studies, the selection and shortlisting of cases and the fine-tuning of the three chosen case studies.

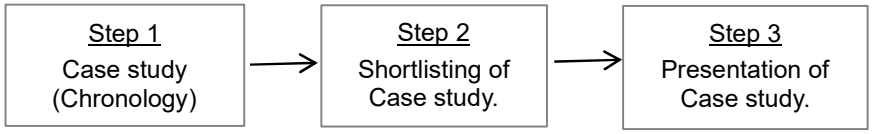


Figure 9 Steps in the development of the case study

In the first step, individual case studies were written by compiling information from diverse sources, including teachers' participation in the academic development sessions, interviews, and class observations. This step involved "direct interpretation" (Stake, 1995) of straightforward information, which meant that the analysis and writing were not as in-depth at this stage. Organizing the information chronologically allowed for an overarching view of teachers' progress in their cooperative learning journey over time. By describing teachers'

practices during the first and second interviews, noticeable changes could be identified, aligning with the research's aim of investigating teacher development. Denscombe (2010) and Punch (2014) support the notion that longitudinal case studies can effectively highlight changes in practice. In addition, the context in which teachers operated varies across the different classes they taught, linking the phenomenon and context as per Stake's (1995) framework. Considering this context was crucial for understanding teaching practices. Reviewing all eight case studies enabled a better grasp of the teachers' implementation of cooperative learning, the unique circumstances they faced, and how these factors influenced the selection of cases for further discussion.

The second step involved shortlisting the case studies. While presenting all eight studies provided a broader perspective, it could dilute the clarity regarding the purpose of the case study approach. Stake (1995) outlines criteria for selecting case studies, including the importance of the case for further investigation, which can enhance understanding of complex phenomena. Chapter Six is essential because it provides a comprehensive illustration of teachers' implementation of cooperative learning, highlighting their progress more clearly by focusing on individual teachers. Furthermore, the transcripts and examples will relate to specific teachers, portraying their classroom experiences. A key consideration during case study selection was the contextual setting of the subjects taught. Although teachers taught a diverse range of subjects, selecting a teacher from a discipline that differed significantly from others could provide insights into how subject differences influence teaching practices. Moreover, the teachers' nationalities could shape their understanding of teaching and learning. Another area of interest was to investigate the impact of cooperative learning on teacher development, as comparing the extent of changes among teachers would yield valuable insights. Three case studies were shortlisted for further examination based on these selection criteria to offer richer and more diversified cooperative learning experience stories of how the teachers' development varied and impacted them.

Step three entailed reviewing and refining the selected case studies. While the initial compilation of information helped lay the groundwork for chronological case studies, further refinement was needed. The transcripts, examples, and class observation notes were compared to the writing in Chapter Five to ensure that the case studies in Chapter Six either expanded upon specific issues, revealing different insights or addressed different arguments stemming from teachers' experiences. Each of the three case studies will highlight distinct themes in their

development, as outlined in Chapter Six, ensuring that they do not duplicate one another. This approach contrasts with Creswell's (2013) assertion that case studies should emphasise similar issues. Stake (1995) advocated for "categorical aggregation" analysis, which involves drawing connections from diverse information to identify patterns. This methodology facilitates more in-depth data analysis, providing varied perspectives on teachers' delivery of cooperative learning. It challenges the researcher's assumptions and supports critical reflection on its influence on their development.

Furthermore, understanding teachers' experiences requires a comprehensive awareness of their background, including previous teaching experience and their preferred methods of engaging students. Importantly, the interconnectedness of data analysis and writing is emphasised throughout this process. Punch (2014) elucidated that the writing itself constitutes analysis, while Mitchell and Clark (2021) suggested that writing extends beyond mere communication, asserting that it is, in essence, a form of research. Integrating writing with data analysis transforms raw data into meaningful human experiences (Mitchell and Clark (2021). This iterative process of analyzing data reveals intricate details that clarify information, subsequently influencing the writing itself. As ideas evolve during the writing process, they can further inform data analysis. Consequently, data analysis and writing reinforce one another, presenting arguments and perspectives more convincingly. The iterative review of transcripts, evaluation of data, and thorough data analysis ensured that the writing remained grounded in empirical evidence, effectively communicating insights derived from the analysis.

The three steps described above outline the development of case studies that underwent a rigorous review process, reflecting careful deliberation and focused attention. This detailed effort was necessary to portray distinct ways in which teachers implemented cooperative learning across the three case studies, thereby illustrating the influence of context on teaching practices. As a result, these case studies serve as a crucial link between Chapters Five and Seven, enriching the understanding of teaching practices within the broader research context.

4.9.2. Writing of research outcome

The review of themes and teacher extracts served a dual purpose: to construct a meaningful argument related to these themes and to compile relevant evidence from teachers' experiences and actions. As illustrated in Figure 10, various information sources from different teachers were gathered to examine how they posed questions to elicit feedback from students. This

evidence-based analysis was crucial, as it strengthened the argument of how they developed differently gradually during the research period. Consequently, when conclusions and implications were drawn, it facilitated a deeper understanding of the significance of the subthemes for teachers in their teaching practices.

Sub-themes	Ask/ pose questions	Emotions
Extracts	That is where I need to direct them by asking questions, what about this, what about that and have you thought of these?	I didn't expect students enjoyed it so much because they really enjoyed. (said with a wide smile). I can see that students enjoyed more than the traditional class.
	Rajoo interview 2	Gina interview 2
	He specifically asked a student from each group to provide feedback. Win asked follow-up questions to either clarify or to check for understanding.	Well to me, CL is more of student-centric way of learning where we need students to learn in a more interactive way so that they find learning more fun and interesting.
	Win Class observation 2	Beng interview 2
	If I see a blank sheet of paper like they have no idea how to do, so maybe I will try not to give them ready answers but ask some questions. I will ask them "what kind of things you will need to prepare the birthday party? So whose help will be necessary to organise it?	We had cooperative learning for two times in Business Economics class. I enjoyed because in the session, we are talking, explaining and sharing. So I really enjoyed.
	Gina interview 2	Beng student, Yonis

Figure 10 Extracts from different sources relating to subthemes

While presenting a range of evidence to reflect the diversity of experiences would be compelling, it was essential to consider whether this evidence aligned with the overarching themes and arguments. Additionally, incorporating student extracts where appropriate could reinforce the proposed ideas or offer an alternative perspective. This highlighted the necessity of making deliberate decisions to ensure a convincing argument during the writing process. Moreover, the compilation of various extracts required careful review to minimize duplication, indicating that a significant effort was invested even in the preliminary stages of identifying relevant extracts. With the themes and associated extracts established, the focus shifted to drafting the sections for each chapter. Adjustments or reordering extracts may be necessary to effectively convey the arguments and positions. The data analysis section detailed the iterative process undertaken during the analysis phase. A variety of illustrations were employed to show how the extracts and related information were assembled, forming the foundation for analysis and discussion within both the case studies and research finding chapters.

4.10. Conclusion

The chapter discusses the research processes undertaken during the study. Adopting an interpretive research philosophy was crucial as it determined the research design, data collection methods, and thematic analysis in order for new knowledge that the current study revealed. Gaining a clearer understanding of how the teachers developed necessitated adopting qualitative longitudinal and case studies approaches to draw out similarities as well as differences in the teachers' experiences. Hence, the collection of varied information enhanced analysis based on grounded information on how the diverse educational context influenced the teachers' practices, engagement with students and beliefs of teaching and learning. The unique research methodology using several research methods were essential to collect diverse evidence strengthening the knowledge regarding teachers developing differently over a six to nine months. Significantly, embracing a constructivist mindset implied that the researcher to unlearn and learn new knowledge regarding cooperative learning and the development of teachers. The findings of this research will be elaborated upon in chapters five, six and seven, which uncover more details regarding the teachers' adoption of cooperative learning and experiences and impacts upon them, including how they approach teaching and beliefs of teaching and learning.

Chapter 5: Main theme 1: How teachers adopted and adapted cooperative learning ideas

5.1. Introduction

The primary aim of this study is to examine how teachers develop their understanding of teaching and learning through cooperative learning. This research was primarily motivated by the lack of studies on the implementation of cooperative learning in private higher education institutions in Singapore. Analysis of the eight teachers yielded diverse data collected through interviews, focus group discussions, and classroom observations revealed two main themes in teachers' experiences with cooperative learning, detailed in chapters five and seven. To give an overview, Figure 11 is a structural diagram showcasing the research findings in the three chapters, five to seven of how these three chapters are interconnected. The design in the flow of the three chapters consisting of thematic presentation showcases the common patterns in their implementation as well as detailed case studies of how the teachers progressed. Chapter five explores how the eight teachers adopted key cooperative learning ideas thematically, whereby their implementation of cooperative learning was influenced by their beliefs about teaching and learning and contextual factors present in the classrooms. To achieve a comprehensive insight into teachers' implementation of cooperative learning, chapter six complements this analysis by presenting case studies of three teachers, detailing their unique experiences as they each engaged students differently as they taught different subjects. To understand the impact of cooperative learning on teachers, highlighting a shift towards more student-centred teaching practices and challenges faced by teachers using cooperative learning, chapter seven presents the findings thematically. Together, these chapters provide insights into how teachers in a private higher education institution in Singapore in the adoption cooperative learning and its potential impact on their development. Refer to Figure 11 on the subsequent page for details.

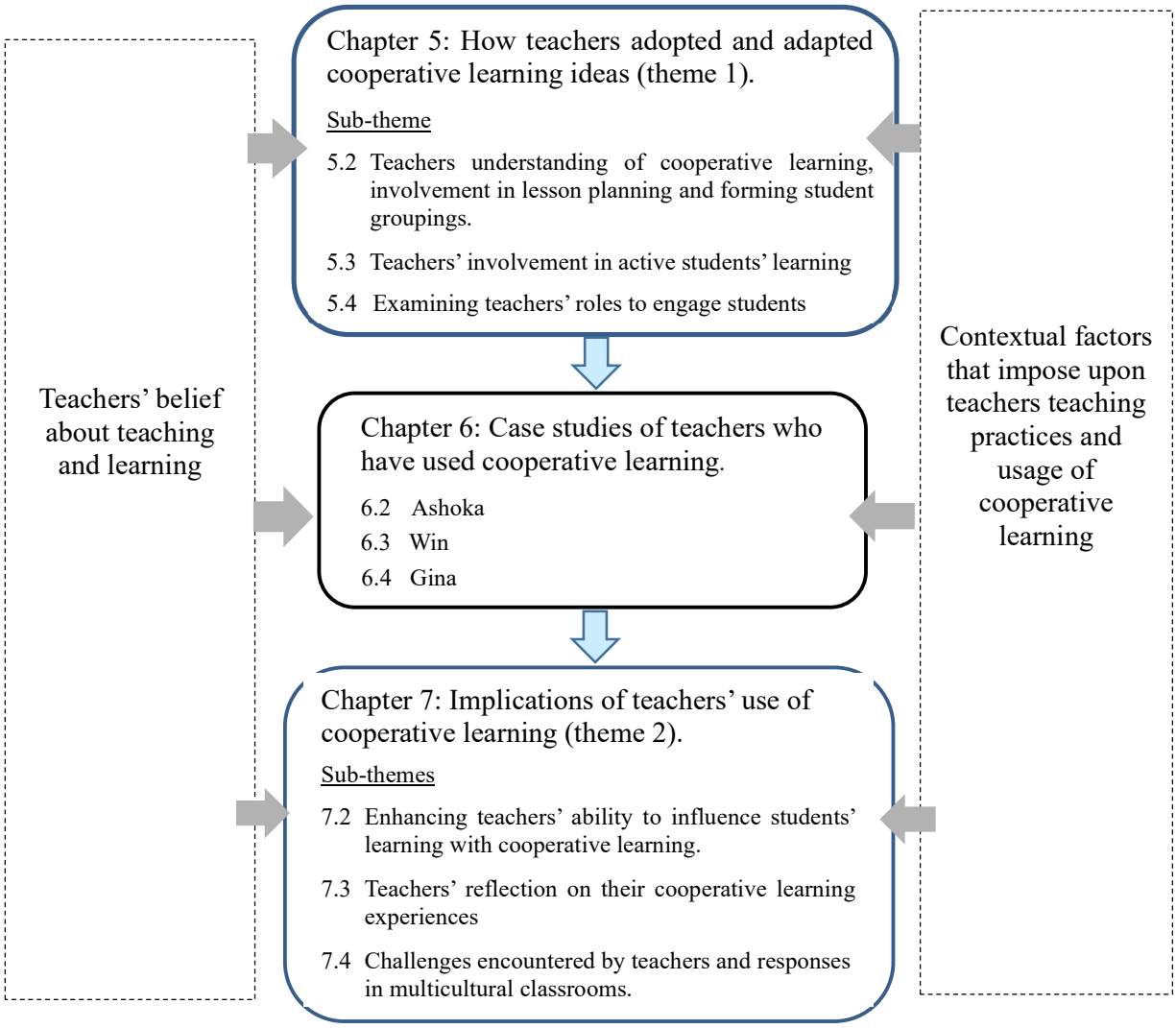


Figure 11 Main themes and sub-themes

In this chapter, subsection 5.2 examines teachers' understanding of cooperative learning and their role in lesson planning and student group formation. It highlights teachers' efforts to promote collaboration among students through lesson planning and grouping students. Subsection 5.3 provides a closer look at how teachers encouraged active student participation by organising lessons during cooperative learning. Subsection 5.4 explores teachers taking on multiple roles to support student learning in the facilitation of student engagement. Hence, these subsections examine different ways in which teachers adopt and adapt to using cooperative learning to engage students which may impact on the development of teachers differently.

5.2. Teachers' understanding of cooperative learning, involvement in lesson planning and student group formation.

5.2.1. Teachers' understanding of cooperative learning.

Teachers acknowledged cooperative learning as a student-focused method that highlighted active participation in the learning process; however, they had varying interpretations of student-centredness. Regina focused on the amount of knowledge students gained, whereas Beng highlighted her involvement with students in active participation as an interactive process involving teachers and students sharing information. Students' involvement was emphasised in the learning process.

> Cooperative learning is that it is more student-centric, ah … it involves how the teacher get more of class participation instead of one-way lecture. Getting students actually to participate and more involve in the learning process. The focus is more on how much students actually is learning.
>
> Regina interview 1 (Psychology)

> Cooperative learning is more of student-centric way of learning where we need students to learn in a more interactive way so that they will find learning more fun, and this will actually help them to learn better. Student-centred in the sense that it involves in so call two-ways communication where students get to participate, not just like the lecturer ah doing the talking part which can be very dry.
>
> Beng interview 2 (Business)

In contrast, Rajoo and Tee defined student-centric learning as engaging students in collaborative small-group activities during the learning process. Rajoo encouraged students to participate by working in pairs, whereas Tee specified that students should engage in different tasks to attain learning goals. Hence, teachers paid close attention to promoting interactive learning to enhance students' knowledge.

> Cooperative learning is a form of student-centric learning where a team comes together and help each other learn. Base on my understanding from what I know, student-centric is when student is the main focus, so everything is focused on students and making sure they learnt. One example is "pair and share". We have two students, pair up and share. Students is the focus. A key in teaching is how much students receive from it and learn.
>
> Rajoo interview 1 (Business)

> From what I know so far, cooperative learning is basically applied to a team, where members will cooperate with each other and achieve the task objective. Members cooperate by volunteering a task, piece of work which they are familiar with. For example, one member may volunteer to do the writing, while another contribute ideas.
>
> Tee interview 1 (Information Technology)

It was evident that cooperative learning was linked to active student engagement and learning rather than teachers focusing on delivering content. The focus was on students engaged in the learning process. There were interactions not just among students but also between teachers and students, indicating that teachers were part of students' learning process. Cooperative learning enabled them to learn differently. Significantly, the teachers' understanding of cooperative learning influenced them to perform roles, including planning lessons and organising students into groups, which will be further discussed in sections 5.2.3 and 5.2.4.

5.2.2. Teachers' involvement in planning cooperative learning lessons.

Teachers were crucial in lesson planning, impacting their cooperative learning implementation and student engagement. Teachers were required to consider various contextual factors, including lesson objectives and class sizes as these may affect learning. In planning for cooperative learning, Patrick emphasised the importance of lesson planning to ensure the achievement of learning objectives. Without it, the effectiveness of ensuring students in peer sharing will be compromised

> Before running cooperative learning, in the planning, I need to ensure I have to cover the learning objective. You can't simply conduct cooperative learning without planning. Otherwise, the learning outcome may not have achieved. In the planning, I need to make sure that there are questions set and consider how to allocate the questions to students. Need to set the learning goals, what students must achieve to achieve this goal, example get them sharing ideas.
>
> . Patrick focus group (Hospitality)

Rajoo elucidated that knowing the learning objectives was helpful as it guided him in breaking them into smaller objectives and setting questions that involved students in contributing information to learn. Hence, he was intentional in designing learning activities to engage students actively which could impact learning.

> In any kind of academic setting, there are learning objectives. With the learning objective, the teacher will then try to see how to break it down into perhaps smaller sections, questions and it put forth to students with the main aim of they contribute something and learn as a whole.
>
> Rajoo interview 1 (Business)

For Beng, lesson planning was a rigorous process in which class sizes and types of students influenced her. She recognised her essential role in encouraging students to participate by assigning learning activities. Lesson planning required Beng to consider the class size and determine which lessons would incorporate cooperative learning for students. Furthermore, it was essential for her to involve the less active students in participating actively and create

learning activities to encourage them. Therefore, a variety of learning methods were utilised in her lessons. This demonstrated Beng's attention to detail and acknowledgement of contextual factors affecting lesson planning.

> Before using cooperative learning, a key consideration is whatever I give to them must meet the learning objective. When I was given the task to conduct a lesson using cooperative learning, there are several questions came into my mind as follows:
>
> What class should I choose for CL? Small class or big class size?
>
> What activities are suitable to be included? Think-pair-share? Case study? presentation? I would need to have different kinds of activities. So I think this is the part I need to explore, try to use different methods to engage students
>
> How to engage passive learners in those activities? What resources do I need? Handouts? Flipchart? How much time to allocate to each activity?
>
> How to ensure the achievement of learning objectives?
>
> How to adjust my role from a 'talking head' to a facilitator?
>
> Beng interview 2 (Business)

Similarly, Regina was conscientious in planning due to the dense syllabus of the Psychology subjects she taught, which required her to spend time imparting knowledge. This limited her use of cooperative learning, making it essential to carefully select lessons and topics to support student discussions. Moreover, she needed to source for appropriate learning materials to enhance student participation, demonstrating her attentiveness to details. Using cooperative learning entailed Regina exerting more effort when planning lessons to promote learning.

> Cooperative learning is good way to get students to discuss. But it is difficult to find the time for all subjects. So, I have the look at the topic and see which topic is suitable for cooperative learning. When planning for cooperative learning, especially for certain lessons with a lot of content to cover. you have to plan how to enable the content to be covered, what kind of activities and searching for the right materials to use so that students learn at the end of the day.
>
> Regina focus group (Psychology)

The findings underscored that student engagement through cooperative learning was not coincidental but rather a deliberate outcome of teachers' involvement in detailed lesson planning. While teachers recognised lesson planning was essential, they approached planning differently, with varying degrees of meticulousness. Contextual factors such as dense syllabi, class sizes, and students' learning preferences for active learning underlined the need to devote time and effort to lesson preparation. The discussion highlights teachers acknowledged cooperative learning as an effective method to foster active student participation in which planning could make a difference in how students learned actively. Hence, teachers devoted

effort and time to lesson planning to prepare for cooperative learning which could impact on their development.

5.2.3. Teachers' involvement in forming student groups.

Implementing cooperative learning involved teachers grouping students to foster collaboration. Understanding the rationale behind how teachers formed these groups provides insights into how they facilitated peer interaction and learning. Teachers formed groups in two ways: by directly assigning students or allowing them to choose their own groups. Mixed groups were formed by grouping students of diverse nationalities and abilities to encourage peer learning. Grouping students showed teachers' desire to have students work collaboratively to enhance knowledge and acquire soft skills.

Patrick and Tee intentionally created mixed groups to include students with varying learning abilities and English proficiency. They recognised that students helping one another was an integral approach to fostering collaboration and peer learning. It also helped them complete tasks more effectively while working as a team. Importantly, grouping students encouraged students to learn from their peers which improved knowledge.

> It is beneficial to have a mixed group because it will be a platform for people who are not performing well, or not talking too much, to participate. The good students will share their opinion with the weaker students. They learnt from each other and can complete the task.
>
> Patrick interview 2 (Hospitality)

> In Network systems, I grouped the students. I know who are the strong students and I distributed all the strong students amongst the different teams. The strong students try to help the weak students in the team.
>
> Tee interview 2 (Information Technology)

Beng recognised that organising students into small groups enhanced the acquisition of soft skills, which benefited their development. This approach exposed students to learning in diverse ways. Tee added that students improved on their interpersonal skills when they exchanged ideas and enhanced their communication skills. Hence, it underscores the importance to place students in mixed groupings to foster diverse learning experience and communication abilities.

> When they are discussing and sharing views, students will benefit from the soft skills such as interpersonal skills, teamwork and leadership skills as they are exposed to different modes of learning.
>
> Beng Interview 1

> When students learn to share information in creating answers, they learn communication skills, communication between team members and social interaction skills. Their social interaction would improve.
>
> Tee interview 2

Teachers recognised students learn to appreciate each other more and improve their perspectives in mixed grouping. Patrick acknowledged the benefits of students' communication and listening skills when interacting with their peers. Students prioritised the group's interests over their own, which was crucial in building teamwork skills as they worked together to create solutions. Rajoo created small groups that prompted students to share different ideas. This approach motivated students to enhance their creative thinking skills and broadened their perspectives for enhancing students' learning in New Business Development subjects. Content knowledge impacted his engagement with students, motivating them to gain diverse knowledge through sharing ideas.

> They need to work together and come up with a solution which is best for their team, start discussing, with another group member, engage in more participation among group members. From this activity, students can understand the importance of working in the group. listening to other people opinion and think about the group first before your individual opinion. Help each other. Better team player.
>
> Patrick Interview 2 (Hospitality)

> One of the things I will do as a facilitator I basically break them up into groups and after that I will actually expect at least one contribution from at least one person. So I encouraged students to have differing views, to have diversity. With diversity comes creativity. So I think that is the key point because in New Business Development, it was all about new ideas.
>
> Rajoo interview 1 (Business)

The above showed that teachers recognised forming groups as an effective approach to facilitating students' enhanced knowledge when they learn from each other and acquire soft skills as well. Hence, group formation nurtured students' holistic development and benefitted teachers as they developed varied approaches that could impact their development as they learned to engage students in learning collaboratively.

Dickson, a higher diploma student, experienced increased self-confidence and learning gains through peer tutoring in a computational subject in which he faced a learning challenge. Similarly, Lee, a degree student, found peer explanations in relatable language improved comprehension. Dickson and Lee chose to learn from their peers benefitted them instead of studying independently.

> I prefer small group will be better because you are able to share your understanding and learn

> from someone. For myself, I am weak in calculation and in my class there was a classmate named "Choon" who was very good in calculation. So I will ask him for help, how to get the answer. Then he will share with me you can use this method. If you work alone, you may not be confident on what you have done.
>
> Dickson higher diploma Business student (Singapore)

> If you don't know something, you can rely on the person next to you to teach you and vice versa. Sometimes they may phrase in a way that is more accepting to you than the lecturer explains it. So, peer learning is good.
>
> Lee degree Business student (Singapore)

Teachers also grouped students of different nationalities to enhance communication and idea-sharing in English. Gina and Win noticed that when students from the same nationality were grouped, they often reverted to their native language, which hindered effective collaboration. Therefore, the teachers formed mixed groups to improve student English proficiency and encourage diverse interaction, with the unique purpose in group formation.

> Even in small groups, to use English to communicate they also find it difficult. They always like to group among their own nationalities. This is why we have to separate students to have different nationalities in the group so as to encourage them to use more and practice the use of English.
>
> Win Interview 2 (Business)

> If I grouped them according to nationalities, it is very hard to force to speak in English. Or even if there are two students from the same country, ah … they will start talking in their own language and the third students who are not from same country will be left out… I formed group based on race and nationality to make sure some can speak English.
>
> Gina Interview 2 (Hospitality)

Ian noticed that when peers from China congregate, they tend to converse in Chinese when he recognised it would hinder students' cooperation. Although Ian was of Chinese origin, he recognised grouping students from different nationalities was helpful in enhancing collaboration among students. He was receptive to collaborating with peers from different countries to improve his English, which benefitted his learning.

> We have many Chinese in TMC, and whenever they are together, they will speak in Chinese which is not good because we are supposed to speak in English. I am from China, no choice, I try to speak English. And when teachers happen to put Chinese students together, they don't care and speak in Chinese. I won't say is all bad. It makes more effective, it makes things easier to cooperate, but it is not good for our English.
>
> Ian higher diploma Hospitality student (China)

Robert remarked that he was receptive to collaborating with peers from other nationalities. He acknowledged that when students were overly familiar with each other, they often lacked motivation to contribute to the group. The contribution from group members was unequal.

Robert chose to join a group where he didn't know the members well.

> If I select members on my own, it will not so good because if we are friends, sometimes they, you can do my task, I do not know how to do. They find just find a reason not to work and let one person do most of the work. It is better if we don't know the person well, there will be less opportunity not to get excuses not to do.
>
> Robert, higher diploma Information Technology student (Indonesia)

However, grouping students with diverse learning capabilities posed challenges. Regina noted that cooperation sometimes only occurred among students of similar competency levels, isolating less capable peers. In contrast, Bryan, a student in Regina's class, observed that working closely in mixed groups helped foster closer relationships and mutual support among students. These outcomes highlighted the variability in students' preferences and learning experiences requiring teachers' attention to ensure the effectiveness of cooperative learning. Hence, placing students in groups was challenging as it required considerable attention.

> In some instances, I have also seen if good students are paired with those who are weaker, then the good students just discuss among themselves and like to weaker students, they are like left out. They tend to leave out the ones who are quieter and they just discuss among their friends.
>
> Regina interview 2 (Psychology)

> Motivate each other by helping each other to understand. We don't see each other as competitors, as classmates but as friends as there is a difference between classmates and friends. As friends, we care about their concern and their welfare whereas classmates are just like acquaintances.
>
> Bryan, higher diploma Psychology student (Singapore)

An alternative approach was allowing students to choose their own group members. Regina and Rajoo both used this strategy, although for different reasons. Regina believed that self-selected groups helped students foster stronger relationships and enhanced collaboration, especially in small classes where students were already familiar with each other. It encouraged students to interact. Classroom context influenced Regina's approach to group formation.

> Ah …, I usually get them to just pick who they are comfortable with because it is a very small class. So I will tell them to, form groups of 2 or 3, then they just pick their partners. Most of them are almost the same level.
>
> Regina Interview 2 (Psychology)

The discussion topic and the diverse nationalities in the class provided opportunities for students to enhance their intercultural communication skills. Rajoo allowed students to choose group members to encourage learning and expand their knowledge by sharing various cultural elements. He established requirements for the composition of group members to guarantee

diversity in mixed groups. He was adaptable in how he formed groups.

> What I tried to do is for this particular module is about intercultural business communication considering different culture. As you would know, my cohort is a mixture of a few different nationalities. I have relatively huge diverse group of students. I first try to do is I try to allow them to choose their own members but I would say that I do not want more than two nationalities of students in the same group. That is my main condition, other than that, I leave it up to them. Now the reason why I say this is because so that there will be appreciation of different culture. This particular module I am teaching is what we call a compulsory module.
>
> Rajoo interview 2 (Business)

5.2.4. Conclusion

There were various ways to group formation. Teachers created mixed groups to foster interaction, peer support, and language development, either by assigning students or allowing self-selection. Teachers' knowledge of their students was essential in deciding group compositions to promote effective peer learning. Although students benefited from mixed groups as it developed their interpersonal and learning skills, their choice of interaction among peers sometimes influenced their comprehension of the content. While forming groups seemed straightforward, it involved complex decisions about group composition and addressing the diverse needs of students. Contextual factors, such as subject matter, student diversity, and learning proficiency, played a significant role in these decisions. Therefore, numerous factors that affected group formation required teachers to navigate nuanced areas. Significantly, teachers varied in establishing group promotion. Teachers' role in group formation was pivotal in creating diverse opportunities for cooperative learning, and fostering student engagement could impact their development as a shift away from didactic learning. The experience of group formation impacted teachers in the understanding of teaching and learning, shaping their perceptions of collaborative dynamics leveraging diverse students' capabilities.

5.3. Teachers' involvement in active student learning.

5.3.1. Introduction

Several teachers reported that active engagement with students was frequently used in classes. Active student engagement was described by teachers using a variety of descriptors, including engagement, interaction, involvement, sharing and participation. The following sections discuss the reasons behind teachers' efforts to foster active student engagement, and the different methods used to structure lessons.

5.3.2. Reasons for engaging students in active learning.

According to teachers, one important aspect of cooperative learning was the need for students to be active learners. Teachers played a pivotal role in promoting this participation, each with their own motivations. These included keeping students engaged during lessons, enhancing knowledge retention, and broadening students' perspectives.

Teachers responded by engaging students when they noticed a lack of focus during lessons. Tee observed that students were more engaged when given tasks during lessons. Regina added that activities helped students stay attentive and improved retention as they interacted with the materials. Teachers' awareness of their students' needs shaped their engagement strategies, particularly when dealing with less attentive students.

> In the usual class, when teachers doing most of the talking, students may or may be paying attention. During cooperative learning, students should be more attentive because they are given something to do.
>
> Tee interview 2 (Information Technology)

> I choose the topic for that day for students to look at different issues. Cooperative learning is effective because usually when they discuss, they will tend to remember better, remember theories better.
>
> Regina focus group

To stimulate students' thoughts and provide a lesson on perception, Patrick encouraged them to debate the importance of a memorable location to broaden their understanding of how event interpretation might influence their viewpoints. Hence, Patrick aligned learning activity with discussion topic to create meaningful learning experienced for students.

> In the USA, the most popular place is "ground zero", the place of "9-11" why people like to visit this place? Some say it is for memory and from tourism perspective, it is generating a lot of money. There are different ways of thinking, it shows where they are looking at. It gives a good picture about what is good and what is not good. By sharing different ideas, it helps them to change the perception about the certain concept.
>
> Patrick interview 2

Teachers dividing lessons into segments, which includes group and class discussions was crucial for maintaining students' engagement influenced on students' learning, Marcel appreciated this approach as he preferred teachers who utilised a variety of learning approaches. On the other hand, Charisee indicated how the learning activity engaged students in deepening their knowledge by researching information and writing answers. Questions posed by teachers as well as students clarifying doubts improved students' comprehension of

the topics. Incorporating diverse teaching strategies and encouraging active student participation significantly supports effective learning

> For 3 hours, 1st hour, teachers lecture, explain. In the 2nd hour – work in small groups to discussion and after that, in the 3rd segment, discuss the group discussion with teachers. I think it is better than teachers teaching for the whole hours, it will be very boring. We are more focused because we are doing something rather than teacher doing the teaching for 3 hours, some of us will be daydreaming, sleeping not paying attention.
>
> Marcel, higher diploma Hospitality student (Indonesia)

> The activity required us to do the research before, gathering and then presenting the idea, it gives you that chance, maybe you write something and the other person write something else, so it is more collecting ideas from everyone. Ya, I see the positive side of it. it also help that the teacher also ask like do you understand the lesson or do you have any questions. So far, the teachers have been very welcoming in the questions.
>
> Charisee, higher diploma information technology student (Philippines)

Teachers engaged students in learning, especially those who were less motivated. Keeping students engaged during lessons encouraged learning. Students demonstrated a clear shift in their learning behaviour, displaying enthusiasm when teachers provided engaging assignments or organised small groups for discussion and idea exchange. Teachers adjusted their teaching methods to be interactive, encouraging students to take a more active role. The changes to their teaching were driven by teachers' desire for students to engage in active learning which could impact on their development differently.

5.3.3. Teachers' practices for promoting active learning through lesson organisation.

Teachers organised their lessons to promote active learning by involving students throughout the class. Three distinct methods were adopted: engaging students in activities before introducing concepts, involving students as contributors during learning activities, and applying learned concepts after teaching. These methods show variations in teachers' engagement with their students.

In the first method, Tee engaged students in discussion before introducing new concepts, especially in challenging subjects like Information technology. Instead of lecturing, Tee had students research information in small groups at the beginning of the lesson, which helped immerse them in the materials and reduced their reliance on him. Importantly, this shift in approach led Tee to spend more time facilitating students learning rather than teaching directly. The subject's context prompted him to organise lessons differently, emphasising interactivity to promote active learning. This demonstrates how changes in lesson organisation and teaching

practices can work together to foster student engagement.

> I will use cooperative learning first in the beginning of class. I use it to get students briefly discuss to capture the attention of students before I cover the more technical areas. From what I experience cooperative learning is quite good to tackle those area that where there is a lot of technical details especially for Information Technology (IT) courses, there are many technical details. If the teacher go through slides A to Z, students will fall asleep. If we were to use cooperative learning, can actually get the students to divide out the work. Get students find out certain parts or details. With the questions, students will arrange the answers to answer the questions. So, when students do this way, when students share with the class, it will be more like sharing what they have found. After students know what they have found and when teacher explain the slides and summarise, they understand better. For me, I do not have to go through all the details in the slides.
>
> Tee interview 2 (Information Technology)

In the second method, teachers structured their lessons to include learning activities directly within the lesson. Beng and Rajoo modified their teaching materials to involve students to encourage active learning which required participation. Beng delivered part of the lesson material and had students work together in small groups to come up with answers. Learning activity was a part of teaching instead of a separate activity. This approach encouraged students to learn actively and independently as they researched and collaborated to create knowledge. This indicates that encouraging students to engage actively is essential for enhancing their knowledge. It indicated a shift from teachers being the only sources of information to a context where teachers and students actively construct knowledge together. Beng appeared to be assuming a different role during cooperative learning.

> When it comes to cooperative learning, I will just like cut short my teaching. I may just teach them with some very basic concept with details missing here and there. And then give the case questions to students make them think, perhaps in the group activity and let them come out with their own ideas or answers to so-called make the study more holistic.
>
> Beng interview 2 (Business)

Similarly, Rajoo adjusted his activities by providing limited information, prompting students to search for more details. Working in small groups to exchange information led to the diffusion and deepening of knowledge. Rajoo also observed that when students took ownership of gathering information, they were more receptive to further learning, which ultimately strengthened their understanding of topics like "Eco-tourism." By modifying how information was presented and encouraging independent learning, teachers played a crucial role in influencing students' learning experiences.

> Now this particular project which we were working was "Eco-tourism" in Singapore. I gave them one particular piece of article and then I asked them to get more information, discuss in groups, to brainstorm with more ideas. I don't want to give them too much information, then it

> will be very restrictive… Of course, they don't just contribute without thinking through first. They do a little bit of research, discuss among themselves what each found. And normally when they do the research and come up with something, they are more open to learning because it is more interactive than just one-way whereby I just give and they received. Together as a group they contribute ideas.
>
> Rajoo's interview 2 (Business)

In the third method, teachers arranged their lessons so that they introduced the learning activities after teaching the concepts. Teachers thought that applying knowledge to real-life situations improved students' understanding and problem-solving skills. Beng used a video case study to engage students, linking it to the earlier lesson topic and helping them work together to produce answers collaboratively. In addition, Beng engaged students by having them switch groups between activities instead of keeping them in the same group throughout. It allowed students to gather various ideas from multiple groups to broaden their perspectives. Hence, engaging students in an activity after teaching the concept and collaborating with different students significantly transformed their learning experience.

> Cyber-bullying topic of discussion in her Business Communication class. Prior to this activity, she conducted a session a week before this class but on a different topic. A video was played that centers on Cyber-bullying. In addition, she also hand-out an article on cyber-bullying. Beng provided a brief to students on Cyber-bullying. In groups of 5 students, I want you to spend 15 minutes to engage in group discussion. You are to answer a list of questions. Each group will be given slightly different questions. When you are done in answering the questions, I will rotate some of the group members and re-assign to another group. You will then share with the new group the answers have come up with, and in turn, you will receive information from then new group members.
>
> Beng Business communication class observation

To foster a more participatory learning environment, Ashoka designed a task that required students to work in small groups to develop solutions collectively. His purpose was for students to apply accounting principles to different scenarios, promoting understanding and knowledge retention. By sharing insights based on varied scenarios, students' interest was sparked, and their understanding of accounting was broadened. This highlighted Ashoka's role as a learning facilitator who effectively engaged students in meaningful learning.

> In cooperative, I give them different tasks, example, "Activity Based Costing" for automobile (group A), airline (group B) and so on. The reason for each group having to investigate different scenarios is so that there will not be the same answers. By having different groups relate different answers to a different context, helps to expose and expand students' knowledge…
>
> Ashoka interview 2 (Business)

On the other hand, Rajoo similarly piqued student interest by showing short video clips related to advertisements. He encouraged students to apply relevant theories to the ads, but they

initially struggled with this. To support them, Rajoo involved students in relating to Marketing concepts to help them apply to the advertisement.

> I was teaching "Global marketing". We were talking about advertisement, about standardisation and adaptation concepts. I discussed with them the difference between the two concepts. What I basically did was played a video and make them come up with the answers. I played a video, they watched it and I asked them what did they think of the advertisement? Lots of ideas were thrown around regarding the video. They talked about everything except the marketing theories. I then probed further to get them think what form of marketing applies, standardised or adapted? Students were initially lost, they did not know what I was referring. I relate to the lessons that was taught earlier before they came to see how marketing can be applied.
>
> Rajoo interview 1 (Business)

To encapsulate, teachers arranged their lessons in various ways to promote active learning among students. The findings showed that teachers engage students actively in learning before introducing concepts, and during lessons where students applied what they had learnt. Organising lessons and engaging students in various ways affected how students acquired information, which impacted how students learned rather than receiving information passively. Importantly, teachers changed their teaching practices by adjusting teaching materials and structured learning activities to encourage active learning. It reinforced the significance of conducting this research to comprehend teaching practices. The findings indicated teachers modified learning materials can actively influence students to engage in different ways of learning. Hence, teachers to have a clear end goal in mind for how they intend to engage students since it influenced the design of learning materials, activities and engagement to promote learning. The above underlines the various ways teachers promote active learning impacted their development differently when they learn to organise lessons.

5.4. Examining teachers' roles to engage students.

In this research, teachers demonstrated a variety of roles, including facilitators of learning, question posers, and guides for encouragement and strategic intervention. Despite the cooperative learning environment, their involvement showed active monitoring and intervention in student learning processes.

5.4.1. Facilitators of learning.

Teachers actively engage students in the learning process, each with their own unique approach. Ashoka prioritised stimulating students' mental engagement by involving them in collaborative knowledge creation to improve knowledge. He acknowledged his role as supporting students

to motivate them to take a more active role in promoting learning more effectively.

> The role of the facilitator actually in my case, is to get the students stimulated intellectually so that they are willing to also put in the effort to learn so that it will makes the whole process more effective the learning process. They have to do their own research, make their own contributions and so the teacher is just like a … support. In this way, they are more participative, they get more interested in the subject matter and naturally the tendency to want to do better.
>
> Ashoka Interview 2

To exemplify the facilitator role, Beng undertook multifaceted roles, including assigning case studies, facilitating small group discussions, and providing constructive feedback to engage students and improve their learning and ability to work together. Her interactions with students were geared towards enhancing information sharing and exchange.

> Well, I gave the case and questions to students. They will form group on their own. In the assignment of questions to students, for those students who are more passive, I will appoint them a group leader or help them to allocate task if necessary. I will provide immediate feedback such as relevant answers, areas of improvement, etc. to each group on their performance.
>
> Beng focus group (Business)

In contrast, Regina facilitated interactive discussions where students exchanged ideas with minimal guidance from her. However, she indicated she did not guide students much as her Psychology students were sharing ideas comfortably. Hence, she played a limited role as a learning facilitator. It showed that the extent in which learning facilitators engaged students was dependent on students' participation.

> I think it is quite useful with groups of students in that they actually willing to participate. Participation in the sense that if I give them a topic to discuss, they would without dividing them into groups, they would be willing to actually share their ideas quite openly. I think guidance for my part for my current groups I am teaching, there is not much guidance I would say they actually need. I would say most of the students they are able to quite well ah share quite well even without my guidance. They are able to understand the topic the topic and follow.
>
> Regina interview 2 (Psychology)

Overall, these findings underscore the pivotal role of learning facilitators in promoting student engagement. Teachers varied in their engagement approaches, from directing activities like case analyses to fostering peer discussions. Some teachers performed limited roles to initiating topics, while others undertook broader responsibilities such as activity setup, students' role assignment, and proactive student encouragement. The findings demonstrated that teachers held divergent perspectives regarding the role of learning facilitators. There was a shift in teachers' roles from knowledge transmission to promoting student learning. Significantly, the learning facilitator roles held by teachers influenced students to take on active roles. It underscores teachers' importance in promoting active learning during cooperative learning.

Crucially, organising lessons differently provided teachers with valuable insights into how alternative approaches influenced teaching and learning processes.

5.4.2. Engaged students through questions.

Teachers engaged students by posing questions, either individually or collectively, to widen opinions and deepen their knowledge. Patrick intentionally directed questions to various students to encourage participation. His questioning purpose was to encourage students to justify their answers, thereby stimulating them to think further. Patrick engaged students to take wider perspectives in learning. Ian, a student in his class, reflected that the questions posed challenged him to think further and check his answers more thoroughly. Notably, he developed to be more alert in his learning.

> Normally I will try to listen. I will go around the group, so I try to stay with them for few minutes to get some opinion what their opinion is all about. I highlighted by asking oh, you need to think about this area. Have you think these areas? Because you are focusing on other areas, you have to think about other areas also.
>
> Patrick Interview 2 (Hospitality)

> Mr Patrick, he will walk to check is everybody doing ok. He will ask question. Example, do you really think that the answer should be like this? What is the reason for saying this answer? It can be useful, but sometimes it may even cause to be confused especially if I do not know which answer to choose when I am in a dilemma. But I think it is good because normally we don't ask ourselves questions right. So, when he asked question, it make us check the answer more closely.
>
> Ian higher diploma Hospitality student Ian (China)

On a slightly different note, in Regina's developmental psychology cooperative learning session, she engaged to discuss the video case. She used questioning techniques to stimulate deeper thinking among students, encouraging them to explore topics beyond the surface level. Her approach leveraged developmental psychology principles to promote independent learning and diverse opinion-sharing among students. Regina actively engaged students to encourage them to contribute.

> Regina: What are some of the reasons in the talk show that teens wanted to get pregnant?
> A: mass media influence
> B: inspired by the celebrity who got pregnant at a young age.
>
> Regina: what do you think is the cost of raising a child? Does the teens even know? Think about it. Think about the consequence. If you look at the reasons the teens cited which don't seem very realistic. If you link back to Cognitive Development at that age, how do you think it plays a part in influencing in the kind of reasons they actually provide*?*
> C: they are still rather child-like not mature.
>
> Regina: yes, although there is Cognitive development, they have not reached the kind of

maturity to raise a child. They have not though in the long-term.

Regina's "Developmental Psychology" class observation on "teenage pregnancy"

In another instance, Regina posed questions to the entire class to gather a variety of opinions. Her intention was to avoid restricting discussion to a single perspective and instead encourage broad participation. This approach required her to adapt her responses and make impromptu decisions based on students' input. Regina's awareness of the educational context, including students' participation levels was important as it influenced how she facilitated learning during lessons. It underlined Regina's flexibility in adjusting her practice to engage active students' learning.

> There are some students who sometimes have strong views. I will throw the questions back at them. This student has this view, what about your views on this? Do you all agree? Then some may say like yes we agree and some may say we disagree. There was an instance where I get them to share their views whether it is good for our kids to go to international schools compared to local schools. There was one student who said that students who go to international schools tend to be more snobbish. There were two students who went to international schools. Of course, one of the students said no as most of my friends are not like that. So I just ask the class do you really think students who attended international schools are snobbish*?*

Regina interview 2 (Psychology)

Furthermore, questioning was used by other teachers as an effective tool to support student learning. Recognising that students had limited knowledge about "Eco-tourism" and faced challenges in learning, Rajoo used a series of targeted questions to help them generate ideas and arrive at answers. The nature of the discussion topic and the student's ability to independently develop ideas influenced Rajoo's questioning style, showing his adaptability in engaging students.

> Rajoo: "I shouldn't be doing this you should be doing your own thinking. Now what are the thing about Eco-tourism project? When you talk about Eco-tourism project, what is the most important thing? What comes to mind"?
>
> Student:: nature,
>
> Rajoo: some more?
>
> Student: sustainable
>
> Rajoo: very good, build up, some more. What do have in Mandai nature reserve?

Rajoo's Business communication class observation

The discussions detailed how teachers involved students by posing questions with varying purposes. Some engaged students to think more deeply, while others encouraged students to contribute information to enhance knowledge. Teachers utilised questions to engage students to go beyond surface-level information and stimulate critical thinking. Hence, students exerted

more effort in their learning and developed into independent learners during cooperative learning. Teachers were keen to improve students' knowledge with questions as it required them to contribute information as a shift towards constructivist teaching and learning underlined the significance of the current study.

5.4.3. Facilitation of learning through supportive interventions.

Teachers monitored closely by walking about in the classroom; however, their responses differed in their interventions. Teachers intervened when they observed students struggling with assigned tasks, offering support to help them complete their work. The findings revealed different types of interventions, ranging from indirect to direct involvement. The indirect intervention involved teachers allowing students to manage on their own, whereas direct intervention provided specific guidance when students faced difficulties.

Beng adopted a flexible approach, generally allowing students to handle learning tasks independently. However, she intervened when they encountered difficulties, indicating that the role of a learning facilitator could be adapted based on classroom needs rather than strictly following a predefined approach. Her rationale for intervening was to help students continue progressing in their tasks rather than getting stuck. This demonstrated her student-centred approach to fostering independent learning rather than relying on her for support.

> Let's say some of the groups they are very fast into the business, ok, usually I will just observe them for a while. If the whole process progressing very well, I will just leave it. And then, I will move on to their group. But I find that some groups already get stuck, I will go there and find out what is happening. For example, some students they are not willing to take up certain types of roles. So, I will actually arranged for them to take on roles such as leader, presenter.
>
> Beng interview 2 (Business)

Rajoo took an active role, moving around the class to observe student participation. He focused more on groups that were struggling, offering suggestions on structuring their thoughts while avoiding giving direct answers. This approach reflected his preference for fostering student independence. However, he acknowledged the need to step in and assist when students were unable to generate answers on their own.

> I basically walk around, I walk around and go to every table, I look at what they come up with. I also encourage them to draw a map, basically a mind-map and then I will ask them what is this and what is that? I go from team to team. Some groups are very quiet, right. That is when it can get a little bit more challenging because they seem like they have limited ideas. That is where I need to direct them by asking questions, what about this, what about that and have you thought of these although I did not give them the answers?
>
> Rajoo interview 2

In contrast, some teachers directly guided students by pointing them towards answers when they recognised students lacked sufficient ideas. Tee assisted when students struggled to produce answers. Tee helped by organising course materials and class notes in a more manageable way for students. While this eased the pressure on students, it risked reducing their engagement and limiting their understanding of the.

> When we have the cooperative learning session, we made it simple in the sense that instead of telling students to go to google search to find out more, I came out with possible content, guide notes for students to read and from there, students will decide which concepts will piece together to form the answers.
>
> Tee Interview 2

On the other hand, some teachers believed it was more effective to engage students by creating collaborative learning rather than intervening directly. Patrick, for example, involved students in discussions about interpreting body language as part of an international tourism topic. He emphasised the importance of sparking students' interest in learning by asking them questions to prompt their thinking, which encouraged a greater willingness to contribute ideas. Similarly, Ashoka had students work together to shortlist items, fostering collaboration among them.

> We did some exercises, how to be more observant, how to read the body language, what are the cultural things about the body language? Because for culture also, plays an important role in body language. I ask them what do you think about this picture? So that helps students to participate more because they feel they are more enthusiastic to say something, especially when it comes to reading the picture when it comes to international tourism.
>
> Patrick interview 2 (Hospitality)

> I would give them hints where to look for. Ok, some of the things for example 10 items, I will tell them, look, you don't need all these 10 items. You need maybe 5 to 6 items. Go and research and decide which of the 5 or 6 are relevant, then come and tell me why. So instead of me giving you everything, like I said, you have to make sure on their own, they have to all the 10 items. And they also have to know which is relevant to the task.
>
> Ashoka interview 1 (Business)

Before concluding the cooperative learning sessions, Beng and Win provided feedback to students on their cooperation with peers, the answers they produced, and areas for improvement. They highlighted the differences in their approaches to engaging students. Beng summarised each group member's contribution to the answered question. She also included her own opinion in her comments. Feedback informed students about their answer presentations and highlighted areas for improvement.

> OK, let me give some feedback regarding what you all have done. I can see some consistency in your answer except for question 1a), well, there are both positive and negative impact on cyber bullying case and individual may have their own views. I think group 3, the case is

> actually a sad case it helps one think about is it better if the victim can report it to somebody. As for question 1b), I see most of you very consistent providing quite similar answers. It shows you have quite a good job exchanging answers in your core and non-core group. Finally, for Q3, which is quite a difficult question. Not every group came out with the complete answers. So, for group 1, they miss several key points, Group 2 & 3 have done quite a good job by providing examples and quite clear explanation. So I hope you have learnt from this group discussion on the case. Thank you. Applause ….
>
> Beng's Business communication higher diploma class observation

In contrast, Win first encouraged students to provide feedback on each other's presentation. He valued hearing students' perspectives before offering his own advice on group cooperation and presentation skills. In addition, he engaged students in sharing how different groups worked together to encourage peer learning. Win also highlighted group members' important roles in their contributions to fostering close cooperation when they helped each other learn. Hence, Win's feedback to students served to improve collaborative learning. Importantly, he elicited feedback from students regarding collaborative practices.

> Win question: can I have feedback regarding the presentations?
>
> Zhang: I think some of the students, they were able to present without relying too much on the notes.
>
> Rita: I think for our group and maybe other groups, we could all manage our time better because I think too much time explaining our answers.
>
> Tania: I think the presenters they don't speak clearly.
>
> Win question: can you tell us how your group has done well or come out with the answers?
>
> Tania: I think our group showed teamwork. In coming out with the answers, we do the questions by ourselves. If one of us faces difficulty, we will try to help out.
>
> The way to do case study review are as follows;
>
> a) Each student has an individual role and you divide among yourself. Each one of you has role, presenter, writer and researcher. So when you research, discuss and write the answers.
> b) Whether how well presenter perform well and able to answer it reflects on the group. It reflects on the level of preparation. So your group need to reflect to improve and overall the group will do better.
> c) Some groups able to present well other than level of preparation is the level of language. As a group, you must practice and share information, you are able to do it fluently.
>
> Win's Business strategy class observation

The findings presented in section 5.4.3 showed teachers adopted myriad approaches to encourage active student engagement. Their understanding of students influenced how they adapted their intervention strategies, reflecting different perspectives on student engagement and their role as learning facilitators. Teachers who adopted an indirect intervention approach believed that students should take more responsibility for their own learning, preferring to offer minimal guidance to motivate them. This approach reinforced the idea that a learning

facilitator's role is to support, rather than direct, students' learning. In contrast, teachers who intervened directly viewed themselves as responsible for supervising and assisting students in completing tasks. They believed that while students should take responsibility for their learning by cooperating with peers, it was also important to provide direct guidance when needed. Moreover, teachers provided feedback on students' collaboration, demonstrating diverse roles assumed to foster active student learning. Hence, variations in teachers' approaches facilitated students' learning through active intervention, potentially influencing teachers' development.

5.5. Conclusion

Main theme one revealed how teachers adopted and adapted cooperative learning. The findings indicated that teachers played an active and important role in encouraging students to engage actively in learning. Teachers planned their lessons due to contextual factors to ensure lesson objectives were attained. Furthermore, they placed students in mixed groups to promote collaboration and peer learning during activities. Mixed group formation encouraged students to converse in English to consider nuanced classroom dynamics. This approach demonstrated that teachers' understanding of the educational context and awareness of students' diverse language skills were crucial in adjusting group formation. Teachers' implementation of cooperative learning showed their responsiveness to the diverse needs of their students. Significantly, teachers adjusted their approach by organising their lessons differently before, during, or after knowledge impartation. The variation in teaching approaches highlighted teachers' adaptability in their implementation depending on academic subjects, lesson topics and learning activities. It also indicated that teachers held different beliefs about teaching and learning. Organising lessons and adjusting teaching materials and practices led teachers to reconsider various approach to teaching and learning. In addition, teachers took on the role of learning facilitator by encouraging students to produce information independently. However, they differed in executing this role, reflecting varied interpretations of their responsibilities and beliefs about how students learn. They also adopted diverse facilitation strategies, including questioning, encouragement, and providing guidance. Teachers played an integral role during cooperative learning implementation in engaging active students' participation. These varied classroom experiences deepened teachers' understanding of cooperative learning implementation, teaching and learning. The thematic analysis showed teachers' adoption of cooperative learning, along with their use of varied teaching approaches, contributed to a deeper understanding of their development.

Chapter 6: Findings II: Case studies illustrating teachers' teaching practices during cooperative learning

6.1.Introduction

The previous chapter examined teachers' experiences when adopting cooperative learning, and the next chapter will analyse the impact of this experience on their ongoing use of cooperative learning and their teaching more broadly. The current chapter provides insights into the experiences of some of the teachers who adopted cooperative learning and impacted them in different ways. This chapter consists of case studies of three teachers, who teach a range of subjects to students pursuing various educational levels. The case studies focus on Ashoka, who teaches Accounting and Statistics, Win, who teaches Business and Finance, and Gina, a teacher of Hospitality and Tourism Management. Ashoka's case demonstrates how implementing cooperative learning shifted his teaching approach from a knowledge-transmitting focus to a student-centered learning focus. In contrast, Win's case study examines the challenges he encountered in encouraging students to learn collaboratively and actively. On the other hand, Gina's case study shows how the implementation of cooperative learning was influenced by contextual factors related to the nature of Hospitality subjects and the student cohort. These teacher case studies provide rich insight into three distinct experiences of adopting cooperative learning into their teaching influenced development differently. It underlined the significance of using case study approach to comprehend teachers' development.

A case study approach was adopted to present detailed insights into individual teachers' experiences in implementing cooperative learning. Furthermore, this approach provides a comprehensive understanding of the complex impacts of contextual factors on teachers, reinforcing the importance of the current study. Importantly, examining teachers' practices prior to implementing cooperative learning and their subsequent incorporation into lessons revealed how their teaching practices and student engagement evolved. Examining teachers' implementation of cooperative learning through two class observations showed how the teachers applied it in distinct subjects and student cohorts were analysed. As a result, the case study provided a time-dependent holistic understanding of teachers' experiences in adopting cooperative learning impacting approaches and thinking about teaching and learning, hence development. It contrasts thematic analysis in identifying patterns and themes across different data sets that the teachers had in common in cooperative learning implementation. As a result,

the case studies (Chapter 6) and thematic analysis (Chapter 5 of main theme 1) complement one another to provide in-depth and fine-grained details of teachers' teaching practices, implementation of cooperative learning, and contextual factors that influence them. Such extensive knowledge is crucial to understanding the intricacies of teacher development.

6.2. Case study of Ashoka

6.2.1. Background

Ashoka was a senior lecturer at Shine Academy, holding a bachelor's degree in finance and a professional certificate in Accounting and Finance. In addition, he earned a specialist diploma in teaching and learning from a polytechnic in Singapore. Before becoming a full-time academic, he gained experience in the finance sector and taught part-time at a private school in his area of expertise. Despite being a relatively young academic with four years of teaching experience, he acquired varied teaching knowledge and skills as he taught a variety of subjects. The majority of the subjects he taught at Shine Academy involved computation, such as Mathematics, Statistics, Finance, and Accounting at "O" levels, higher diplomas, and degrees. At the time of this research, he was teaching Statistics and Accounting at the higher diploma and degree levels. The purpose of presenting Ashoka's case study is to illustrate how the implementation of cooperative learning influenced his development toward more student-focused approaches.

6.2.2. Teaching Practices Before Using Cooperative Learning.

Ashoka was teaching Maths and Accounting to "O" level and higher diploma students. Despite having prior knowledge of cooperative learning from a course he attended a few years ago, he deemed cooperative learning inappropriate due to the educational levels of the students and the subject Accounting. He perceived cooperative learning as more suitable for degree students. These educational contexts influenced his decision to use cooperative learning.

> Actually, I have heard of cooperative learning through a course I attended, about more than 3 years ago. I started to incorporate some elements of cooperative learning, example giving work to do like assigning ah … students to pairs or groups to come up with the solution. I did try to use cooperative learning to a limited amount but didn't really try using it fully because I was teaching the "O" level Maths and Accounting which I did not think was appropriate.
>
> Interview 1

Ashoka remarked that students pursuing higher diplomas necessitated greater guidance

compared to those pursuing degrees, Furthermore, he indicated that he was familiar with students' learning styles at the degree level, as many progressed from higher diploma studies. As a result, he allowed students to work on computational questions independently. Ashoka recognised more support was required for higher diploma-level students than those in the degree programmes essential for students to establish stronger foundational knowledge.

> Higher diploma you have to provide quite a bit of support …. so I can't really leave them on their own independently to study. Initially the first few lessons more lecture and as lessons progresses, less teaching instead more time on exercises. Degree level, you can expect them to be matured and independent thinkers. And by the time students get to degree level, I am also familiar with their learning styles and they are also familiar with my teaching style. So, it is easier to get them to do the work at the degree level.
>
> Interview 1

Given the academic subjects he taught, Ashoka placed a strong emphasis on strengthening students' computational skills and knowledge. Besides engaging students in solving various computational problems, he supervised them by identifying and rectifying their errors. He believed that it was essential for students to exert effort and focus on learning. Hence, he engaged students to solve sums on the board. The analysis revealed he employed a conventional teaching approach to instil computational knowledge.

> I have a set of practice questions ranging from basic to advanced levels at the higher diploma levels. As they progress from one question to the next, if they make mistakes, I will point out the mistakes… Quite a number of times, I ask them to come up to the board and show the answers on the board. Initially they are quite reluctant. But once they know that it benefits them, they find out the mistakes right, they don't mind coming up to the board to do.
>
> Interview 1

Ashoka rarely intervened in how students solved computational problems, either individually or with peers. In instances where students cooperate informally, he noticed they shared information to arrive at solutions, indicating unintended peer learning, even though he did not formally organise such interactions. When he grouped students occasionally, he paired them based on complementary knowledge and abilities, believing they would assist and learn from each other. Ashoka acknowledged that student participation in interactive learning with peers was crucial.

> I don't deliberately form groups for students, I leave it to them how they arrive at the answers. Most of the time, they do discuss among themselves, usually they are in their own groups. In anothersoccasion, in one of the module, there were these two students. One was good in Maths ok but weak in explaining. The other one is able to explain but weak in the calculation. Once I know this is their strength and weakness, I make the two of them attempt the same questions both the maths and explanation part. In this way, they will correct each other. They check each other's work and help each other to get the correct answer. At the same time, they also learn.

Interview 1

Prior to using cooperative learning in a more planned and formal manner, it was acknowledged that there were already some elements of cooperative learning in Ashoka's teaching, as referenced above. Ashoka's teaching practices were influenced by a variety of contextual factors, including the computational nature of the subjects, which required students to solve problem sums. He closely monitored and supervised higher diploma students to strengthen their computational knowledge and skills. Ashoka emphasised that students should exert effort in learning independently, and as a result, he rarely formed student groups. When he did group students, he did so based on complementary knowledge, indicating his belief that students contribute to each other's learning.

6.2.3. Lesson planning and grouping of students during cooperative learning influenced Ashoka's development.

Lesson planning and grouping students were the main roles that Ashoka assumed during cooperative learning. However, there were distinct differences in how he planned lessons and grouped students. Ashoka acknowledged that planning was not straightforward, requiring a balance between lesson objectives and maintaining student engagement. Ashoka understood that while learning objectives were important for creating activities, those activities also had to be engaging to capture students' interest in learning. This demonstrated that he considered students' interests before implementing cooperative learning, demonstrating his focus on students but required concerted effort in lesson planning.

> Cooperative learning requires a lot of planning. I realised, ah … Compared to normal lesson right, you have to mmm… make sure the activity that you have planned right must be linked to the lesson objective. At the same time, must keep the student interested.

Interview 2

Ashoka's knowledge of students' learning capabilities and their receptivity towards taking a more active position enabled him to plan manageable learning activities that would motivate students' participation. Importantly, he priortised students' learning needs rather than planning lessons and creating learning activities in isolation indicated his concerned of how students learn.

> I think I have to know the participants first. I don't think, I am not sure whether I can use the cooperative learning approach or use it within the first lesson It might take me 1 or 2 lessons to get to know the students, then see how receptive, I can plan the activities. When I plan the activities, I know the students can manage this much or this may not be within their capability,

so maybe I have to tone down certain activities, something like that.

Interview 2

In addition, when creating problem-solving questions, he intentionally increased the difficulty to encourage students to work together when generating solutions. As such, he exposed students to a range of questions and enhanced their computational knowledge and skills. Adjusting the difficulty level of questions instead of reusing them demonstrated once again Ashoka's commitment to engaging students to gain more knowledge and improve learning. This approach may have influenced his implementation of cooperative learning, making it more student focused.

> Also, when I plan the activity, the questions that I come up with I try to have calculations and some theory questions to encourage discussion. I have to change the way I prepare the exercises. I have made some of the questions a bit more challenging because now they will be more people attending the questions.
>
> Focus group

To summarise, Ashoka's lesson planning showed his intention to promote student learning by adjusting the questions difficulties and ensuring that learning activities were manageable. Significantly, this demonstrated that he meticulously planned and designed exercises with the intention of motivating students to improve their knowledge, despite the effort required to adapt his teaching methods.

Ashoka's approach to grouping students provided insight into the development of his thinking. Mixed and homogeneous groups were formed depending on the activity and lesson objectives. In his Accounting class, due to a variety of tasks, he formed mixed grouping to engage diverse students to contribute to different tasks. Importantly, he instilled peer learning in which the less competent students received assistance from peers. Conversely, he formed homogenous groups consisting of students of the same nationality to converse and share more information readily when they were comfortable with each other. His awareness of multicultural classrooms led him to form mixed groups and homogeneous groups depending on learning activities to encourage students to accomplish learning tasks and learn from one another.

> To give an example right, I can relate to "Accounting" because the activity I given them was slightly different from the Statistics activity. In the Accounting exercise, students had the same task, ah … some calculation, interpretation and presentation. Due to different tasks, I wanted students to contribute to different areas. I mixed some weak and strong students.
>
> Interview 2 reflecting on Accounting session.

> For the Statistics class, it was based on … nationalities. Same nationalities for that task, all the

> Thais then the Chinese students, the Vietnamese and Singapore students were together also. Because the topic was generic, shoe sizes, I thought it would be easier for students to communicate. I really want them to participate. If it was a mixed group, I am not so sure whether they would have been so willing to participate. The grouping is for this task, it may not be the same for every activity.
>
> Interview 2 reflecting on Statistic session

Ashoka's knowledge of his students was crucial and enabled him to form mixed groups with diverse abilities to encourage weaker students to learn from their peers. Notably, students completed learning tasks independently instead of relying on Ashoka for guidance. Acknowledging students' abilities and his responsiveness were pivotal in engaging them to enhance their knowledge through group work.

> So, by knowing which students are able to perform which task well, I was able to group them. If I didn't know the participants' abilities, I may have group them similar abilities. I tried to pair up one of the weaker students with at least two of the better students and they discussed to go about solving the problem.
>
> Interview 2 reflecting on Accounting session

Furthermore, in forming mixed groupings, Ashoka considered the diverse personalities of students to avoid mixing more vocal students with quieter ones. He was concerned that the more vocal students might overshadow the passive ones, discouraging their participation. His foresight regarding student dynamics and his sensitivity to personality differences demanded careful consideration when assigning students to mixed groups.

> Personalities of students can affect how students worked together. There can be some who are very vocal, they are active. While some of them are much more silent and passive. They are less participative. To encourage the quieter students to participate, the group has to be a bit more balanced. So, by knowing the students in advance, it helps in grouping students to split them into groups.
>
> Interview 2

Due to his adaptability, homogeneous and mixed groupings were formed to encourage students to increase their knowledge through peer interaction. Group formation enhanced Ashoka's understanding to promote students' learning by fostering students' collaboration. Significantly, his student-centered approach was pivotal in placing students in different groupings to encourage students' knowledge enhancement. Ashoka's adaptability and awareness of students' learning abilities were key in shaping his development of engaging students to learn collaboratively.

6.2.4. Influences on Ashoka's development as he adapted in his teaching practices.

Ashoka's teaching practices were affected by contextual factors such as student nature and educational levels. While both Statistics and Accounting subjects involved computation, he employed different teaching methods. In Statistics, beyond imparting knowledge, students learned to apply formulas for problem-solving, enhancing their understanding through practice. Conversely, in Accounting subject, establishing a strong foundational knowledge was crucial for applying concepts to computations and problem-solving. Ashoka's teaching practices were influenced by his knowledge of these subjects and his engagement with students to foster diverse learning approaches. Consequently, his experience deepened his understanding of how to engage students in acquiring knowledge across these disciplines.

> Statistics, it is more of maths, formula, calculations and therefore more exercises. For Accounting, you need to be able to explain concepts first before you can do questions. It will require more time for lecture. Also, the way of teaching is also slightly different. I have to … make sure they understand before I can even carry on. Statistics sometimes, they understand better after doing the questions, they understand concepts after they use the formula and try out the questions. After they tried the questions and they realised, why I need to learn this concept. Then they understand. Accounting. if they don't understand why you have to do this step, even if they do the questions, they don't learn.
>
> Interview 1

> Statistics, you can use cooperative learning more easily because the stronger students will be able to help the weaker students. But for Accounting, , cooperative learning to a limited extent. It can be applied at the degree level but at the higher diploma ah … students need to understand concept first before they can carry on the next step. Getting them to understand is the most challenging part.
>
> Interview 2

Another factor that influenced Ashoka's teaching practices was students' level of education. He engaged students differently depending on their educational and maturity levels. He believed that higher diploma students required more guidance than degree students due to their weak knowledge foundation and lower maturity level. Hence, they depended on him for information instead of pursuing it independently. On the other hand, degree students were independent learners and required less guidance. This meant that the level of attention and support Ashoka provided was contingent on the students' levels of education.

> The teaching method there are slight difference between higher diploma and degree level. Like I said, at higher diploma they will need more assistance. I have to provide the bulk of the resources. The level of involvement of the teacher is much higher to get the students complete the task. Moreover, some students may not so receptive. They may still have a lot of inhibitions. At degree level, it is more of independent learning, the weightage is higher. The facilitator can stand back, don't need full control.

Interview 2

To understand how Ashoka navigated the contextual factors of subject nature and education levels in cooperative learning, two examples of his implementation are presented. During his Accounting degree sessions, he gave students similar questions, encouraging them to be independent learners rather than relying on him for support. Furthermore, since the class size was relatively small—just 10 students. Hence, he spent a considerable time visiting each student group to monitor their learning progress. Instead of asking leading questions or providing answers, Ashoka probed students to encourage them to think more critically and consider the implications of decisions, such as which organisation to invest in. Even though some groups made mistakes, and one group had two possible answers, it was crucial that they created their solutions independently. Ashoka was pleased that it was more meaningful for students to engage in solving the problems than simply copying the answer. By changing how he engaged students in independent learning, he adapted his delivery of Accounting subject with cooperative learning, learning of how he leveraged students' prior knowledge to reinforce learning. This adaptation of teaching approaches influenced his development.

> The cooperative learning activity involved students cooperating in groups of 3. He narrated …. "You cannot ask me whether the company should invest. The group must arrive at their own decision. You may have to make assumptions on what your decision is based on. You are to discuss among your group the answers and recommendation. The answers to the questions are not all that straight forward, some questions required some thinking. When you come and present your answers, don't give the answers straight away. You are to show the calculation, explain and conclusion must be your answer".
>
> Accounting degree class observation

> The Accounting was a degree class, they are more mature learners and more receptive. They are able to complete the task will less amount of intervention from me. Usually, I will go through the questions with them. I gave them the answer on the board and they will be very busy copying the answers. They will not be paying a lot of attention. This time, I gave them the questions but not the answer. One by one they will come up and present their answers. So when they were presenting, they also asked me questions. I asked them back. I don't give them a direct reply. We went through the answers and they learned much better rather than copying the answers.
>
> Interview 2

In addition, informal peer chat influenced his implementation of cooperative learning. A peer chat between Ashoka and the researcher revealed that the dialogue prompted him to reflect on his methods for engaging students in small group learning during his forthcoming delivery of cooperative learning.

> Ashoka: For the degree Accounting class, usually students would be working individually on the questions, not in groups.

> Researcher: Suggested to Ashoka for cooperative learning activities, he could group students either in pairs or in threes. You need to think of how students can be engaged in learning actively.
>
> Informal peer chat with Ashoka

Conversely, in the Statistics sessions, which were at a higher diploma level, Ashoka was aware that the concept of 'confidence intervals' was abstract. To assist students' comprehension and stimulate their interest in the topic, he engaged them in a light-hearted learning activity before introducing the concept. Moreover, he grouped students by nationality to promote closer interaction. By cooperating with peers, they were familiar with, Ashoka believed students would be encouraged to share and exchange more information. Importantly, when the concept was subsequently introduced, they learned better. As a result, students benefited from their active engagement. Ashoka structured his lesson differently, involving students in an activity prior to teaching to facilitate understanding of a specific concept. Rearranging the order of teaching and activity had a significant impact on how students learned.

> In today's lesson, we going to do something a little different. I am going to start by telling you a story about an entrepreneur who aspire to be a professional shoemaker. Supposedly you are a shoemaker, you want to design shoes for your lecturers. But you do not know the average shoe sizes. What I like you to do is to look at certain groups of people, including basketball players, gymnast, astronauts and so on. You are to find out and take a sample of their show sizes for this group of people. This activity is to relate to a concept you will learn shortly.
>
> Statistics higher diploma class observation

> For the Statistics class, when I gave them the task, get the differentiated sizes, and when all of them participated, then when I brought in my main topic and relate to it, they understood better. If I were to just students oh "Confidence Interval" is this, students will not be able to relate it easily. They can understand but the relation part will be missing. But when they did this task and when I went through the lesson, they will be able to see the link much faster. It would give students some idea of the concept I am going to teach.
>
> Interview 2

The two illustrations indicated several aspects of how context influenced Ashoka's teaching. His pedagogical content knowledge significantly impacted his adoption of different teaching practices to engage students. Furthermore, his understanding of the educational context led him to adopt diverse approaches for students across various educational levels. Since he considered degree-level students to be more mature and possess a stronger grasp of knowledge, he engaged them to learn more independently in Accounting than in Statistics subject. Ashoka adjusted learning activities and his engagement with students based on the knowledge he wanted them to acquire. Significantly, this influenced his development, instead, he could engage students to learn more effectively by using an interactive approach.

To encapsulate, although there were changes in Ashoka's teaching practices to better facilitate students learning, he approached teaching differently when introducing concepts. Rather than merely encouraging students to memorise formulas and calculations, he was flexible in adjusting how he taught and organised the lesson flow to focus on comprehension. As a result, Ashoka concluded that adapting his teaching approach led to more effective learning experiences. He found teaching computational subjects enjoyable, reflecting a change in his understanding of teaching and learning. This demonstrates how changes in his teaching practices influenced his beliefs about teaching. Significantly, his teaching practices were no longer dictated by the computational subjects once realised that teaching encompasses more than just formulas.

> After using cooperative learning. Hmm … actually I enjoyed the teaching better than before. Ah … because mine quantitative subjects, actually it is very straight forward. Just run through the formulas, steps, calculations, there is not much variety you can introduce. Usually the lesson is structured, Ok, first, second part, so on and lesson over. But when I use cooperative learning, ah … it is no longer very routine. I can … designed in such a way that I do not have to follow the usual pattern. I can start with somewhere in the middle and then by the end of the lesson, I can connect. I can get the ending and starting connected. It is easier to do that. My own teaching approach I have changed because previously like I said, my subject is just quantitative. But now I am beginning to … ah … teach in such a way that it is not just purely quantitative the lesson can be more creative.
>
> Interview 2

6.2.5. Conclusion

This case study revealed Ashoka's implementation of cooperative learning and how it influenced his teaching practices and development. Before the study, Ashoka appeared to emphasise building and reinforcing students' computational knowledge. He was intentional in his planning, grouping students, and implementing cooperative learning. A distinct area was his knowledge of students, which enabled him to plan learning activities to accommodate diverse learners and place them in groupings that fostered learning. Moreover, he adjusted the difficulty of problem-solving questions. Homogenous and mixed groups were formed to promote student interaction and collaborative problem-solving. In the two cooperative learning sessions he led, it was evident that Ashoka encouraged students to take active and independent roles by not providing answers despite variations in educational levels and subjects. For degree students, he required them to independently explain and justify answers, and questions were posed to mentally stimulate them, strengthening their knowledge. In reflecting on his cooperative learning, Ashoka remarked that he perceived and understood teaching differently after acknowledging the connection between teaching and students' learning. Hence, he

adopted a variety of approaches to engage students interactively. Furthermore, he was flexible in making adjustments in his teaching as he adapted cooperative learning to different subjects and educational levels. The use of cooperative learning influenced his development, giving him a deeper understanding of teaching and learning and how it changed.

6.3. Case study of Win

6.3.1. Background

Win was a senior lecturer at Shine Academy's School of Business and Law for three years when the research was conducted. He was a native of Malaysia. Prior to becoming a full-time academic, Win had over twenty years of experience in corporate and private banking. In addition, he held a bachelor's degree from a local university in Malaysia and an MBA from a British university. He accumulated eight years of teaching experience in three different countries: Malaysia, Mongolia, and Singapore. The subjects he taught were diverse, including Business Finance, Business Strategy, Marketing, and International Business, at both higher diploma and degree levels at Shine Academy. It was important to present Win's case to examine how he taught different subjects affected his development. The case study presents Win's implementation of cooperative learning in theoretical and computational subjects, along with the challenges he encountered.

6.3.2. Teaching practices before using Cooperative learning.

Win had a clear idea of learning and teaching that appeared to stem from his subject matter and professional background. Due to teaching a variety of subjects, he perceived learning as both quantitative and qualitative. Quantitative learning entailed students solving computational problems. To encourage classroom engagement, he required students to solve problems in front of the class, where he identified and corrected any mistakes. Win emphasised the importance of students gaining robust computational knowledge and skills.

> Quantitative learning involving more of self-practice. Students do their own practice, own analysis, your own doing the sums or on your own doing the working. In quantitative teaching, a lot of students in my experience, do not know what they do not know. After the lecturer gave the lecture, it is best to let them do the sums by themselves. I told the students to come forward & do the sums themselves & write out on the board. Individually they go up individually, one by one. While he is doing the sum, the rest of the students learn. And lecturer will be there to correct his mistakes and explain to students. The rest of the students can also learn from his mistake.
>
> Interview 1

In addition, while students were working on solutions, Win moved around the classroom. This approach allowed him to supervise and encourage students to ask questions, as some hesitated to seek clarification in front of their peers. Monitoring students in this way increased his effectiveness in addressing diverse students' learning needs and provided personalised attention as they worked on problems.

> In quantitative sum, I realise when I give them the questions for the higher diploma students to work out, sometimes they have certain questions to ask. But they dare not ask because they scare other students may hear it. As the lecturer was walking pass, they will either hold or pull the sleeve or pull his belt, sir… sir… how to answer this, how come mine is wrong? How to use calculator to calculate this? Sometimes it can be very simple or basic questions they will ask you when you walk around in tutorial groups. It becomes very effective. Students have chance to ask some very personal questions related to the question sum which they usually don't ask in front of the class or in front of lecture where there are so many students.
>
> Interview 1

In contrast, for qualitative learning, Win exposed students to case study analysis. Students collaborated in small groups to generate answers. While in groups, he provided them with a list of theories to guide them in applying the theories to the case studies. Thus, Win encouraged students to be less reliant on him and assumed the role of a facilitator, informally promoting interactive learning.

> Qualitative learning involves group learning and critical thinking which involve student applying theories. I use case study. Students in groups they will discuss. The way I do case study is to give students a brief analysis of the case study to bring students interest about the case. And I will highlight to them what are the possible theories that may involve in the case study to highlight to them and not to give them the answer. My duty as the teacher will be going around to show them or to remind them certain theories need to be apply. In-between students will counter check with the lecturer and the lecturer will point out this is the wrong theory to apply, this is the correct theory to apply.
>
> Interview 1

In addition, Win adopted different teaching styles for higher diploma and degree levels. He provided more detailed explanations and examples to higher diploma students, who relied on him for guidance. Conversely, at the degree level, the emphasis was on applying theory in written assignments; therefore, he did not follow up closely with students, perceiving them as independent learners. Importantly, he believed that cooperative learning was an effective method to encourage students to become more independent in their learning at the degree level.

> The teaching styles to higher diploma and degree students are definitely different. At the higher diploma level, there are more practical and explanation needed due to students requiring more "hands-holding' whereas at the degree level, there are more theories and concepts to be covered with more emphasis of writing skills as well as this is the assignment requirement."

Interview 1

> At the higher diploma level, students are more reliant and more dependent on the lecturer. When you go up to the degree level, that is where we want them to be more independent. This is where I think cooperative learning is more useful at the higher level where there is more interaction between teachers and students, and there will be better understanding. Cooperative learning is to help students to be more independent in their studies rather than relying on the lecturer, "spoon-feeding.

Interview 2

The discussion revealed that Win employed a variety of teaching methods based on the subjects he taught. In computational subjects, he acquainted students with solving problems individually, whereas in theoretically based subjects, he facilitated collaborative learning through case study analysis. Win's teaching and engagement with students in different subjects are crucial, as his preexisting knowledge influenced his implementation of cooperative learning and development of engaging students in learning collaboratively.

6.3.3. Challenges in the implementation of cooperative learning

Win found implementing cooperative learning challenges. The teaching approach he adopted during cooperative learning impacted on how he involved students in learning Business Finance and Business Strategy. An analysis of his implementation of cooperative learning in these two courses revealed that he formed mixed groupings differently and engaged students in learning collaboratively.

In conducting cooperative learning for Business Finance, Win's goal was to engage students in pairs to solve a set of theoretical and computational-based questions. His rationale was to foster effective collaboration among students to produce answers. He encouraged them to sit close together to share information when tackling different questions.

> Win begin the Business Finance session by flashing brief instructions on slides. Now divide into groups of two. The two must sit together because the two of you are to discuss the answer and do the working together. You are to work together to answer 2 sets of questions (theory and problem-sum). I want to see how the group work efficiently to obtain the results and must be correct.

Business Finance higher diploma class observation

The first challenge was the allocation of learning tasks to students. Despite his desire for students to learn and acquire both theoretical and computation knowledge, he advised them to divide questions based on their competencies in Business Finance. As a result, students worked on questions separately. Furthermore, encouraging students to choose questions they were

already familiar with did not challenge them to learn new concepts and broaden their understanding. This approach led to complacency and affected their motivation to expand their knowledge. Moreover, since Win emphasised that students were efficient in answering questions, they ended up gaining only partial knowledge. Hence, the allocation of learning task questions based on his advice impacted students' knowledge acquisition.

> In the activity, you will notice I put the theory and the calculation questions together. This is to get students not only that they need to know the theory, they also need to know the calculation part as well.
>
> Focus group

> Since there are two of you, divide the job. The good team will divide the job so that you can get speed. Some will do the theory questions, some with the calculation questions. The one good at calculation must do the calculation, don't select a poor student to do the calculation, then you get everything wrong.
>
> Business Finance higher diploma cooperative learning session

Furthermore, when determining how tasks were allocated among students, Win encouraged them to assess their own learning abilities and skills, as he preferred not to intervene. Consequently, students decided in advance which questions to tackle rather than having questions assigned to them. This led to several issues. Firstly, students selected questions they were familiar with and felt competent in, resulting in an unequal distribution of questions. Another issue was that within student groups, there might not be sufficient diversity among members possessing a wide range of knowledge and skills, which affected students' contribution and their ability to answer questions. Win's preference for allowing students to choose which question to tackle indicated his belief they possessed diverse knowledge and skills. Furthermore, he was presumptuous of students' ability self-assess, thus affecting the assigning of questions.

> In dividing the group task example, the questions, I think among themselves, they will select the questions to whoever feel they have more knowledge about it. It is not for the lecturer to ear marked the questions for them. We usually leave it to them to select among themselves. Then among themselves, they say I have more knowledge in this topic, for another topic, I have less knowledge. Then you don't do, I will do. It is their own selection.
>
> Interview 1

Richard illustrated how he and his peers decided on the questions to tackle grounded on their knowledge competencies. Richard asserted his proficiencies in writing resulted in his focus on answering theory questions in contrast to his peers who addressed the computational questions. This supported the point previously mentioned about students selecting questions based on proficiencies.

> In Win's Business Finance class where we worked in pairs to compete and see which group finished first, we first discuss who is good at doing what type of questions. For instance, I am better at writing than my peer while in terms of computational skills, we are almost the same. So, we decided jointly I attempt the theory questions while he did the calculation questions.
>
> Richard higher diploma Business student in Win's class

To motivate students to concentrate on their tasks and work together effectively, he introduced a competition. Students in pairs competed with other groups to submit completed tasks. Although he grouped students, his intention was to involve them in competing rather than cooperating. He believed that students' learning improved when they worked together. However, the competitive element hindered their information exchange, as it was perceived as a time-consuming process. Hence, students' cooperation was negatively impacted because the focus was on competing with their peers, notably hindering their ability to acquire knowledge and learn from each other, despite being paired up.

> Why divide into groups? I want you all to compete to see how the group work efficiently to get the result. Let's see which group finish first. The good team will divide the job so that you can get speed … Once you have completed the task, raise you hands, I will come and complete from you. I will rank which pair finish first, second and so on.
>
> Business Finance higher diploma cooperative learning session

> You see, when you have competition, students in pairs work together with speed but with perfection. If you ask them merely to learn, they will just simply complete the task but not do it well.
>
> Focus group

Win's reason for using competition was to stimulate students' learning based on his awareness of Business Finance. Although fostering competition may have engaged students, it could have a detrimental effect on encouraging collaboration, undermining the benefits of placing students in groups.

> Business Finance is a subject if you force them to do it, they find it very boring especially those not confident. In the past when I was teaching this quantitative method, I use to call each student one by one to answer. They are very scared to be called up. They are trying to avoid instead. But once I formed a group, then they share among each other. If there is any doubt, they discuss and compete among groups. Like the session you attended, you will find that they are very interested. In fact, they are asking for more of that kind of session.
>
> Focus group.

Zhang mentioned that she and her partner refrained from sharing information during the activity due to time constraints, opting instead to capture pictures of the work and solutions. The pressure to submit ahead of their peers appeared to hinder students' willingness to share information, ultimately impacting their learning.

> For Business Finance, after each of us has finished our part of the questions, due to the limited time during class, we take photos. We submit our answers.
>
> Zhang higher diploma Business student in Win's class

Students expressed varied opinions regarding the incorporation of competition. Although Richard was receptive to competition, asserting his inherent character, he was uncertain whether his peers shared similar views. In contrast, when she was younger, Zhang prioritised on academic results and favoured competition. However, she appreciated collaborating and learning from peers as she matured. This showed that students held differing perspectives regarding learning competitively which could influence how they collaborate with peers

> For me who is quite competitive and aggressive, so I liked the competition and also good for me but I am not sure whether other of my classmates enjoyed it.
>
> Richard higher diploma Business student in Win's class

> I like competition. Especially when I was younger, I pay much attention to the result the marks. But now I am more mature, I enjoy the whole process of learning, working together in a team to arrive at the answers which I am very satisfied.
>
> Zhang higher diploma Business student

On the other hand, for Business Strategy, Win assigned students a case to work on and encouraged them to help one another. In addition, when students gave presentations, collaboration was fostered as they shared information and supported one another. In the second interview, he contrasted his current approach with his previous one, where he involved students in answering all questions. Win's pedagogical content knowledge influenced his decision to use a different approach during Business strategy cooperative learning by involving students in collaborative learning.

> My module is Business strategy at Higher Diploma and it is a case study. The total number of students in the class was 26, so I divide into 5 to 6 groups with each group about 4 to 5 students.
>
> I gave them all the same case study about company "Kellogg" and there were several questions for them to answer. After that, they were supposed to send a representative up to the front and do a presentation of what is the answer. Now the way I do case study is this, I brief students a brief analysis of the case study to bring the students into interest.
>
> Focus group

> In the past, it was one way traffic. When I ran the case study, students will be attempting to all the questions and I asked for volunteers to answer and shared the answers. Students attempted all 5 questions individually. In cooperative learning, it was conducted differently which involved students sharing and working together. And even doing the presentation, it is also a group effort. Although I select one of them to do the presentation, but the cooperation will be there where the rest of the member try to give him the support to do the presentation.
>
> Interview 2.

Zhang and Richard elucidated that tackling case studies required students to apply theories to produce answers. Since the answers to the case were not straightforward, this necessitated creative thinking. The difficulty in arriving at case solutions encouraged students to work together to complete their learning tasks. Furthermore, with diverse answers generated, students collaborated in groups to decide on their final responses. This underscored Win's role as a facilitator of learning, creating challenging tasks that promoted student cooperation and learning. Consequently, working together to find answers positively impacted their understanding of Business Strategy.

> In Business strategy, when we discussed, there may be different answers. So, we tried to figure out the answers by understanding the case and see whose answers were more correct. There is an instance the group members asked me where you found the answers. I explained, showed them in the textbook examples and applied to the case. Relating to Porter 5 forces concept and in the case, they could only find four forces. So, I showed and explain to them the fifth force.
>
> Zhang, higher diploma Business student

> In Business strategy, he also used small group activities. The activities involved mostly case studies which were much more complicated unlike computational subject like Business Finance. Though there are theories, but you need to come out with answers and solutions by yourself which is not in book. So, different students have different ideas and thoughts. The answers are not fixed and certain for the case study. Through working in case, my knowledge also increased.
>
> Richard, higher diploma Business student

The preceding discussion indicated that allowing students to assign learning tasks among themselves and encouraging competition between groups was one of the challenge Win encountered in implementing cooperative learning in Business Finance. Significantly, this may have adversely affected his understanding of cooperative learning and caused confusion among students regarding whether they should compete or cooperate in their learning.

The second challenge Win faced was his belief in seeing his role as a teacher as one who took charge of the student's learning process during cooperative learning, rather than allowing students to lead. He was concerned that more proficient students might overpower their less proficient peers. Therefore, rather than encouraging proficient students to assist their peers, he intervened to ensure that less proficient students had the chance to express their ideas. For example, he provided an instance where a student named Richard dominated group discussions. As a result, Win took charge of overseeing students' discussions to ensure active involvement from all participants.

> In the classroom, if you don't have cooperative learning, you will find that those good students they will always be better, those poor students will be lagging behind. In cooperative learning,

> the weaker students because they are given a role to contribute, they also forced themselves to learn. Therefore, you will find there is an improvement. Gap between the good and weaker students will be lesser. For example, I have a student, Richard who spent too much explaining to the group members that their group could not finish within 30 minutes.
>
> Interview 2

Assigning the weaker students to give presentations indicated that Win knew his students well enough to assign them distinct roles. While this approach encouraged the weaker students to participate and gain knowledge, Win seemed to be the one guiding and demonstrating how to do presentations. Despite it being a cooperative learning session, Win priortised supervising students over fostering peer collaboration. This showed that Win's understanding of his students influenced his intervention during the activity segment, hindering their ability to work together and become less reliant on him for support. Win seemed to struggle to let go of control when it came to managing his lessons and encouraging student participation.

> As the role of teacher, if you are a facilitator, you always emphasise the point that you will bring up the slow learners to learn and to speak up. Like picking up the poorer students to do the presentation, that is coaching. you will be guiding every process to the required answer you want. If you are unsure, it is ok. I will teach you how to do it.
>
> Interview 2

Furthermore, Win's interventions aimed to ensure the smooth implementation of the cooperative learning session as intended. He emphasised the significance of closely monitoring the entire process, from the initial planning stages to execution. Although he supported student participation in discussions, he had doubts about whether their conversations were on topic. As such, he intervened to keep their discussions focused, which affected discussion quality.

> I realised for cooperative learning, the teacher must play a leading role in terms of planning, designing, managing the process. The teacher must be in full control, you cannot leave it to the students. If you leave students to have the free hand to say what they want to say and to do what they want to do, you will lose control. That is where teacher must play the role very closely. Otherwise, students will tend to talk about other things rather than the actual subject. Then you will lose control.
>
> Interview 2

Win justified his intervention by explaining that he allowed proficient students to support and encourage their weaker peers. Nevertheless, he was also attentive to different levels of participation, noting that more capable students tended to dominate during presentations. This dynamic may have undermined his intention to engage weaker students actively and encourage their learning. This situation illustrated that the differences in students' learning styles necessitated Win's attentiveness as they took on more active roles.

> When the weak students do the presentation, he might get stuck. And I do not want to embarrass him. By getting a stronger student to back him up, he is able to consult and encourage him. But we need to make it a point that the stronger student don't take over the presentation. For example, there was one case where I missed out and the stronger student ended up taking over the presentation. It defeats the whole purpose. So we have to be careful and limit how much help the strong student gave to the weaker student. You can only guide and help him.
>
> Interview 2

6.3.4. Conclusion

The discussion highlighted the impact of Win's guidance on students' collaboration in Business Finance and Business Strategy. The findings revealed two main challenges he encountered while delivering cooperative learning. The first challenge was his emphasis on competition in Business Finance, which was regressive and discouraged students from cooperating. In addition, the way tasks were allocated led students to focus on one distinct area of knowledge. This suggests that Win's organisation of learning tasks significantly impacted students' knowledge acquisition. Although he had good intentions to inject enthusiasm into students' learning, they prioritised competing over cooperating. Conversely, in Business Strategy, Win engaged students to work collaboratively and independently during the case study analysis activity. Moreover, students assumed different roles within their groups. Win's pedagogical content knowledge influenced his adoption of contrasting teaching practices. The second challenge was Win's tendency to take a dominant position in overseeing how the sessions were managed, indicating his difficulty in relinquishing control. The findings underscored that his priority to encourage either cooperation or competition impacted students' engagement with their peers. Furthermore, the structure of the tasks and his engagement with students influenced their collaboration. Win's contrasting experiences with cooperative learning had a significant impact on his development, as he gained knowledge and skills in effectively engaging students through both competition and collaboration. Despite cooperative learning, Win's preexisting understanding of quantitative learning and qualitative learning influenced his implementation of cooperative learning in his Business Finance and Business Strategy classes. His practical knowledge and experience with cooperative learning could affect his teaching methods, which, in turn, influenced how he engaged students in active learning.

6.4. Case study of Gina

6.4.1. Background

Gina taught hospitality and tourism at the diploma and degree levels at the Academy. She completed the majority of her education in Poland, her native country. Before transitioning into teaching, she spent several years working in hotels and resorts in Dubai, Greece, and Europe. After four years of teaching in Poland, China, and India, she became a senior lecturer. Gina had over six years of teaching experience when she enrolled in this research project. Her work and teaching experience provided her with substantial hospitality knowledge and practical skills. Furthermore, her exposure to Asian students was beneficial, as the majority of her students came from Asia, primarily China, South Korea and Thailand. This case study presents how the multicultural classroom context influenced Gina's implementation of cooperative learning.

6.4.2. Gina's teaching approaches and beliefs before using cooperative learning.

To gain insight into Gina's understanding and beliefs about teaching and learning, an excerpt revealed that in her early years of education in Poland, students were encouraged to learn independently to produce answers rather than being given to them. Hence, she was familiar with active learning. Establishing Gina's earlier educational experiences was important, as they influenced her belief that students should be more active and independent learners.

> When I was at university or high school in Poland where I came from, teachers in schools always wants us to think for ourselves during a class. It wasn't just taking notes and listening to a teacher. In schools, they wanted us to have hands-on activities like in Science or Physics doing experiment. Teachers will never give us the correct answer. We have to figure out by ourselves during experiment.
>
> Interview 1

In her earlier years as a teacher, Gina spent considerable time imparting information based on her beliefs about teaching. She involved students in activities to keep them attentive, which also allowed her to take brief breaks instead of promoting learning. It was therefore beneficial for students to be actively engaged in learning.

> When I first started teaching, its 100% lecture because I thought I had to go through all the points A to Z. It is very tiring. I started to give them exercise, they are participating and doing things interesting. And sometimes ya, I give them things that are fun, I don't know. I think I told them about marketing, so they have to design poster, some advertisement. It is not really connected, ya maybe 20 minutes just to have fun together. So, it is a, I think it builds up the communication among them and teamwork spirit.

Interview 1

A key reason for Gina's emphasis on active learning was its enhancement of knowledge retention. Therefore, she encouraged students to participate in creating information. Their engagement with learning materials and the production of answers led to an improvement in exam performance. Active engagement in learning was advantageous for students.

> If they get the answers by themselves, it's easier to remember, easier to understand. Because if I were to figure out by myself what the answer is, of course the probability I will remember later is better than if I just give you the ready answer or show on the slide or write it down. During the exam, they will remember I came across this in the exercise where I looked for answers.

Interview 1

Although students were expected to learn independently, Gina believed it was her responsibility to guide them so that their answers remained within the topic's scope. One area in which she intervened was to ensure fair contribution from all students, rather than allowing a few students to do most of the work. To facilitate this, students submitted written assignments to Gina, enabling her to assess their knowledge levels and provide feedback for improvement.

> In doing exercises during class, students are guided by the facilitator, so it is not like as if they come to the classroom and they know what to do right away. So, it is kind of like a guided exercise. They get some instructions and some introduction to the topic. As a lecturer, I will monitor students' progress when they are discussion with team. I have to follow-up with students' progress on a regularly basis to make sure work gets done. I will walk around, it is not as if I just sit in my desk, ok do this. To make sure they participate, I will always get them to write down the answers. I think that is the best way. Then I collect it. Feedback, usually in written is provided though not marks.

Interview 1

Gina's early formative educational experiences exposed her to active and independent learning, shaping her beliefs in the importance of students being actively engaged in the learning process rather than remaining passive. However, she recognised the need to guide and intervene when students worked on learning tasks to ensure fair contributions from all participants. Consequently, Gina's role as a teacher involved imparting knowledge while keeping students active and engaged.

6.4.3. Adoption of student-centred cooperative learning approach

The awareness of a multicultural context was crucial as it influenced Gina's adoption of student-centred cooperative learning. To encourage students to be more active in learning, Gina adopted several measures. These included engaging students in cooperative learning, giving

examples, adjusting how questions were posed, giving encouragement, utilising peers to foster students' greater participation, and planning with diverse students' learning preferences in mind. These classrooms experienced enriched her development encouraging students' participation.

Gina was aware of the diverse learning backgrounds and preferences of her students and was responsive to their needs. She understood that students' short attention spans influenced her approach, prompting her to incorporate activities that would capture their attention. Despite her efforts to enhance her lecture slides and make them interesting, students often struggled to maintain focus. Engaging them in learning activities not only provided her with a well-deserved break but also proved to be an effective strategy for captivating students' attention and promoting focused learning considering their limited attention spans.

> Young learners have problem with concentration during lecture, so you need more activities and tutorial. Lecture is usually one way delivery with minimal discussion. When they do some kind of activities, at least they don't fall asleep if you just sit and listen. I try to make the slides interesting but after 20 minutes, that's all. They started playing on their phones. They pretend they listen. When I give an activity to do, so it is kind of break for me. I don't feel so tired by talking knowing that they are bored. And it also gives them some break and wakes them up!
>
> Interview 1

To facilitate a more engaging learning experience, Gina involved students in an activity session focused on napkin folding techniques. Rather than providing direct instruction and demonstration, she implemented a co-teaching approach by dividing students into three groups. Each group was tasked with learning a specific napkin-folding technique, which they would then teach to the other groups. This peer-teaching method allowed students to acquire napkin-folding skills collaboratively, fostering a more dynamic and interesting learning environment where they exchanged knowledge and skills. This approach marked a significant departure from traditional learning, as students learned from their peers instead of Gina's instruction. Importantly, it fostered a sense of learning responsibility among students and nurtured teamwork to work together to achieve activity's goals.

> Students will form 3 groups. Each of the group will learn a particular napkin folding technique. There are given 10 minutes to learn and practice. Students will rotate to teach another group your technique and in turn another group while teach you theirs. By the time of the exercise, everyone will learn the 3 different types of napkins folding techniques.
>
> Operation management higher diploma class observation

> Each group has a different task and they had to teach each other what they learned. So, if one group didn't achieve the goal of the activity, they wouldn't be able to teach another group. So, it means the goal of the entire activity will not be reached. In this case, students could only help

each other if one of the members didn't know how to follow some steps.

Interview 2

Gina recognised that understanding her students' prior learning experiences was essential, as it impacted their learning approach. Their learning approach was passive, and they struggled to express their ideas openly due to a lack of confidence and fear of ridicule from peers. Hence, engaging students to learn actively can be challenging due to students' inhibition to actively participate. During focus groups, Gina expressed how she engaged students to work in small groups in sharing and exchanging information with peers. Moreover, it broadened their perspectives. As a result, students acquired knowledge independently rather than relying solely on Gina. This could address students' concerns.

> It depends on like what was the previous students' learning experience. I think knowing this is important. Let us say the whole learning process was just to listen to a lecture, suddenly if I ask them to do the opposite, that is they have to talk instead of listen, it might be difficult. Especially for students who are shy to talk in public. I know them, they have the ideas but some of them think their ideas are not good or stupid. They prefer not to speak out because the rest of the classmates might laugh at them. Some of them they lack or courage to speak out what they think.
>
> Interview 1

In addition, students past learning experiences influenced their receptivity towards receiving information from peers. Shirley shared that her past educational experiences involved teachers primarily focused on imparting content. Although she interacted with peers to share information, she preferred receiving information from teachers, whom she viewed as the authoritative source rather than from her peers. Hence, she was reluctant to engage in students' discussion. This analysis underscores the importance of knowing students' previous educational experience and learning preferences to tailor teaching methods effectively.

> I like my previous learning experience because in China, the teacher from morning till evening focus very much on teaching and sharing a lot of information to us. I don't like teachers spending too much to let students discuss because a class is only 3 hours. I think the teacher in the class should spend time teaching.… I prefer to learn myself. If I really don't understand, I will ask the teacher. I always suspicious of knowledge from classmates if I get from students. I always believe the teacher provide the information that is most correct.
>
> Shirley, higher diploma in Hospitality (China)

Placing students in small groups was a practical approach for familiarising them with learning actively. However, students needed time to acquaint themselves with their peers. Gradually, as they worked together, trust was cultivated. Gina's understanding that students required time to adjust to small-group learning was essential for building collaborative skills and encouraging

active learning. It encouraged students to shift their focus from the teachers to their peers. During focus group sharing, Gina related how she engaged students to construct stakeholders' knowledge in small groups, which was more effective for encouraging students to learn collaboratively and fostering a more comfortable environment for peer interaction.

> I think they just learn the new style of teaching. So I remembered at the beginning when I ask them to form the groups, they did not show a lot of enthusiasm especially they have to stand up and change their seat. They have to leave their friends and work with someone they know. Gradually, they get to know each other because I mixed them they never work with their friends. They get opportunity to talk to their classmates. So they get like familiar with each other more. I think it also made students more comfortable to work with each other. So after a few tries, it was better.
>
> Interview 2

> I ask them to do is to make a group and then each the group has to discuss a different stakeholder of the event. Later they had to exchange the knowledge, types of stakeholders. At the end of the class, they came up with a few categories of stakeholders with examples. So, it is like without me telling them about the different types of stakeholders, they manage to figure out by themselves.
>
> Focus group

Students learning dispositions were influenced by the subjects they were studying. Sue noted that she adopted different learning approaches based on the subject matter. For Accounting, she preferred to work through problems independently before comparing her answers with her peers. In contrast, when studying Hospitality Law, she found peer opinions invaluable for gaining different insights and perspectives that enhanced her understanding. This distinction affected her engagement in group settings.

> For subject like Accounting, I prefer working and do by myself first. When I obtain the answer, we compare answers. If not the same, I will try again. But for Hospitality Law, we can share our opinion. I prefer talking with my friends, I asked in this situation, what do you think? In groups, we can know the other people's opinion. We do not know the correct answer. So, we find out what each other view is. It also leads me to think about other's opinion or answers.
>
> Sue, higher diploma Hospitality (Thailand)

To effectively engage students across different subjects, Gina employed a variety of teaching approaches. In Hospitality Law, she guided students in analysing and interpreting law cases, encouraging group collaboration to diagnose issues and provide recommendations. Conversely, for practical subjects, it was essential to instil practical skills. Role-playing exercises immersed students in realistic scenarios, thereby strengthening their communication abilities. Gina's pedagogical content knowledge enabled her to utilize a range of teaching methods to capture students' attention and instil diverse knowledge and skills. This adaptability reflected her extensive knowledge, allowing her to tailor her approach to the varying demands of the subjects

she taught and engage students to learn actively.

> Now I teach Hospitality Law. First, I explain to them some legal issues, Acts and case law. We do many cases and scenarios of what happened, how to analyse and give legal advice. For some modules, the assessment is practical. I use like practical activities to teach students. So, it really helps in gaining those skills. Operational management is one such subject. In addition, role play give students the real atmosphere. Especially the training room look like a restaurant or the hotel room. I think in the role play the most important is communication skills. Even in their assessment, it assesses how they communicate, use of body language. This is what we want them to learn.
>
> Interview 1

To encourage students to produce their own ideas, Gina provided an example related to the stakeholder concept. She believed that once students understood the concept, they would be motivated to contribute information. Moreover, it enhanced students' participation and deepened their knowledge. Gina took the step to cite an example that students were able to comprehend, reinforcing her belief that students could put effort into their learning. Hence, she was effective in promoting active learning due to her student-centred approach.

> Let's say you are the organiser of the event. You have to organise someone's birthday". And I will ask them "what kind of things you will need to prepare the birthday party? Whose help will be necessary to organise it? They might give me some answers, I will then say, "Now try to apply those things you need to prepare for a birthday to an event that this was given".
>
> Interview 2

In Gina's operation management session, she noticed that some students struggled to fold napkins correctly. Instead of rushing to help them, she encouraged them to keep trying. This reiterated her belief that the role of a facilitator is to guide rather than simply teach or show. When students successfully folded the napkins, she praised them as a way of encouraging them to acquire hands-on skills for a practical subject. Gina's preference was to motivate students to develop practical skills.

> This one looks good".
> "Keep on trying, don't worry of you don't get it initially, you have to figure out".
> "Take your time, you need to patient"
>
> "Ya, this one looks good!"
> "So its your napkin stand on its own? Ya, good one, well done!"
> Applause, "well done Marcel"
>
> Gina's Operation Management class observation (Hospitality)

Furthermore, Gina posing questions was an effective way to encourage students to share information. However, she adjusted her approach by starting with easy-to-answer questions to motivate students to participate. As a result, it encouraged them to contribute more information.

This underscored that Gina's adjustment of her questioning technique was effective in promoting active learning. Importantly, students became more confident in sharing information openly.

> To support students who may be particularly shy or hesitant to participate. Knowing students from different backgrounds, to make them more confident in sharing opinions and participating in the tasks, I would start by asking very simple questions. After the easy questions, they should be more confident in sharing opinions.
>
> Interview 2

> Here is an example. A student asked, "which category singers fall into"?
>
> Gina replied, **"**You need to think further which group of stakeholders would singers belongs to? Also, are the singers hired by the F1 organisation or provided by a third-party organisation? If hired by F1 organisation, where do you place them under stakeholder category"?
>
> Event management class observation, higher diploma

Moreover, Gina utilised student peers as an alternative approach to influence students who were reluctant to participate. Peers had a profound influence on encouraging others to participate actively. Nonetheless, Gina asserted that she needed to monitor students closely to ensure they were engaging. The analysis demonstrated Gina's flexibility in adjusting her engagement with students, including leveraging peer influence to motivate them.

> There will be a few students who refuses to participate even if there is a certain task. I try to get the group to convince him or her. Peer pressure is better than the facilitator. If I know there is a student who will not participate, I will come to the student more often to check on him or her.
>
> Interview 2

Gina attributed her students' active engagement to the meticulous planning she undertook before conducting lessons. Since there were diverse students learning preferences and needs, planning activities involved considering their educational backgrounds. Importantly, she designed learning activities that encouraged students to think critically and produce creative solutions. Moreover, it challenged students in their learning when answering difficult questions.

> In planning for the activity, it is not like I will not just plan any kind of activities, or I think that is fun. The exercise should be designed this way to help students understand. Some tasks that I gave to students are not that straight-forward. They also have to be creative, think "out of the box" to get the answer. If the answer is not very clear, if the answer cannot be found in the book, they have to use a very different approach to solve some problems. In this way, they learn critical thinking. And I think for the students, they also feel that they learn more because they already can apply through those activities they do during the class.
>
> Interview 2

The above analysis revealed a student-centred approach to delivering cooperative learning to actively engage students, considering students varied in their learning approaches. The session engaged students in active learning by interacting with peers, where they collaborated to build and reinforce their knowledge. Furthermore, students developed a deeper understanding of their peers through mutual assistance, fostering stronger interpersonal connections. Gina's application of cooperative learning impacted her development in instilling student-centeredness in cooperative learning and provided her with valuable insights into how to facilitate diverse learning experiences.

6.4.4. Conclusion

Gina's case study included a comprehensive examination of her teaching beliefs, which influenced her students to become independent learners before using cooperative learning. During cooperative learning, Gina demonstrated various teaching practices to engage students in acquiring practical skills and knowledge across different subjects. Despite Gina being familiar with active and independent learning, implementing cooperative learning required her to adapt to encourage students to learn together in a multicultural classroom. Recognising that students had different learning styles and were not initially receptive to active learning, she planned her activity and grouped students carefully, encouraging them to work together. The cooperative learning session indicated that learning was more engaging for students when they gained knowledge through peer learning. The adjustments Gina made in her teaching approach were important as they influenced her development and helped her gain a further understanding of how to engage students in learning.

6.5. Conclusion of the teachers' case studies.

To encapsulate, the three case studies presented varied approaches teachers adopted in cooperative learning and impacting development differently. It involved the shift towards a student-focused approach from a teacher-centred one enhanced Ashoka's understanding of engaging students to learn differently, even in quantitative subjects. Furthermore, he adopted an interactive teaching approach rather than a rigid way of imparting knowledge. On the other, Gina displayed sensitivity towards diverse students' learning preferences by adjusting her teaching practices to respond in a student-centric manner. She changed her questioning techniques, provided examples, and utilised peer support to encourage active and independent learning during cooperative learning. Consequently, her cooperative learning experience

impacted her development, sharpening her ability to enhance students' knowledge. Conversely, Win had mixed cooperative learning experiences, with students learning competitively in Business Finance and collaboratively in Business Strategy. These diverse experiences enhanced Win's understanding of effectively utilising cooperative learning to engage students in the two subject areas. These teachers gained different teaching experiences impacting varied development, highlighting the significance of the current investigation as opposed of perceiving cooperative learning as a teaching method.

Findings indicated engaged active students learning with cooperative learning experiences. They organised learning assignments. which impacted students' inclination to work together and complete tasks. In addition, the allocation of learning tasks and the roles assigned to students determined whether they cooperated or worked independently. Therefore, the learning tasks and assigned roles significantly impacted students' knowledge and learning. In addition, changes in the teachers' teaching approaches influenced how students learning collaboratively and the types of group formations used. The teachers' awareness of students learning in multicultural classrooms and pedagogical content knowledge profoundly influenced the implementation of cooperative learning to engage students learning actively. Furthermore, their adjustments in how they engaged students influenced their practical knowledge of collaborative learning. Teachers gaining classroom experience showed different ways to encourage students to participate more actively, including learning collaborative. When teachers engaged students in different ways, it significantly impacted their beliefs about teaching and learning, thus affecting their development. This underlined cooperative learning as an essential tool in promoting teachers' development with a shift towards to constructivist teaching and learning impacting students learn independently from teachers when they contributed knowledge enhancing learning. This reinforced the significance of conducting the current study.

Chapter 7: Main theme 2: Implications for teachers' use of cooperative learning

7.1. Introduction

This chapter examines the impact of delivering cooperative learning on teachers' development, underscoring the importance of the current investigation. It is the final chapter of the three; Chapters Five through Seven analysed teachers' development through cooperative learning. To recap, Chapter Five examined teachers' implementation of cooperative learning in their lessons, while Chapter Six delved into detailed case studies of three teachers who used cooperative learning in different subject disciplines. Chapter Seven analysed the three main impacts that teachers experienced when using cooperative learning. Table 16 shows the impact on teachers and outlines the structure of this chapter's discussion.

The first impact examines how using cooperative learning improved teachers' ability to influence students' learning. Increased interaction with students raised teachers' awareness of students' knowledge levels, leading to addressing learning gaps. Furthermore, the learning environment became more positive, and this seemed to more effectively promote learning. Changes in teaching practices and engagement with students to enhance learning during cooperative learning impacted the development of teachers' understanding of teaching and learning.

The second impact examines the role of reflection in teachers' implementation of cooperative learning. Reflection influenced their implementation of cooperative learning differently over time. Moreover, reflection revealed shortcomings in their implementation, leading to adjustments in teaching materials, group formation, and learning activities. Teachers also proposed using different cooperative learning methods to influence students' learning in future sessions. As a result, reflection improved teachers' implementation of cooperative learning and engagement with students.

The third impact examines the challenges teachers faced when implementing cooperative learning, including institutional factors and multicultural classrooms. Importantly, teachers adjusted their teaching and implementation to overcome these contextual difficulties. They provided examples such as engaged students in learning activities and encouraged more active student participation by placing them in pairs. As a result, teachers gained more knowledge and skills in delivering cooperative learning in multicultural classrooms impacting on their

development.

Table 16 Chapter structure related teachers' implementation of cooperative learning

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7.2. Enhancing teachers' ability to influence students' learning with cooperative learning.

7.2.1. Introduction

Cooperative learning had a positive impact on teachers' ability to influence students' learning. Teachers' interactions with the students provided them with insights into the students' knowledge level. Moreover, it shifted teachers' perspectives on using cooperative learning as they learned how to engage with students. In addition, changes in teaching practices impacted teachers' stages of development when they developed to prioritise students' learning. The impact on teachers will be discussed further.

7.2.2. Increased teachers' interaction with students improved learning and creation of positive learning environment.

Implementing cooperative learning heightened teacher-student engagement. Regina, Win, Beng, and Gina indicated a positive impact on student learning. Regina emphasised the importance of student participation for understanding perspectives and knowledge levels, keeping her updated on student comprehension. Win recognised that active student participation in discussions kept students engaged, allowing him to identify and address knowledge gaps, thereby improving learning effectiveness. Win was more focused on students' learning, improving his effectiveness in enhancing students' knowledge.

> When it's one way, most of the time, from teachers' perspective, they understand that their part is done. They have delivered the knowledge. But from the students' side, we don't know unless of course we wait till they are being assessed. But if it involves students' participation, there is feedback for the teachers to know where students actually stand because students will be speaking up more.
>
> Regina interview 1 (Psychology)

> Through cooperative learning, the interaction of the lecturer and the students become more effective. My previous understanding was lecture is just lecturing, I didn't realise the extent in the response and interaction with students are so important. After these sessions of cooperative learning, I have changed in that I emphasised more in terms of students' response. Interactions with students are very important. Otherwise, we assume that the students will know and understand. But through cooperative learning, through the feedback, we understand how much actually they know and to gauge the level of understanding. Teachers by asking questions and from the answers given by the students informed how much they know. Teachers will take steps to improve on the shortcoming of the students. To have the maximum effect of teaching
>
> Win interview 2 (Business)

Furthermore, Win acknowledged that interacting with students allowed him to bond more closely with them, resulting in greater trust as he understood their needs. Consequently, students recognised his responsiveness, which motivated them to become more engaged and invest more effort in their learning. This showed that Win's interaction with students had a considerable impact on student learning. Therefore, establishing closer relationships with students influenced how Win encouraged them to learn.

> Cooperative learning also increases the bonding between teacher and students because the teachers are more conscious of their response and students are also responding effectively. So, it does improve bonding effect between teacher and students. If bonding is increased, you will realise students will like learning, and this will improve on their level of understanding. Students will find interesting to learn, otherwise if they don't like learning and no bonding, then they would lost the interest of learning.
>
> Win interview 2 (Business)

In addition, Beng recognised that using cooperative learning helped her reach out to students and understand their diverse learning needs. Her student-centred approach significantly enhanced her ability to establish strong connections with students by understanding their perspectives. Moreover, her friendly and approachable disposition encouraged students to seek clarification when they felt comfortable interacting with her. Importantly, students became more receptive to Beng's teaching, improving her ability to influence their learning through her deeper understanding of their needs. Beng's engagement with students significantly impacted her development, as she provided more meaningful learning experiences.

> With cooperative learning, I know students, their strength and weakness. It enables me to understand how students feel and see things from their perspective. This allows me to easily connect with students from different ages, nationalities and cultural backgrounds. For students they can feel free to ask me questions when in doubt. I think we can sometimes joke so that lessons don't need to be serious. This may even interest students more in their learning.
>
> Beng interview 2 (Business)

Teachers' interactions with students transformed the learning atmosphere, making it more vibrant as students engaged in cooperative learning activities. Increased peer interaction during information exchange also improved learning and heightened students' enthusiasm for learning. Hence, Gina was motivated to implement cooperative learning, as her students demonstrated a strong inclination towards active learning. This highlighted that Gina's experience with cooperative learning improved her understanding of its use by providing insights into students' interaction during lessons.

> The class passes very fast like 3 hours, it is feels like it is just half an hour because there is this engagement, also a lot of energy, not only from one side teacher side but from students as well. Very dynamic. So it is not like traditional classes, students might fall asleep. It is easy to get bored. But in this kind of class where there is a lot of energy and dynamism, everyone kind of engaged. And I think for the students, they also feel that they learn more because they can apply through the activities they do during the class. So I started to introduce more and more like almost every time we had class, to have some kind of activities.
>
> Gina interview 2 (Hospitality)

The analysis revealed the effect of teacher-student interaction on learning. Win and Beng underscored significant improvements in teachers' ability to support students as they became aware of their learning needs enabling them to address knowledge gaps and build stronger relationships. Importantly, cooperative learning created a positive and dynamic environment that boosted student engagement, fostered a passion for knowledge, and enhanced learning outcomes. As a result, teachers became more proficient in implementing cooperative learning and in their teaching and engagement with students. Although teachers were impacted in their

development, however, they developed differently since they adopted varying practices when facilitating student learning with cooperative learning.

7.2.3. Change in teachers' perspectives on incorporating cooperative learning.

There were notable changes in teachers' perspectives when using cooperative learning in certain subjects' disciplines. Some teachers were hesitant about using cooperative learning, unsure if it was suitable for the subjects they taught, while others found that their classroom experiences did not match their expectations. Consequently, the outcomes varied, influencing teachers' perspectives on using cooperative learning to engage students.

Beng's pre-existing knowledge about cooperative learning influenced her to be selective in its use. Given the variety of academic subjects she taught, she believed cooperative learning was well-suited for subjects like Business Communication, as it allowed students to gain broader perspectives without abstract concepts. However, she was hesitant to implement it in Business Economics due to the numerous abstract concepts and uncertainty about how students would grasp them. Thus, Beng preferred a teaching-centred approach focused on imparting knowledge and having students work on practice questions. The academic subject taught influenced Beng's perspective on implementing cooperative learning, leading her to hold biased views about its suitability.

> Well, I find cooperative learning quite effective when it comes to the so-called "light" module like "Business Communication" whereby students do not actually expose to a lot of complex kind of theories. For the so-called more very heavy module like "Business Economics", I don't actually find cooperative learning that suitable in the sense that we actually whereby students have been so-called are taught with a lot of theories. It is more effective through one-way communication to build basic understanding of the key concepts. Ya, and also with some very extract kind of concept, so therefore, they actually might prefer so-called question directly rather engaging in some group activities.
>
> Beng Interview 1 (Business)

When Beng implemented cooperative learning in her Business Economics lessons, she gained a better understanding of using it to engage students in learning. Although she acknowledged its potential, she suggested using cooperative learning primarily for less abstract concepts. As a result, Beng's perspectives on using cooperative learning changed slightly, though she still had reservations about using it in Business Economics. This indicated a gradual shift in her views, with some ongoing hesitation.

> I believed that I could conduct cooperative learning selectively, even for like "Business Economics" which is considered a heavy module by most of the students. I believe I can use

> cooperative learning on concepts that are easier to understand. I can perhaps conduct say two or maybe maximum three cooperative learning activities out of the 10 class sessions rather than like having for every single lesson.
>
> Beng Interview 2 (Business)

In Tee's class, although he was open to using cooperative learning, he was initially uncertain about his ability to influence students' knowledge acquisition. However, after implementing cooperative learning, he found that he was able to engage students in gathering information collaboratively with their peers, positively impacting their knowledge acquisition. Notably, students became more independent when working with peers, reducing their reliance for information. Tee emphasised encouraging students to be active learners rather than simply delivering learning material. As a result, his perspectives on cooperative learning changed when he saw students learning more effectively.

> I find cooperative learning surprises me because it can help teachers to teach those content with a lot of details than I had expected. When I was conducting the network cooperative learning session, I get the students to divide out the work. Get students find out certain parts or detail because there many details to cover. By getting students to find information, I want to encourage active learners. Between students, they share what they know about certain topics. Students help one another so that the teacher may not be the first contact point you know. Subsequently, if they still have problems with the team, they can approach the teacher.
>
> Tee interview 2 (Information technology)

Conversely, Regina's experienced with cooperative learning was not as positive as she had hoped. She believed that active participation improved the learning experience, but despite her best efforts to encourage interaction, her students were less receptive to collaborating with peers. Instead, they preferred to engage directly with Regina, as they were confident learners. This made it challenging for her to encourage peer cooperation, and her experience with cooperative learning fell short of her expectations. This indicated that students' receptiveness to working with peers influenced how Regina perceived about using cooperative learning

> What I enjoy more is when students participate more because the class is a lot livelier and you will also get to learn something from the students.
>
> Regina interview 1 (Psychology)

> If one or two are very quiet, then I just asked them like a few questions to get them to interact. But that also is a bit challenging because I noticed that sometimes it does not change like when I said when I am around, they forced themselves to say something to each other and then when I leave, they are back to one person being quiet. For some of the students, they feel that they already know the content. They already understand. So, they feel that there is not much need to discuss it with each other. They would want to actually discuss it with me, with the rest of the class. They feel we can discuss, there is no need to spend time in groups to share their opinion.

> They are willing to just speak and share directly with me.
>
> Regina interview 2 (Psychology)

The discussion highlighted several outcomes regarding how the use of cooperative learning changed teachers' perspectives as they gained practical knowledge, underlining the importance of conducting this study to involve active student learning. Understanding these perspectives enhanced their experience of cooperative learning. To encapsulate, Beng experienced a gradual change in her perspectives on using cooperative learning. Tee's experience exceeded his expectations by effectively involving students in the learning process. However, Regina's experience did not meet her expectations, as students were more inclined to engage with her than their peers. The varied teachers' cooperative learning experiences demonstrated a gradual shift in perspectives and students' willingness to learn collaboratively. It was essential to understand how teachers' perspectives evolved, as it directly influenced their cooperative learning experience and the likelihood of using it in future lessons. Gradually, teachers developed self-awareness of how changing perspectives influenced practices and impacted the understanding of teaching and learning, and their development.

7.2.4. Changes in teachers' stages of development in teaching.

Teachers' stages of development refer to their beliefs about teaching and learning, which range from a teacher-focused to a student-focused perspective. Significantly, teachers' stage of development influenced their implementation of cooperative learning and engagement with students. The use of cooperative learning led to a shift in teachers' roles, moving them from controlling the learning environment to acting as facilitators, encouraging student independence and promoting in-depth peer discussions.

Before implementing cooperative learning, Tee dedicated substantial time to disseminating subject-specific knowledge, using a teacher-centred approach that rarely involved student-group interaction. During cooperative learning, he took on a different role as a learning facilitator, encouraging students to contribute information and monitoring discussions to ensure content remained on topic. He paid more attention to supporting student learning and showed a greater emphasis on prioritising students' learning.

> I will usually spend three quarter on teaching because there are much content to be covered in "Information technology". If I do get students to discuss, it is usually sharing between two students.
>
> Tee interview 1 (Information technology)

> Normal lesson I usually try to delivery some theories before following with exercises. For some of the exercises which may involve calculations, I will get students to feedback answers. The teaching approach will change because it is not just the teaching. With CL, it will organise and conduct the CL session. I also organised task among students. OK, this team do this question and another team another question. Let students discuss and do a summary. The answers given to students need to fall within the parameter you have set. Students must have the points. Of course, it would be good if students have certain answers and also other answers that don't belong to the norm. When I gave an activity, I will see what was written was not very correct or unsure what students have written, I will clarify with them. I will check how are students progressing given a certain time.
>
> Tee interview 2 (Information technology)

Rajoo recognised the advantages of adopting a participatory learning approach, as students shared more information and stayed engaged during cooperative learning. Although Rajoo gave students more autonomy in how they participated, this shift proved challenging, as it required him to be more attentive to ensure that learning was taking place. He was also accustomed to a teacher-centred approach, and adjusting his teaching style demanded a significant change. Nonetheless, relinquishing control marked an important turning point, as it allowed students to engage more interactively in the learning process.

> I realised that sometimes when you open up and let them come up with it, they tend to go you know on a rapid trail. They go all over everywhere. And sometimes it is healthy because it makes them think wider. So, in that sense, I thought it was quite good because we give them the space to move anywhere they want which is of course better than the one-way communication and you need to redirect them back. But what was good was that they actually exercise their thinking. …
>
> It is easier to get the learning objective done if I am in control. But once I am no longer in control, the learning objective, I will have to basically steer the ship. With teaching, you know exactly where you want to go but with the sail, you have to adjust the sail depends on where the wind blows.
>
> Rajoo Interview 2 (Business)

Regina also experienced a shift in her understanding when engaging students in peer discussions. She admitted that she used to involve students only superficially in sharing ideas. However, she realised that during cooperative learning, students needed to interact differently. They were required to question each other's viewpoints rather than merely accept concepts and participate passively. Regina's emphasised on students engaging in deeper discussions indicated a shift in her development rather than merely engaging students to exchange information superficially. Hence, Regina's utilised cooperative learning to enrich students' learning experience.

> I think the nature of discussion is slightly different with cooperative learning where they have to sort of I get them to engage because most of the time is just like discussing in groups. But I

> also tried getting them to like sometimes to get a partner to share ideas with each other and to question each other. In CL, you also have students teaching each other, so it is not just sharing overall as a class. Now I do discussion, I have a better idea of what can be done or can be changed when students are actually discussing. So how to make it even more interactive or it can be conducted in different styles? There is no one single way to delivering it.
>
> Regina interview 2 (Psychology)

Tee, Rajoo and Regina's classroom experiences showed contrasting shifts in their development. Although each teacher developed differently, they all shared a common shift toward becoming more student-centred. Incorporating cooperative learning had an impact on both students' learning and teachers' teaching experiences, making it necessary for teachers to include it in their lessons.

7.2.5 Academic development supported teachers' implementation.

The importance of conducting the present study was the academic development influenced teachers' cooperative learning implementation. Academic development sessions they attended, dialogue with colleagues, and informal peer chats supporting teachers cooperative learning implementation. These initiatives were essential in supporting the teachers' implementation of cooperative learning, helping them to acquire cooperative learning knowledge and exchange classroom experiences.

The academic development sessions provided teachers with cooperative learning and pedagogy knowledge. Interaction with colleagues as a form of informal learning reinforced teaching practices. Hence, the benefit of delivering academic development training sessions influenced their delivery of cooperative learning. Ashoka and Patrick conveyed that they were unsure if their teaching methods were effective. Receiving feedback from colleagues helped them compare and feel assured that their teaching methods aligned with those of their peers. Moreover, they gained ideas for effective classroom management, which bolstered their confidence. The exchange of teaching experiences was beneficial as it fostered peer learning, encouraging the improvement of knowledge and practices. Hence, teachers developed a variety of teaching approaches.

> Academic development helps because sometimes when we have certain issues and we are looking for solutions, so by having the Academic development sessions right, we get different perspectives and then we change our approach. Next it also gives you the assurance that your colleagues you are doing it correctly. So because when you share your experiences, oh … you have the same experience, I did this. So we learnt from there. It's a good thing, sharing of ideas.
>
> Ashok interview 2 (Business)

> Sharing and then we find out during we go through activities and we find out which one is the most appropriate for our students so that we can adopt the similar situation for such and subject a subject. Maybe it may be similar, maybe slightly different, so that gives an idea which is the benchmark or what we need to do differently.
>
> Patrick interview 2 (Hospitality)

Rajoo acknowledged that staff training provided teachers unfamiliar with cooperative learning with the foundation knowledge essential for its implementation. The training sessions served as a refresher for him and kept him updated on pedagogy knowledge, even though he was already familiar with cooperative learning. Rajoo's participation in these training sessions demonstrated his commitment to implementing cooperative learning and improving his practices.

> I think definitely any kind of staff training if focused on something that is value, definitely it will help. So I think even with this, it will be of some value. for those who have not done CL, it will be interesting. But for me, I have already been doing CL, so for me, it is just re-fresh to be sure I am doing the correct thing. But those who have done, then they are learning something new.
>
> Rajoo interview 2 (Business)

During a peer-sharing session, Beng gained new insights when her colleague Ashoka discussed applying cooperative learning to Statistics. However, this did not mean that she applied cooperative learning to all subjects, as she still believed it was suitable for some subjects but not for Business Economics. Her implementation of cooperative learning in Business Economics indicated that she may have reconsidered using it, requiring her to challenge her underlying assumptions that influenced her practice. Beng needed to question these assumptions, which impacted her approach. Beng's case underscored the importance of reflection in changing her beliefs about using cooperative learning, even after being exposed to a colleague's sharing.

> Say for example, the activity itself, I remembered Mr Ashoka, he shared that in "Statistics", even in this subject, you can use case study. That was what shock me that he can get us to do this kind of activity. So to me, it was it somehow inspired me that even more the pure Mathematical subject, you can do so. If this can be done, why not for other subjects.
>
> Beng interview 2 ((Business)

> The 1st activity was on "think pair share". In my usual class, I don't use CL due to the content itself is very heavy. It was a revision on a part of the concept, "GDP". I gave students a few questions and they discuss in pairs. They were 2 groups. During the activity, students discussed in pairs, helping each other, they go through why answers shouldn't be this.
>
> Focus group relating to Business Economics

The engagement in informal peer chats between the researcher and the teachers helped them to

anticipate their cooperative learning implementation. The teachers were considering how to engage students actively during cooperative learning sessions. Although the peer chats did not provide specific ideas, importantly, the chats played an important role in prompting teachers to reflect on their activities and students' grouping strategies to engage active learning. Peer chat extracts from Win and Beng showed they were encouraged to plan and decide on activities to engage students based on lesson topics.

> A few days before the class observation, I had an informal chat with Win regarding what he planned to do in his CL session. He shared his past experienced had been students worked on solving problem sums individually. He was considering pairing students in dyad. Being the subject expert,he should give some thoughts into how to go about planning for the cooperative learning activity that would fit into the lesson of the day.
>
> Peer chat with Win

> Beng: Next semester I am teaching Business communication, should I do cooperative learning to see how students interact and learn?
>
> Researcher: Possible, but you got to see how you engage students differently when you group them into small groups.
>
> Beng: let me have a thought of it?
>
> Peer chat with Beng

In addition, the peer chat sessions provided opportunities to clarify teaching practices immediately after the cooperative learning session, which helped the researcher better understand them. In Rajoo's case, the question posed made him aware of actions he had taken that he might not have been conscious of. Subsequently, this allowed him to reflect on his conduct and engagement with students during lessons. On the other hand, Ashoka recognised the topic was challenging for students, so he engaged them to find information on show sizes based on an inspiring story. The peer chat sessions engaged teachers in reflection on their teaching and engagement practices resulting them being more self-aware.

> Researcher: You seem to quite harsh on some students, why is that so?
>
> Rajoo**:** Ah … because we are dealing different culture of international students, not everybody goes at the same flow. Not everyone has the same thinking. So and sometimes, we cannot have one you know system to fit all. So I need to adjust based on a particular student, how much they contribute, interest they showing and initiative they showing. That is where sometimes I have to be hard.
>
> Follow-up chat with Rajoo after class observation

> Researcher: how did he came up with the idea using a real-life story and relate to shoe sizes?
>
> Ashoka: the topic will be quite difficult for students to grasp the concept, so he had to find a way to expose to different sets of information. One such information will be shoe sizes. Some time I came upon this inspiring story of an entrepreneur in show making in Channelnewsasia

> (local news programme). I did a search to find out more information. So by using this case study, at least it would give to students some idea of the concept, not so much for students to learn a concept.
>
> Peer chat with Ashoka after Statistic class observation

The discussion above indicated how academic development supported the teachers' cooperative learning implementation. Dialogue with colleagues enabled them to gain valuable insights into peers' practical knowledge acquired from day-to-day classroom experiences. Reflecting on conversations with colleagues could prompt changes and improvements in their teaching practices. Furthermore, the involvement in peer chats stimulated them to plan for their cooperative learning lessons. Significantly, the support teachers received went beyond the academic development training sessions, which extended throughout their cooperative learning implementation. Teachers, although they developed differently as they acquired varied knowledge and insights on students' engagement through peer learning, were significantly as it widened teaching approaches to facilitate student learning.

7.2.6 Conclusion

Section 7.2 examined how teachers influenced students' learning through cooperative learning. Teachers' interaction with students was important in encouraging active participation, as well as developing closer relationships. Furthermore, when teachers assumed the role of learning facilitator and relinquished control, it created a favourable learning environment that encouraged students to participate actively. Hence, the impact on teachers' development was significant, influencing their teaching practices to become more student-centred, shaping their perspectives on cooperative learning, and strengthening their relationships with colleagues and students. Significantly, teachers improved their effectiveness in promoting active student learning. Significantly, teachers developed in a variety of ways that benefited them in discharging their role as facilitators of learning affecting development.

7.3. Teachers' reflection on their cooperative learning experiences

7.3.1. Introduction

The teachers' involvement in reflection proved valuable, resulting in adjustment to their teaching materials and methods, regrouping students, and improving time management. Although the teachers did not explicitly mention engaging in reflection, analysis of their interviews, focus group extracts, class observations, and recommendations all pointed to their

participation. Teachers' reflection played a crucial role in enhancing their implementation of cooperative learning.

7.3.2. Changes in teachers' implementation of cooperative learning sessions.

Teachers in this research project conducted two cooperative learning sessions. Since these sessions were conducted in two separate semesters, it allowed teachers to review their implementation. As a result, their delivery of the cooperative learning session in the subsequent semester differed. In Patrick's first cooperative learning session, which was a degree class on International Hospitality Management, he involved students in a case study on the success and failure of Brighton as a tourist destination. With a class size of five students, Patrick interacted intensively with them. Although there was much discussion, the engagement was primarily limited to a few students and Patrick.

> The session involved Brighton as a tourist destination in which a three-page case study was given to a small group of five students. Due to the group size, he paired students to answer a list of questions related to the case. He did a brief on the case before students went on to discuss answers and recommend solutions. Since, it was a small class, he interacted intensively with students, having much dialogue with students. Students shared answers with the class before he engaged them to discuss further by adding more information.
>
> Patrick, International Hospitality Management degree class observation.

Conversely, during Regina's first cooperative learning sessions, she utilised a video case to engage students in applying Developmental Psychology knowledge. Students worked in small groups to answer the given questions. Reflecting on this cooperative learning session, Regina had concerns about whether students were genuinely working together despite her efforts to encourage discussion. Upon reflection, she realised her students might not have effectively collaborated during the session. Regina's implementation of cooperative learning showcased her effective delivery but, more importantly, highlighted the significant impact of reflection on her approach.

> My lesson was on "Developmental Psychology", I was going through a lecture on some of the theories, changes that happen during the stage of life development. I showed students a video on early sexual behaviour, as a problem behaviour. 12 to 14 years getting pregnant and the consequences. I get students to discuss on some controversial issues. I gave them a list of questions. They form groups and discuss. I am not sure whether there are any cooperation. It is more of discussion and I also throw in a few questions and discuss as a group. I try to get them to relate back to the topic based on the video to explain.
>
> Regina focus group citing on Developmental Psychology session

In the second cooperative learning session, which involved higher diploma students in a larger

class of over twenty, Patrick made a conscious effort to engage students more than in the previous session. Hence, he involved them in survival case discussions that required them to rank items. Since students had differing preferences regarding the list of items, they had to compromise and reach a consensus despite individual differences, fostering closer collaboration. It seemed the first cooperative learning session served as a guide for Patrick on how to engage students differently, With the awareness of his earlier experience, he adjusted his delivery and engagement strategy.

> During this exercise in class, I give a list of items which students need to categorise from what is most important according to them. Students first have to come up their own opinion, which takes 5 – 10 minutes to think through, give the ranking and then they start discussing. When they start discussing, with another group member, then engage in more participative group members. It is more like they will be engaging in more conversation. They need to work together and come up with a solution which is best for your team. It is more like they were engaging in conversation
>
> Patrick interview 2 (Hospitality)

Before delivering the second cooperative learning session, Regina was well aware that her competitive Psychology students might not be inclined to engage in peer discussions and gained much knowledge. To address this, she carefully selected a discussion topic that would involve them in collaboration. This consideration significantly influenced her approach to designing learning activities for the second session.

> I think students who are very competitive they won't find CL benefiting to them because very competitive students usually looked for what they can gain. I think students who are very competitive, they find that I already know this, so why am I spending time, so if the lecturer wants to know, I will answer. They are the more independent learners Which is why I try to find topics that are no right or wrong answers. You know, it is just sort of for them to debate and discuss.
>
> Regina Interview 2 (Psychology)

In the second cooperative learning session on Organisational Psychology, Regina designed a learning activity that simulated the hiring process to enhance students' understanding of the roles and responsibilities of a human resource manager. The activity was designed to simulate a real-world situation, engaging students in the hiring process, where they had to take into account various factors to make decisions. This enriched their learning experiences and provided them with diverse perspectives.

> For this session, we are going have a go at the employee selection process. Assume you and your teammates are in the Human Resource department. You are to make hiring decisions. You will be given a number of case studies containing a profile of the candidates applying for a particular position. The objective is to make a decision whether to hire or not to hire the given candidate. In groups of 3, go through each of these case studies and give your reasons whether

> you should hire or not hire with reasons. Share your choice and reasons to recommend candidates to hiring.
>
> Regina's Organisational Psychology class observation

Patrick and Regina's adoption of cooperative learning in both sessions allowed them to identify areas for improvement in their implementation and engagement with students. Consequently, they redesigned learning activities for the second session to foster closer collaboration among students, positively impacting their learning experience. Both the teachers' second sessions were characterised by student involvement in negotiation and decision-making on selected options. The discussion underscored the significance of teachers' reflection in engaging students in collaborative activities. Significantly, teachers gained practical knowledge that enhanced their cooperative learning implementation when they engaged in reflection could impact on their development. Students benefitted as well when they engaged in active learning rather than passively receiving information.

7.3.3. Reflections improved teachers' engagement with students.

The teachers' participation in reflective practices played a critical role in adjusting their teaching materials, student grouping, and time management. They also recommended using different cooperative learning methods to actively engage students in the learning process. Consequently, teachers' reflection improved their capacity to make necessary adjustment that effectively engaged students and promoted learning. Several examples from teachers demonstrate how reflection influenced their delivery of cooperative learning.

Ashoka recognised the importance of updating teaching materials to align with learning objectives during conducting cooperative learning lessons. He reviewed his lesson materials to ensure they adequately covered the learning objectives and were engaging for students. Conversely, Rajoo admitted that when using a teacher-centred, transmission-based approach, he had prepared his lesson materials casually because he had more control over how students were engaged. However, during cooperative learning sessions where students learned interactively, he realised that multiple examples were needed to support student learning more effectively. This reflection led Rajoo to suggest adding more illustrations to his teaching materials. Engaging in reflection significantly influenced Ashoka and Rajoo to modify their lesson materials to keep them up to date.

> I have to make adjustment and updates in coming up with the learning materials to make sure the objectives are covered. Students will find it interesting and prepare them well for

assessment.

Ashoka focus group

> In cooperative learning, as a teacher, you cannot take the easy way out whereby I will just come prepared with one example and use it during lesson. Instead, right now, when students are participating during lessons, I need to come prepare to have maybe 3 or 4 different examples and see which is the most appropriate examples and use the one depending on how lessons went. That means the lecturer needs to prepare a lot more.

Rajoo interview 2 (Business)

Furthermore, teachers improved their approach to forming groups. Win and Gina demonstrated different approaches in this regard. Initially, Win acknowledged that his method of allowing students to select their own group members led to imbalances. Reflecting on his experiences and gaining insights from his colleagues' approaches led him to set criteria for forming groups, which resulted in more diverse student groups during subsequent cooperative learning sessions. Win's reflection on group formation and the suggestions from his peers played a crucial role in motivating him to change.

> I realised in the case study, when they select among themselves, they also are very particular about this point, they know what is their standard. Usually they will want to cooperate one or two that are better students into their group so that they will have a good leader. However, there might be situation where a group is made up of "weak" students and this becomes the role of facilitator. If the facilitator realised that the whole group consists of weak students, then facilitator has to pay particular attention to the "weaker" groups to make sure they do their work.

Win Interview 1 (Business)

> So now after looking how the rest of the teachers form groups, and my class experience, I also changed. I use different nationality, male and female, strong and weak students mixed. For example, in the Business strategy cooperatively learning session, I gave them the requirement male, female and no two nationalities of students should be in the same group. They come together to help one another to come out with solutions to the case study questions.

Win Focus group (Business)

Gina, on the other hand, engaged in self-evaluation regarding group formation and concluded on her own that improvements were needed rather than relying on ideas from colleagues. She also noted that gaining experience sharpened her ability to engage students through cooperative learning. Therefore, Gina's self-reflection and accumulated classroom experience were important factors in her improvement. Gina's involvement in critically her reflect led her to explore different methods for involving students with a specific learning objective rather than just keeping them occupied. Win and Gina showed different approaches to reflection and improvement of their practices.

> I can reflect from my cooperative learning session. So, I notice what goes wrong and the areas for improvement in the way I conducted my first the session. For example, the way I formed groups, whether am I doing the correct or not the correct way. I already have some few ideas how I can improve it just from the experience. The more activities that I conducted, the better it will be. I will improve.
>
> Gina focus group (Hospitality)

> Going forward, I think it is important that I do a critical evaluation of whether the learning objectives were being met, example I can follow-up with quiz and get students to share what they learned. In this way, this may help them to learn better, and for me as a teacher, ya to make sure learning takes place rather than conducting the session without any goal.
>
> Gina interview 2 (Hospitality)

In addition to group formation, teachers also faced challenges with time management when implementing cooperative learning. Beng and Rajoo acknowledged the need for better time management, as they had exceeded the allocated time during their sessions. Beng admitted that she spent far for time than planned on delivering cooperative learning, while Rajoo recognised that he allowed too much time for students to exchange information. Win was aware that analysing case studies required a considerable amount of time, so, he limited case study analysis to a few sessions per semester. These teachers recognised the importance of improving time management to engage students during cooperative learning effectively.

> Time constraint is one the biggest constraint. So, you plan the activity to run for 10 minutes but ended up taking 20 minutes instead. Definitely a need for me to improve on time management. I think I sometimes I spent too much time on the cooperative learning activity in Business Communication. You plan the activity to run for 10 minutes but ended up taking 20 minutes. With doing more cooperative learning, with the experience, I think I can manage my time better.
>
> Beng interview 2 (Business)

> I think for me, it is about. To be aware of time, because if you let the discussion and activity go on, it can just go on for too long. Also, to be mindful of time yet mindful of the learning objective and yet allow freedom and creativity. The freedom of creativity means more time, so it actually contradictory to each other. This is where I need to manage it better.
>
> Rajoo interview 2 (Business)

> Cooperative learning will take up a bit of time and therefore if you were to use cooperative learning, time management is very important because it is time-consuming to carry out case study. Each case takes about 30 - 45 minutes, so I cannot do many case studies. Even 5 case studies within 10 sessions were demanding.
>
> Win interview 2 (Business)

Furthermore, Beng and Tee both proposed incorporating different cooperative learning methods to engage students in diverse ways during future sessions. Beng suggested using the jigsaw learning method in her next cooperative learning sessions, as she had previously used a

pair-sharing approach. In contrast, Tee, who had been using the jigsaw method, expressed an eagerness to explore other approaches. Beng and Tee showed a strong desire to experiment with different cooperative learning methods to enhance student's learning experience, highlighting their commitment to continuous improvement and adaptability in teaching.

> I can try to use different methods to engage students I can make it more varied rather than every time like ok every group doing the same thing. For example, like previously in the Business Communication, instead of every group doing the same thing that included using "pair share", there was once, I gotten students to pair sharing and also get students to do the "Jigsaw" cooperative learning activity whereby each group just take care of maybe question 1 only. Then have another group attempt another question. Then after which, they exchanged answers and they learned from one another. This may interest them in their learning. Because in cooperative learning, there are many different kinds of activities. So, I think this is the part I need to explore further going forward.
>
> Beng interview 2 (Business)

> That time I was using jigsaw method. So perhaps next time I can use another method. I can get different teams to actually tackle different questions so that when one group share, the other groups will also learn instead of all tackling same areas. So, this enables more areas to be covered and wider as well.
>
> Tee interview 2 (Information Technology)

In summary, teachers' engagement in reflection led to greater self-awareness in conducting lessons, prompting them to take meaningful steps to improve their cooperative learning implementation. These improvements included adjusting teaching materials, learning activities and improving time management. Furthermore, teachers recommended incorporating different cooperative learning methods to diversify student engagement. Importantly, recognising the need for changes strengthened their commitment to implementing these proposed modifications, thereby improving both teaching and learning. Therefore, reflection enriched the teachers' cooperative learning experiences as they acquired deeper knowledge and understanding of effective strategies. Consequently, reflecting could influence their understanding of engaging with students differently. Crucially, teachers acquired the knowledge and engagement in reflection and improve their practices and understanding of teaching towards student-centred learning, thereby impacting their development differently. As a result, teachers demonstrated varied developmental trajectories when adopting different reflective practices. These practices, shaped by their delivery methods and areas identified for improvement, played a pivotal role in improving their development and teaching effectiveness.

7.3.4. Learning from students.

Another impact of teachers interacting with students was they acknowledgment that they

learned from students' sharing of information. When students shared information, teachers reflected on ideas they had not anticipated from students. This was evident in Beng and Rajoo's extracts, where they gained insights that helped them better understand students' perspectives. It highlighted the benefits of teachers engaging interactively with students.

In Beng's class, she was amazed when students' feedback regarding cyberbullying was consistently aligned with previous research. When a more mature student shared a similar opinion, Beng realised that the age might contribute to diversity in opinions, prompting further consideration of factors influencing cyberbullying. Similarly, Rajoo gained diversified knowledge by receiving ideas from other students. Beng and Rajoo's openness to student suggestions was reassuring, prompting them to reflect on and delve deeper into discussion topics. This underscores how student discussion influenced teachers' reflection on classroom experiences.

> In fact, through the students' group activities, I do learn something from them because we might actually see things from different perspectives. When I engaged students to discuss something about "cyber-bullying". Ya, to my surprised that majority of the students they actually agreed with the so-called common approach used by the victim of cyber-bullying. But my class actually there is one matured student, ya, she actually have opposite view which actually similar with me whereby both agree that we should actually report it to somewhere, so that the thing will not just like keep inside ourselves. So from there I can see that different generation actually have different very different views on how to handle the same issue.
>
> Beng interview 2 (Business)

> With CL, I get new ideas from students. It is their perspective and there are a lot more of them doing the work. I am actually learning from the students in the process.
>
> Rajoo interview 2 (Business)

7.3.5. Conclusion

To summarise some key points about teachers' reflections on their cooperative learning experiences, these reflections led teachers to review the lessons they conducted. During this process, teachers identified areas for improvement, which could involve changing teaching materials, forming groups differently, using different cooperative learning methods, or conducting sessions in new ways. In addition, reflection prompted teachers to critique their lesson delivery to better align with learning objectives. Receiving ideas from colleagues encouraged teachers to question their beliefs about teaching and learning, thereby recognising the need for change. Making changes to cooperative learning sessions helped teachers become aware of the necessity to adapt their practices. This may challenge their pre-existing beliefs. Significantly, beyond suggesting changes, reflection enriched teachers' developmental

experiences by helping them to engage students using different methods, ultimately improving their teaching practices and enhancing their cooperative learning knowledge. The importance of the current investigation was teachers gaining reflective practices although their development varied when they adapted teaching practices differently.

7.4. Challenges encountered by teachers and responses in multicultural classrooms.

7.4.1. Introduction

The ability of teachers to adapt is crucial when implementing cooperative learning in multicultural classrooms, as it requires them to adjust their practices to engage diverse students. This section will begin by examining the challenges teachers face due to institutional factors and the diverse characteristics of their students. Teachers' responses to these contextual factors will follow. The experience of adapting their cooperative learning implementation can aid teachers in navigating contextual challenges and strengthen their understanding of teaching and learning.

7.4.2. Challenges posed by institutional factors.

Teachers faced two main challenges related to institutional factors: a compressed curriculum arrangement and class size. These factors constrained their ability to implement cooperative learning effectively, adjusting essential for engaging students in learning.

The first challenge was the tight curriculum arrangement. Rajoo expressed his enthusiasm for incorporating cooperative learning into his lessons; however, the limited number of allocated lessons created a tight timeline to cover the syllabus within the semester. As a result, he lacked the time to implement cooperative learning as his priority was to complete the syllabus.

> I would love to do that seriously, however, there are many constraints to having been able to do that because right now this particular module which you are talking about Introduction to Management, which is our higher diploma module. And for higher diploma module, we have very tight deadline. We only have 10 sessions in which time you must be able to deliver depending on 10 to 12 different components. And it is really a challenge to try to deliver them, let alone have the time to conduct cooperative learning.
>
> Rajoo interview 1 (Business)

The second challenge teachers faced was class size, which varied from being too large to too small for effective cooperative learning. Ashoka and Regina described different class size

scenarios. In Ashoka's case, he stated that class size was beyond his control. To engage students actively, he adjusted learning activities by assigning different tasks to gather a diverse range of information. As a result, the large class size did not hinder Ashoka's ability to engage students, as he adapted his approach to cooperative learning.

> Mm … how class size will affect my activity? For the degree class, the class size smaller, slightly over 10, getting and designing the activity wasn't that difficult. But if it was a bigger class size, then, I have to ensure students are able to keep up with the activity. Like Statistics almost 30 students. That was the reason I had to have many categories of occupation for students to keep up with it and search slightly different information. You also need to ensure that everybody participate as much as possible. That can be quite a bit of a challenge. For the degree class, the class size smaller, about 10 students. Designing the activity wasn't that difficult, not much of a challenge. Class size can't be help. If it is too big means too big. You take that into consideration in designing the activity, preparing it, to ensure participation which can be affected.
>
> Ashoka Interview 2 (Business)

In contrast, Regina explained that when the class size was too small, it impeded the use of cooperative learning due to the lack of sufficient students for meaningful interaction in paired. Hence, Regina preferred to engage directly with students to exchange information. Although varying class sizes posed challenges to adopting cooperative learning, teachers' capacity to respond and adapt their practices was crucial for overcoming these difficulties.

> Class size is a problem. With a class of many students, it is quite interesting to have many groups where students could engage. But, also in some situations where the class size is too small, they don't get much chance to interact. This can be a problem as well.
>
> Regina interview 2 (Psychology)

Institutional barriers such as curriculum arrangements and class sizes hindered teachers' implementation of cooperative learning, but by adjusting learning activities and engaging with students, they managed to overcome these obstacles. Such experienced could enhance development when they circumvent classroom context. In addition, the different learning styles of students affected their level of involvement with classmates during cooperative learning, which will be explored in more detail next.

7.4.3. Teachers' responses to influence students' learning in multicultural classrooms.

The learning preferences of students showed diversity in multicultural classrooms. Students' learning behaviours, including their desire to work with classmates in groups, were influenced by their cultural backgrounds. Furthermore, diverse student learning proficiencies and personalities impacted interaction among students. As a result, teachers modified their delivery

of cooperative learning and practices to enhance students' learning experience.

The influence of culture was significant in shaping the level of student engagement in active participation. Win observed that students from certain cultural backgrounds displayed a more reserved demeanour, requiring motivation to participate. In contrast, Regina believed that involving students in sharing ideas with their peers in pairs was more effective for encouraging quieter students to participate.

> In an oriental society like us, when we are young, we are more dependent on our parents. Oriental society parents have a very domineering role on our children. This made them dare not speak out. This is a cultural background Asian society. Our Oriental students, they are very quiet and docile. Teachers sometimes have to force them to speak. If you don't put a finger in front of them, they don't talk.
>
> Win interview 2 (Business)

> Sharing with their friends help them but I think this would especially be more helpful for like students who are more quiet who not so willing to sometimes just share openly with me, with the rest of the students. So sometimes getting them to just find a partner, to do it on their own, they are not so shy to express because they are like presenting to the whole class. I think for students like that especially it might be helpful.
>
> Regina Interview 2 (Psychology)

Gina recognised that in certain Asian countries, the educational system often emphasises examinations, leading students to rely heavily on rote learning to succeed. Consequently, they were generally less enthusiastic about participating in lessons. To combat this, she designed activity sessions that directly related to assessments. This connection motivated students to engage enthusiastically, as these activities equipped them with vital practical skills. Knowing students' previous learning experiences proved crucial for Gina, as it enabled her to design activities that effectively promoted engagement and enhanced learning.

> The educational system affects students' participation in cooperative learning. For someone, it can be challenging. For example, Chinese or Korean students, I think their educational systems were based on learning for the exams. Memorising theories and definitions.
>
> If the assessment is practical, we have to use like a practical activities to teach students. So it really help in gaining those skills. Students doing the napkin folding, it's a part of the assessment. By doing the activities, they are already preparing for the exam. They acquired the knowledge and skills to pass the assessment.
>
> Gina interview 2 (Hospitality)

Patrick, however, had a different perspective. Despite his sincere attempts to foster student engagement, he observed hesitancy among students to actively engage in conversations with their classmates. Consequently, his efforts to encourage peer engagement proved ineffective.

Nonetheless, teachers' dedication to engaging students in various ways demonstrated their commitment, despite varying results.

> In this exercise, there is one group actually who did not want to, they are more individualistic. Instead of talking, they are just doing it in their own way of writing. Very much on individual learning. When I asked why they were not discussing among group members, they replied oh we have done. I said how can you be done without a discussion? I said it cannot be you all agreed. If you agreed everything, you are not learning anything. If you agreed, tell me why you agreed. Tell me why you didn't agree for the other one. From that onwards, they started talking and engaging. Not so much, but at least, they start to engage. Other groups were quite engaging.
>
> Patrick Interview 2 (Hospitality)

Engaging international students required Rajoo to prepare lessons by relatable examples that students could comprehend. Furthermore, he provided guidance on locating information sources and encouraged active learning. Likewise, he concluded that students to come prepared to contribute information rather than taking a passive approach. which enhanced his engagement with students. As a result, Rajoo and students were positively impacted.

> I supposed because we are dealing with international students, they all have different kinds of background and understanding. Perhaps a little bit more effort on my side is required so that I can relate the particular project or assignment to a particular example in their specific country so that they can relate better and help them understand better. That means it require more effort on my side to try to find example.
>
> I think like most a lot of students were used to one-way information, almost "spoon-feeding". But this time round I did not do that, I told students this is what it is and of course they have difficulty trying to find out how they get the information. So I told them different sources they can go to. And then I told them and direct them to the source to search and told them how to go about gathering the information.
>
> Rajoo interview 2 (Business)

Lau, one of his students, described how Rajoo effectively engaged students to learn independently. He sometimes employed humour to create a more conducive learning environment when students faced difficulties, showing that he was attentive to their needs by responding in a way that motivated and supported them.

> He trying to look around and trying to not giving us any information because we were supposed to discuss. But if we really faced difficulty, he gave a few examples and trying to let us think of more ideas. When Mr Raj saw us then to be stressed because we could not think of any ideas, he tried to create some jokes which was quite funny. And this help because we became awake, alert and get back on our work.
>
> Lau degree Business student (Malaysia)

Beng similarly adopted a more caring approach to assist students, encouraging them to make incremental contributions to the team effort. Embracing an empathetic disposition fostered a

sense of student engagement in the learning process and helped students overcome their hesitancy in sharing ideas with peers. She believed students needed to put effort into their learning, so she encouraged them to learn more independently.

> There are a small number of students who are more passive, so we have to encourage them to participate. I will use some positive motivation method, ok you can actually express yourself very well, giving good ideas in your group, why don't you present your ideas to the class? So a lot of them are actually more encouraged and more inclined to open up their mouth.
>
> Beng interview 2 (Business)

Despite some students being passive and reluctant to participate in class activities and cooperate with peers, the above discussion shows that teachers leveraged different ways to engage students and encourage participation. This suggests that teachers recognised the importance of student participation, as it led students to be more attentive in their lessons instead of being distracted. Significantly, increased involvement in learning enhanced students' understanding and knowledge retention.

In addition, students held varying perspectives on whether they preferred to learn independently or collaborate with peers. Lee expressed his preference for working alone, as it gave him more flexibility to manage his learning. Eliza, if given the option, would rather take on the responsibility of acquiring knowledge independently to find answers. Nevertheless, she was open to absorbing ideas and critiques from her classmates, which helped improve her knowledge and learning.

> My preference is still individual learning. I just like to go with my own pace doing what I like to do. I have free way basically whatever that needs to get done and is more flexible. But I am not fully oppose to group learning. I think it is important and necessary in some situation especially in integrating into society.
>
> Lee, degree Business student (Singapore)

> I am able to work in a group but given a choice, I like to work independent because I like to have the creative freedom to play around with ideas. But after that, if I want to present my ideas to someone, it will be nice to have a group like cooperative learning to hear inputs from other people of what they think about. Only after that, I come together and share different ideas. Then I can see how I can improve and take down the different opinions.
>
> Eliza, higher diploma Psychology student (Indonesia)

Given the diversity of students' learning preferences, it was important for teachers to adopt multiple methods to engage students in learning. Tee delivered lectures before engaging students with learning exercises. Students were involved in working out answers individually or in small groups when discussion was required to widen their knowledge. Patrick elucidated

that, in addition to cooperative learning, he involved students in an online discussion forum where they could express opinions and further engaged them in class discussion when the lesson resumed. Tee and Patrick's cases highlight the importance of flexibility in using varying approaches to engage students.

> I usually try to delivery some theories before follow with exercises. For some of the exercises which may involve calculations, I will get students to feedback answers. But if there are the need to discuss, I will have students to share the answers with the class what students have found or written. I will also get another views from another student to see whether another student share similar views. How different or similar are the answers.
>
> Tee interview 2 (Information technology)

> It is more on lecture, students need some basic background of the topics. And they also need to, ah cooperative learning also there. And also some online activities. If you don't have online activities, they may not get the information which is available in the internet. I put a question in a forum chat group. Students can then put their opinion, criticise, see other students' opinion and collect inputs given by students. In the next class, discuss as the whole class.
>
> Patrick interview 2 (Hospitality)

Personality was one of the prominent characteristics that stood out when teachers and students discussed their cooperative learning experiences. Students' personalities often led to an unwillingness to collaborate with classmates. According to Patrick, some students were introverts who felt comfortable being alone. Furthermore, it was difficult to change personality traits in a short period. Students needed space to adapt to change in their learning approach. In cooperative learning, they were expected to play a more active role in contributing to and constructing knowledge.

> Some of them are more introvert and they want some space. They preferred not to talk too much. Keep more to themselves. Personality developed slowly. You need to give them enough space so that slowly they can develop. they need some time, some personal space and sometimes, you have to give them the time.
>
> Patrick interview 2 (Hospitality)

Ashoka asserted that he intervened in grouping students to ensure a good mix of personalities. This was done to prevent students with similar personalities from being placed in the same group, which could lead to uneven participation and discourage participation from certain students. Hence, knowing students improved his ability to form mixed groupings.

> To encourage the quieter students to participate, the group has to be a bit more balanced. So, by knowing the students in advance, it helps in grouping students to split them into groups.
>
> Ashoka interview 2 (Business)

Angelica elucidated that due to peers with diverse personalities, including those who were quiet

and preferred not to engage, she faced difficulties in working alongside them although she wanted to engage with them. Angelica's case underlined the reason of why the teachers mixed students to encourage them to participate.

> Some students who are quiet, anti-social and group learning will not work with him. It is very hard to get them to participate. Sometimes I ask them to share, some will respond, but like the student I talked about in my previous class, he didn't really care. There was not much we can do because I tried my best to encourage him.
>
> Angelica Business degree student (Indonesia)

In addition, teachers frequently mentioned that students' English language proficiency hindered interaction with peers. Although language proficiency was discussed in Chapter Five, this paragraph and the following one examine challenges encountered by students and teachers' responses. Regina drew attention to a concerning situation in which a student with limited proficiency in English experienced social isolation within their discussion group. She noted that interactions occurred mainly among students who could communicate well in English. Such negative cooperative experiences could harm a student's learning experience. Therefore, it was crucial for teachers to support students who were weak in English.

> There was one student because she is a foreigner from China, so she is not able to express her speech. So, she is a little quiet mainly because she was not very confident in expressing, so I can see she was a little bit left out because the other two will be discussing amongst themselves.
>
> Regina interview 2

Patrick highlighted that it was imperative for teachers to provide guidance and encourage students to converse in English. He indicated that support from peers was important in helping students to be more confident to speak English more, even if they made mistakes. Therefore, teachers played a crucial role in creating a supportive environment when engaging students with diverse English proficiency.

> Some students have some language problems, they cannot talk properly or express themselves. Sometimes, they are stuck. I always say that you try to speak English, it does not matter whether you speak in good English, just try to speak. They will ask their friends, then they will come back to you to try to speak and talk with you.
>
> Patrick interview 2 (Hospitality)

7.4.4. Conclusion

This section on multicultural classrooms presented some of the challenges faced by teachers, including students' reluctance to collaborate with peers, language proficiency issues, and personality differences. Teachers responded by being more attentive in their grouping of

students, exposing them to real-world case studies, and using examples to help students understand and learn better. In addition, teachers' adjustments in implementing cooperative learning enhanced students to cooperate more effectively. Although teachers grouped students with diverse personalities, it may not necessarily encourage students to interact. It underlined the challenges the teachers encountered in encouraging student interaction. The importance of the current study was it exposed teachers to varied classroom experiences engaging active students learning. When students recognised that teachers cared about them, it revitalised their enthusiasm for learning. Teachers adapted their engagement approaches, which improved their development and made them more aware of the diverse needs of students through facilitation methods. Teachers also gained valuable experience when they encouraged students to learn actively. Teachers' increased knowledge and skills enhanced their ability to implement cooperative learning, leading to improved student collaboration. Implementing cooperative learning in multicultural classrooms, although challenging significantly enhanced their development differently as they adapted practices to engage students' learning.

7.5. Conclusion on Chapter Seven

The increase in teacher-student interaction resulting from the use of cooperative learning enhanced teachers' awareness of students' knowledge levels when they engaged them with questions. Importantly, addressing knowledge gaps by being more responsive contributed to teachers' development as they became more student-centred. Increased interaction cultivated a positive learning environment that encouraged students to be more active and enthusiastic about learning. When teachers noticed students putting more effort into learning and being active, it changed their perspective on using cooperative learning in their lessons. However, the outcome of cooperative learning varied and did not always match teachers' expectations. Nonetheless, cooperative learning improved teachers' ability to influence students' learning. Teachers' engagement in reflection was crucial when implementing cooperative learning, helping them stay informed about lessons conducted and students' responses. Teachers recognised areas of shortcomings that required adjustments to their practices. As a result, they delivered cooperative learning differently over time. Reflecting on their teaching materials and methods allowed teachers to improve their engagement with students, demonstrating their development as they take measures to enhance their delivery. Moreover, teachers learned to self-critique to improve their use of cooperative learning. Thus, teachers enhanced development through reflective practices when it informed them on practices and also students'

engagement in learning.

Teachers also faced mixed challenges, including a tight curriculum and class size, which impacted their use of cooperative learning. Large class size required teachers to put in more effort to plan and conduct sessions, while small class size limited its use. However, teachers adapted their methods to effectively interact with students who had varied learning preferences, carefully grouping them and presenting real-world case studies and examples. This flexibility ignited students' enthusiasm for learning and motivated them to engage actively in the learning process, demonstrating teachers' adaptability in reaching diverse students in multicultural classrooms. Studying the impact of cooperative learning on teachers was imperative, as it affected their development, including their teaching practices and understanding of student-focused learning. Cooperative learning had a significant impact on teachers, making it a valuable tool that impacted their development, resulting in their thinking of teaching and influencing their involvement with students to learn differently. In Chapter 8, we will delve deeper into the findings presented in Chapters Five to seven to understand how these findings relate to our research aims and questions.

Chapter 8: Discussion, recommendation and conclusion

8.1. Introduction

This chapter concludes the thesis, which examines the impact of implementing cooperative learning on teachers' development in a private higher education institution in Singapore. It brings together key findings from Chapters Five to Seven in relation to the two research questions: how teachers implemented cooperative learning with diverse students and the impact on their development. This chapter is organised into three main sections, summarised below.

The first main section, 8.2, presents two proposed frameworks illustrating teachers' development through implementing cooperative learning (Figure 12) and the stages of development they experience (Figure 13). The process includes teachers' knowledge, lesson planning, cooperative learning implementation, and reflection as they engage diverse students and the connecting elements. A key aspect of the model is teachers' implementation of cooperative learning process influence development, which varies based on how they reflect and adjust their approach.

The second section, 8.3, discusses how the teachers implemented cooperative learning and its impact on their development. Teachers' understanding of students' learning needs and their partnerships with students are highlighted as essential components of engaging diverse students through cooperative learning. In addition, teachers become more student-centred as they prioritise student learning in their practices. The implementation of cooperative learning impacts teachers in several ways, including their teaching practices, engagement in reflection, and adoption of innovative approaches.

The final section, 8.4, highlights cooperative learning as a developmental tool for teachers. The section outlines the unique contributions of this research and its extension to the current literature on cooperative learning and teacher development. Several recommendations are also made for implementing student-centred cooperative learning. This chapter concludes with a summary of the thesis and a discussion of the research limitations.

8.2 Proposed model of teachers' development

8.2.1 Introduction

The findings from chapters five through seven led to the development of theoretical models for the cooperative learning implementation process (Figure 12E) and the development of teachers

(Figure 13). To illustrate the different phases in the implementation processes, Figures 12A to 12D detail each phase individually. Figure 12A shows the stages of the cooperative learning implementation process. This includes the role of the teacher's knowledge, planning and delivery and beginning with teachers' knowledge and culminating in reflection upon the implementation of cooperative learning. Figure 12B adds to this by layering and adding on top of how external influences affect the implementation of cooperative learning. This includes five external influences that appeared to prompt the teachers to implement cooperative learning quite differently. Next, Figure 12C consists of teachers adjusting in response to external influences involving planning adjustments, implementation adjustments, knowledge-led practice, implementation review and reflective integration. These adjustments illustrate how teachers refine their approaches as they adapt to changing circumstances. In addition, Figure 12D conveys the idea of teachers reflecting on their practices as they engage in cooperative learning. This includes reflective influence, implementation anticipation, planning review and reflective planning. Figures 12A to 12D are combined into Figure 12E, which illustrates a comprehensive model of the cooperative learning implementation process. Figure 12E, underscores the complexity of cooperative learning implementation. As teachers navigate this complexity, their development is impacted in different ways, reflecting varied trajectories of change and adaptation. Since several figures of the model will be shown, to aid in interpretation, newly added information is shown in black, while repeated information appears in grey, allowing for a clear distinction between new and existing details without losing track of previous content.

8.2.2 Stages in cooperative learning implementation process.

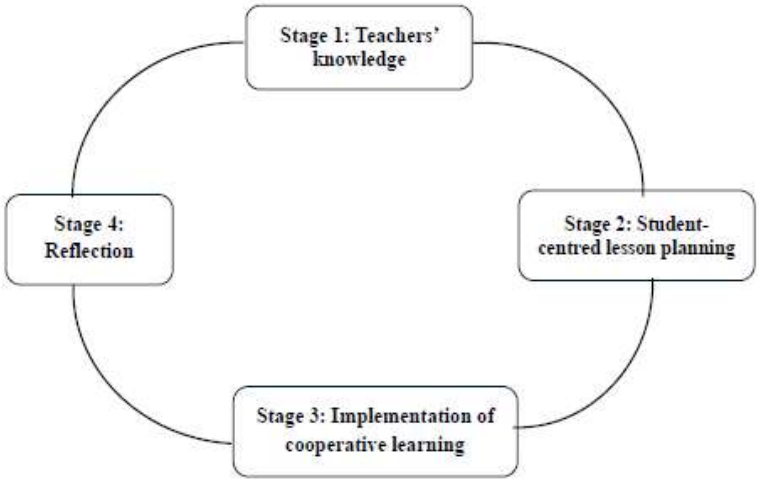

Figure 12A: Stages of cooperative learning implementation process

Figure 12A shows the four stages of implementing cooperative learning: teachers' knowledge, student-centred lesson planning, implementation of cooperative learning, and reflection. The stages denote an iterative process, with each stage impacting the others in a continuous cycle during implementation.

Stage 1: *Teachers' knowledge* encompasses both pedagogy and cooperative learning knowledge. They also possess subjects in their field of discipline. Such diverse knowledge parallels Djik et al. (2023) and Shulman (1987), who assert that possessing pedagogical content knowledge is essential, as it integrates content and pedagogy to translate concepts for student understanding effectively. Cooperative learning allows teachers to make their pedagogical content knowledge explicit while explaining concepts in a way that students can understand. As a result, teachers better understand how students learn and modify their approach to support them. In the current investigation, teachers' knowledge included their understanding of cooperative learning and ongoing teaching experiences, which help them plan lessons and create dynamic educational experiences to promote active student learning. Hence, the diverse teachers' knowledge influences the implementation of the cooperative learning process.

Next, Stage 2, *student-centred lesson planning* comprises teachers translating their knowledge into lesson plans with students in mind. Lesson planning influences how teachers organise learning materials and activities to engage students actively. However, teachers structure lesson flow in diverse manners to accommodate different learning preferences. This contrasts with Johnson and Johnson's (2005) model, which argues that structuring learning activities that encourage students themselves is sufficient to foster students' work together. Moges (2019) argues that the lack of preparation before using cooperative learning promotes the adoption of didactic teaching. In this study, teachers' involvement in lesson planning fostered their commitment to using cooperative learning and reinforced their pivotal role before introducing it to students, highlighting their intent to promote active student learning. Importantly, how teachers approached lesson planning shaped their development in distinct ways, influencing how they adapted to cooperative learning.

Stage 3: *Implementation of cooperative learning* involves teachers adopting diverse roles to actively engage students during the transition from lesson planning into implementation. Teachers distribute learning tasks, group students and monitor students' engagement in adopting the learning facilitator's role. Facilitating learning involves teachers' attention to encourage students' participation, ensuring learning objectives are met, and managing time.

When delivering cooperative learning, teachers gain practical knowledge and a nuanced understanding of how students learn. This helps them develop student-centered approaches, positively impacting the development of teachers. Significantly, teachers' adoption of participatory teaching practices as learning facilitators enhances their ability to foster student interactions and create a dynamic and responsive learning environment in higher education.

Finally, Stage 4, *reflection* consists of teachers reviewing their cooperative learning practices. Teachers draw conclusions based on their reflections, but the focus and depth of these reflections can vary. Teachers' involvement in reflection is crucial in explaining the gain in knowledge and experience, which differs from Johnson and Johnson's (2018) and Slavin's (2014) cooperative learning models, which focus on students' learning instead of teachers. While some teachers reflect on lesson planning and teaching practices to enhance student learning, others may resist or reinterpret insights from reflection when they challenge preexisting beliefs. This variation underscores the critical role of reflection in shaping teacher development, as it determines the enhancement of new knowledge. Moreover, teachers' development is inherently complex, as their responses to hands-on experience and acquired knowledge differ, leading to varied trajectories in their development.

The extent to which teacher knowledge evolves impacts the next cycle in the planning, application, and reflection process. In the current study, implementing cooperative learning influenced the development of a student-centred approach to learning when they emphasis on students' learning. This, in turn, shaped their teaching approaches, reinforcing the dynamic nature of their development. This model suggests that existing knowledge plus practical knowledge enhances teachers' knowledge, which affects the application of cooperative learning. Practical experience and reflection provide insight, while continuous learning further shapes teachers' knowledge.

8.2.3 External influences on the cooperative implementation process

The external influences in Figure 12B, form the educational context affecting the stages of cooperative learning implementation. The current study shows external influence include knowledge acquisition, classroom experience, academic development training, students' knowledge and capability, students' engagement with peers, subjects and educational level students pursue, curriculum structure, and academic development. These external influence impacts teachers' knowledge and teaching practices when they implement cooperative learning. As a result, teachers' knowledge is diverse and dynamic, changing with increasing

experience rather than static. Teachers' knowledge acquisition entails both formal and informal learning. Formal learning takes place during academic development training when teachers acquire specific cooperative learning knowledge. In contrast, informal learning through day-to-day teaching experience (Kolb, 1984). Additionally, academic development during engagement with peers in exchanging classroom information enriches practical knowledge. Vreven and McFadden (2007) assert that time-compressed courses and class sizes reduce the effectiveness of cooperative learning when students have less time to collaborate with peers. Teachers faced the challenge of allocating sufficient time for students to exchange information. Student engagement varies during collaborative knowledge construction, with less active students preferring individual learning, which impacts the effectiveness of cooperative learning. Students' diverse learning experiences require teachers to adapt their practices to engage students and meet learning objectives. Recognising these external influences is crucial as they affect implementation of cooperative learning and teaching practices. Hence, teachers are attentive in their implementation. As such, cooperative learning increases teachers' awareness of the influence in which they adapt in their engagement strategies to foster active student learning and influence diverse development.

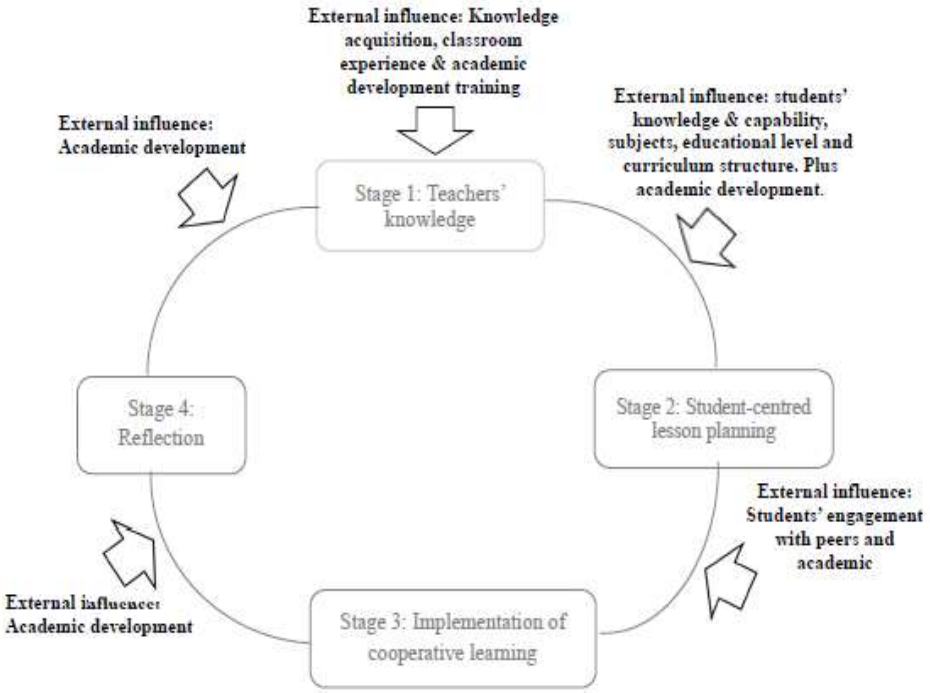

Figure 12B External influences in the cooperative learning implementation process

8.2.4 Forward pathway between the stages in cooperative learning.

A notable feature of the cooperative learning implementation model is the connections between the stages of implementation shown with dotted boxes in Figure 12C, which follow a clockwise sequence. It shows teachers' ability to adjust their implementation of cooperative learning due to external influences, which is evident in the current study on numerous instances. The forward pathways include *knowledge-led practice, planning adjustments*, *implementation adjustment*, *implementation review* and *reflective integration*. The connection indicates the indirect relationships between planning, implementing, reflection, and knowledge, highlighting teachers' ability to integrate new insights, modify teaching approaches, and refine their implementation to external influence over time. It underscores teachers' crucial role in influencing the implementation process and promoting student-centred teaching and learning. Importantly, it deepens teachers' understanding of cooperative learning principles when they applied it to promote learning. This current model differs from Kolb (1984), who omitted context when explaining experimental learning, in which the present study showed external influences on teaching practices and adjustments in engagement with students. Teachers' implementation of a cooperative learning process causes a shift in knowledge when they gain new insights from context-rich teaching experiences crucial for their development. The importance of the current study provides empirical evidence of teachers using cooperative learning to engage students that significantly transform teaching practices.

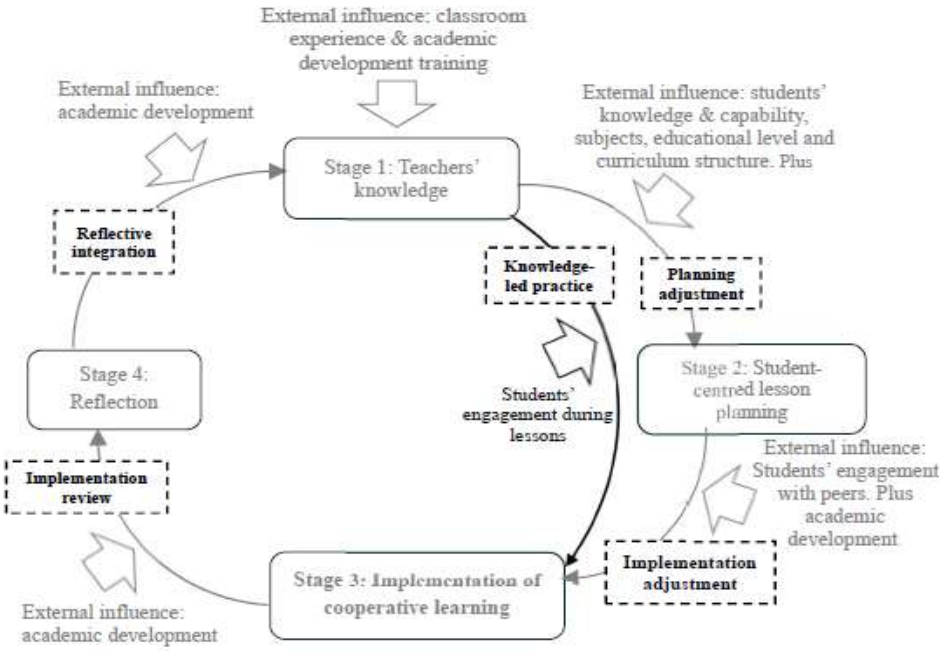

Figure 12C: Forward pathways between the cooperative learning stages

Figure 12C illustrates that apart from teachers undertaking lesson planning before the implementation, as discussed previously, they may desire to engage students without planning cooperative learning in advance, emphasising timely responses to the educational context. Crucially, teachers adapt their approaches to actively engage active students in learning as they implement cooperative learning.

The *planning adjustment* connects the teachers' knowledge and student-centred lesson planning components. In the planning adjustment, the current study showed that teachers varied in planning lessons, considering various contextual factors that resonate with Eley (2006), who argued that context influences lesson planning. Teachers modified learning activities to engage students in meeting lesson objectives, adjusting group formation and allocating time for students' involvement in group learning. In addition, teachers adjust the difficulty levels of questions to promote students' critical thinking and enrich knowledge. The planning adjustment emphasises the crucial role of teachers in recognising students' learning ability and background. This awareness allows teachers to modify learning content to engage students in learning collaboratively and actively. However, engaging diverse students can be challenging, which requires a delicate balance between the teaching context, students' learning capability, and the desired learning outcomes to achieve the desired lesson objectives. Significantly, teachers gaining different experiences is critical for development since it allows them to manage contextual variables and improve their efficacy. Hence, using of cooperative learning is beneficial in enhancing their development.

The *knowledge-led practice* connects knowledge with the implementation of cooperative learning, whereby teachers engage in ad hoc in response to less engaged students. It emphasises teachers' awareness of external influences on student engagement during lessons, prompting them to actively engage students in learning rather than solely planning and implementing cooperative learning in the forthcoming lessons which can affect learning. There are several ways for teachers to implement cooperative learning, either by planning lessons proactively or on an impromptu basis depending on classroom context. Adapting cooperative learning practices improves teachers' competencies in using cooperative learning, which is important since Letina and Vasil (2021) assert that a lack of competencies affects implementation. The increase in competencies enhances their effectiveness in teaching, contributing to development. Since teachers adopt cooperative learning differently, it results in varied teachers' development due to their knowledge and the extent they engage students.

The *implementation adjustments* indicate that teachers adjust their cooperative learning implementation. Despite acknowledging diverse students' learning preferences, teachers adopt varied strategies to engage students in active learning in their studies. This contrasts with Awang-Hashim, Kaur and Valdez (2019), who argued that teachers adjust their practices to be sensitive to students' learning needs. Yelkpieri et al. (2016) professed that increasing class sizes influence teachers to adopt teacher-centered teaching practices. The present study showed that teachers adjusted their approach to encourage students to take a more active role in learning, including providing relatable examples, asking questions, giving encouragement, organising student groups and supervising students to encourage participation, reinforcing teachers' crucial role in facilitating learning. Teachers' adjustments in cooperative learning implementation to promote constructivist learning (Vygotsky, 1978) enhance their effectiveness and foster diverse development as they adapt their approach.

The *implementation review* connects cooperative learning implementation and reflection components that align with Schon's (1983) reflection-on-action. Teachers vary in their reflective approaches, which review learning activities superficially or engage in self-critique. By critically examining their experiences, teachers uncover insights into what works effectively in the classroom and identify areas for improvement. This process deepens their pedagogical knowledge and fosters adaptability, enabling them to address diverse student needs and implement more impactful strategies. The extent to which teachers engage in reflection could affect their development differently. The present study showed that asking academic developers questions could prompt teachers to reflect intentionally when reviewing lessons. Furthermore, teachers exchanging information with peers encourage reflecting on practices that lead to pedagogy awareness, which is not apparent and is a taken-for-granted assumption.

The reflective integration connects reflection with teachers' knowledge. This study highlights that teachers' reflections on cooperative learning implementation reveal a nuanced understanding of their practices and gaining practical knowledge. Practical knowledge, when accepted, enhances teachers' knowledge of implementing cooperative learning. Teachers' knowledge increases with each cycle of implementation. On the other hand, practical knowledge acquired may not necessarily be when it is not acceptable and aligns with preexisting knowledge since such new knowledge differs from existing knowledge. Teachers could be selective on the information to accept or reject depending on the receptivity of new knowledge parallels Mezirow's (1991) assertion reflection does not necessarily impact actions.

Additionally, teachers' conversations with peers encouraged them to reflect on their practices and prompted them to be attentive to phenomena during lessons. This contrast with Fook, White and Gardner (2006) and Schon (1983), who assert that teachers primarily engage in self-reflection without prompts from colleagues. Collaboration with peers and academic developers encourage teachers to reflect on their practices as a distinct approach compared to Schon's (1983) model, which focuses primarily on individual reflection. Through this collaborative process, teachers' reflection enhances their awareness and adaptation of teaching practices as transformative learning. Implementing cooperative learning may not lead to an increase in teachers' knowledge; hence, they vary in development.

8.2.5 Reflective pathway between the stages in cooperative learning.

Figure 12D depicts a reflective pathway comprising *planning review*, *reflective planning*, *reflective influence*, and *implementation anticipation,* shown in dotted boxes. This pathway underlines teachers' engagement in reflective practices as a continuous improvement process. Reflection enables teachers to strengthen their understanding of theoretical knowledge and practical application, enhancing their effectiveness in promoting learning.

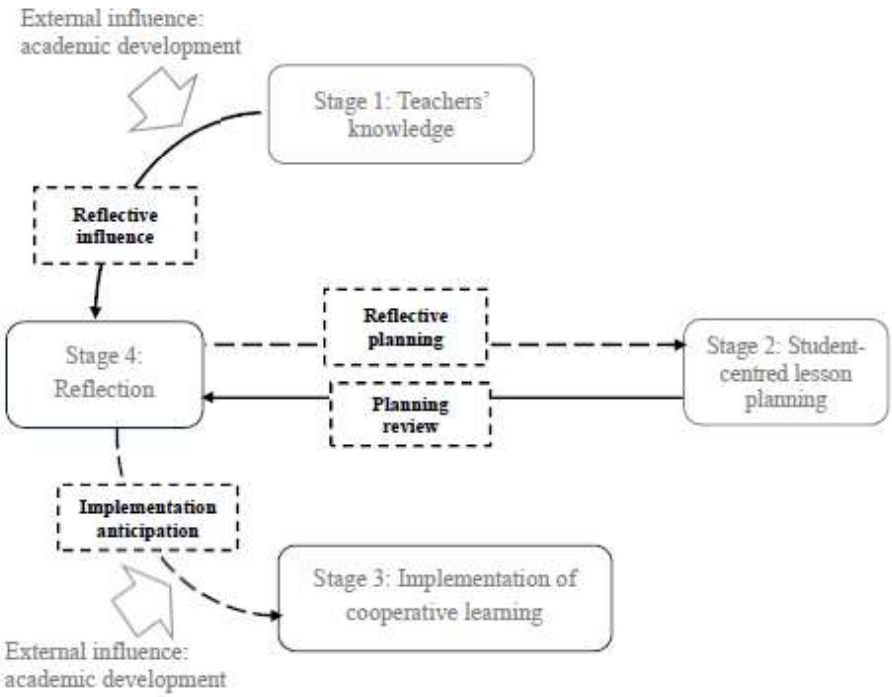

Figure 12D: Cooperative learning reflective process

The reflective pathway connects reflection with teachers' knowledge components depicted in dotted boxes of Figure 12D. This study highlights that teachers' reflections on cooperative

learning implementation reveal a nuanced understanding of their practices and gaining practical knowledge. Practical knowledge, when accepted, enhances teachers' knowledge of implementing cooperative learning. Teachers' knowledge increases with each cycle of implementation. However, practical knowledge acquired may not be accepted when it differs from preexisting knowledge. Academic development could prompt teachers to rethink the knowledge acquired. Additionally, may exercise discretion in determining which information to accept or reject, aligning with Mezirow's (1991) claim that reflection does not inherently influence actions. Piaget (1936) posits that knowledge change transpires solely through the assimilation of new information into pre-existing frameworks, thereby altering teaching beliefs. Implementing cooperative learning may not lead to an increase in teachers' knowledge. Understanding teacher development is complicated since teachers could respond differently to knowledge acquired impacting their development differently.

The *reflective influence* connects knowledge and reflection, indicating knowledge acts as lenses that influence teachers' reflection. New knowledge or experience gained when accepted may change teachers' reflective lens where they critically review implementation. In this study, teachers gained cooperative learning knowledge via training sessions, causing a shift in the reflective lens through which they may realise implementation improvement areas. Teachers acknowledge student-centred learning benefits students influence them to anticipate and experiment using cooperative learning to engage students in different subjects and students' cohorts. Instead of responding to inactive students negatively, they perceive it as an opportunity to engage students differently by adapting practices in a student-centred manner, such as posing questions differently or encouraging peer-to-peer learning. This study indicates that teachers either lacked the awareness to reflect or believed reflection was unnecessary. McAlpine & Weston (2000) state that a shift in paradigm influences a shift in perception and practices. Introducing cooperative learning does not necessarily cause teachers to engage students in learning collaboratively due to the receptivity of new knowledge that influences reflection.

The *implementation anticipation* links reflection and implementation parallels reflection-in-action (Schon, 1983). Teachers' engagement in reflection during lessons could cause them to adjust implementation, which requires alertness to teaching situations and student participation. Although it is more challenging as reflection-in-action necessitates spontaneous reaction (Schon, 1987), it enhances teaching effectiveness by addressing classroom challenges promptly rather than postponing adjustments until subsequent lessons. In this study, when teachers

noticed that few students participated during the activity, they adjusted by directing questioning to the whole class or students within groups. Reflection leads to pedagogical awareness, which informs them and adjusts to promote effectiveness in promoting learning (Postareff et al., 2022). The model underlines adjustment practices due to the engagement in reflection. Conversely, reflection due to implementation review may cause inaction when teachers do not recognise the need to do so with unchanged knowledge or influence anticipatory actions in future lessons to tackle classroom context as in students' participation. This contrasts with McAlpine, Weston, Beauchamp, Wiseman & Beauchamp's (1999) claim that reflection leads to actions, although they recognised that it varies with teaching experience and classroom context. It underscores teachers' roles in reflection and reciprocal actions, and development may vary due to differences in knowledge gained.

The *planning review* connects planning with reflection, showing that teachers review their planning when they consider how students are engaged in learning. It allows teachers to assess whether their planned activities, materials, and teaching approaches align with students' learning needs, meeting lesson objectives and classroom dynamics. The planning review highlights teachers critically assess planning rather than practices. They engage in *reflective planning*, adjusting planning, including the learning activities and types of group formation, and enhancing teaching effectiveness as they impact students' knowledge acquisition. Planning review and reflective planning heighten teachers' awareness of how their plans can influence cooperative and students' acquiring knowledge. Reflective practices improve and adapt their methods to support students' learning, enhancing on teachers' development.

8.2.6 Overview of the cooperative learning implementation process.

Overall, Figure 12E which consists of Figures 12A to 12D depicts the complexity of the cooperative learning implementation process with varying stages, the connection between the stages, and external influences on the implementation process. The model recognises that implementing cooperative learning is not straightforward and seamless. Teachers' awareness and adaptation to the educational context are crucial which enhances the effective implementation in promoting learning. Acquiring classroom experience is essential as it increases their knowledge and abilities using cooperative learning. Teachers' involvement in cooperative learning could significantly impact their development, underlining it as a developmental tool to enhance teachers' knowledge and teaching practices.

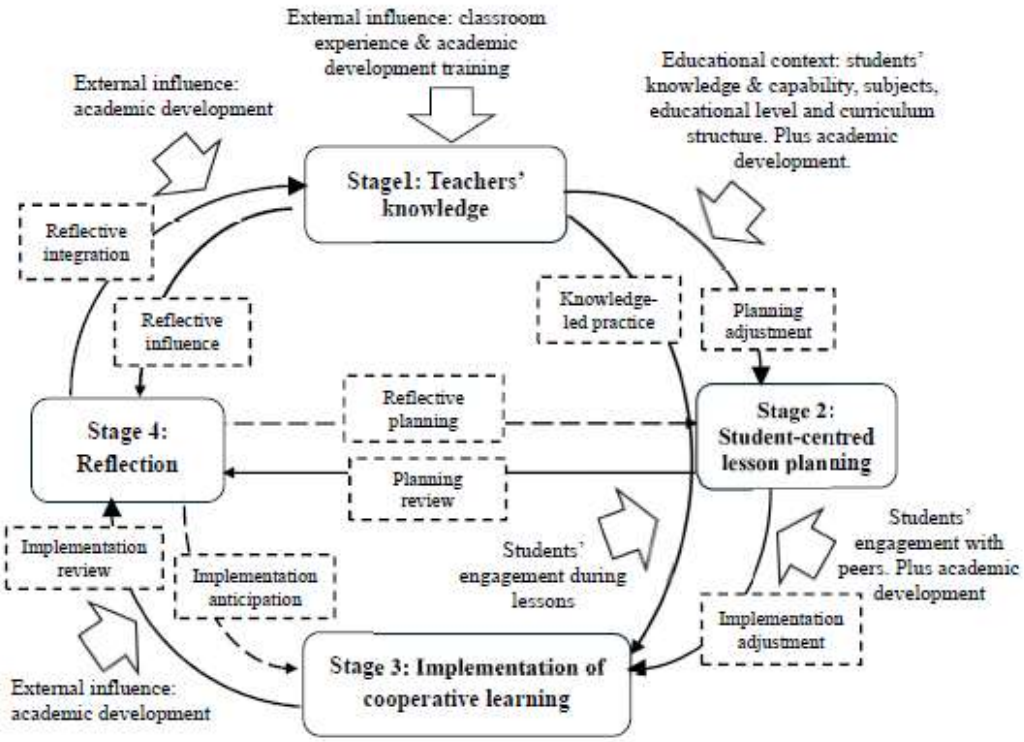

Figure 12E: Overview of the cooperative learning implementation process.

The proposed model offers two distinct features in explaining teacher development. Firstly, the linkages between the components recognise teachers' ability to review and adjust implementation in response to contextual factors. Teachers improve over time when cooperative learning is implemented for prolonged periods, enhancing development when they gain nuanced insight into teaching and learning. The linkages between components are distinct from the seamless transition between learning stages in Kolb's (1984) model, which does not adequately explain how progression occurs from one stage to another (Bergsteiner, Avery, and Neumann, 2010). Similarly, Kaendler, Wiedmann, Rummel, and Spada (2015) conceptualised a model of three main components, but the connection between the components was not discussed. Secondly, the model illustrates that implementing the cooperative learning process can occur in several ways, such as forward adoption and reflective cycles. It differs from models by Brody (1991), Kolb (1984), and Guskey (1986), which depict a unidirectional, clockwise interaction between components, which implies teachers develop uniformly. Moreover, this model differs from Johnson and Johnson's (1999) cooperative learning model with an emphasis on teachers' role in fostering active student learning. Teachers' reflection based on students' group processing is not mentioned explicitly in Johnson's model. Since teachers implement cooperative learning differently, the model explains why they experience

development differently as the distinct contribution of cooperative learning and development.

Figure 12E highlights the critical role of teachers' knowledge in influencing lesson planning and reflection processes. Shifts in teachers' knowledge prioritise student learning, enabling them to incorporate innovative practices effectively. Teachers adjust to address the diverse needs of students to promote active and independent learning while achieving learning goals. Successfully managing these nuanced challenges requires a deep understanding and sensitivity to students' learning needs. This model suggests that teachers' beliefs, pedagogical knowledge, and experience influence their knowledge, which leads to variability in cooperative learning implementation. This diverges from Kolb's (1984) theory, which argues experience is sufficient to improve knowledge. Reflecting practices enhance self-awareness of teaching situations and improve teaching practices as an ongoing learning through practices on a daily basis. Significantly, Figure 12E suggests that implementing cooperative learning is complex and affects teachers' development which is a learning journey that involves experimenting, reflecting, and adapting to implementation. Importantly, teachers vary in their learning experience, asserting that development is uncertain and requires understanding variations to understand better. It contrasts with the shift from a teaching-centred to a student-centred process not in a seamless circular but rather varied when they gain insights into practices which impact their practices and beliefs about teaching and learning. Teachers develop progressively, refine lesson plans, and adopt an interactive approach that is crucial in engaging students in multicultural classrooms.

8.2.7 Teachers' development component

Teachers vary in development due to the different ways they implement cooperative learning. Figure 13 depicts three stages of teacher development and the progression process as they move toward becoming more student-centred and culturally sensitive. The spiral model depicts teachers' development as an ongoing iterative process in which they learn, adapt, and progressively improve their cooperative learning implementation. Through reflective practice and experimentation, they improve their effectiveness in promoting students' active learning in cooperative learning. The varying approaches teachers take in implementing cooperative learning, engaging in reflective practices, and adjusting to external influence impact their development differently, underscoring the complexities and diversity of teacher development. Two salient points should be highlighted here. First, while the figure suggests that stage one is the starting point of teacher development, this varies among teachers. This means that teachers

do not necessarily begin at stage one, although they likely exhibit teacher-centred teaching at some point in their careers. Secondly, the progression from one stage to the next, in an increasing hierarchical manner, represents an advancement in their development. For example, stage two development is more advanced than stage one, and so forth. However, while some teachers progress positively, others may stagnate at a particular stage. Hence, their development is impacted differently when teachers' experience varies.

Figure 13: Three stages of teachers' development process.

In stage one, teachers exhibit a teacher-centred approach focused on information transmission. Teachers act as knowledge experts concerned with improving instructional quality, often adopting transmission-oriented approach (Noben et al., 2022), which involves didactic lectures (Felder and Brent 2007). They organise content and presentation skills to convey complex information, helping students comprehend the subject content (Postareff and Lindblom-Ylanne, 2008). In delivering cooperative learning, teachers are more directive in determining how students should learn and retain much classroom control. As a result, students learn passively. The teacher-centred approach has limitations in catering to students with diverse learning needs, as it believes that students learn in a similar manner.

In stage two, there is a greater emphasis on teacher-student interaction approach. Teachers assign learning responsibility to students, who take a more active role in their learning (Brody, 1991). Teachers act as learning facilitators, guiding students as they are given the flexibility to explore and construct knowledge (Goodyear and Dudley, 2015). Students actively engage in activities like cooperative learning and project work, becoming enthusiastic learners and learning (Barr and Tagg, 1995 and Biggs and Tang, 2011). This approach aligns with learning-oriented teaching conceptions, encouraging knowledge construction (Noben et al., 2022;

Vilppo et al., 2018). Adopting student-centred practices affects their development. However, learning-oriented teaching assumes students are equally motivated and engaged (Harju and Åkerblom 2017), which may not necessarily be so. Cultural differences can be problematic in high-power distance societies where hierarchical relationships are more pronounced (Hong 2011), resulting in students preferring not to ask questions in class to respect teachers and criticise peers' contributions. Acknowledging cultural differences affects teaching practices that promote learning.

Stage three involves transitioning towards a culturally responsive approach to engage students with diverse learning backgrounds, talents, and comprehension levels. Such engagement is uncommon in higher education (Turner, Solis and Kincade, 2014 and Chamberlin and Power, 2010) as it has commonly been used in schools, but it is becoming increasingly important in higher education classrooms with diverse international students. It bridges the learning experience meaningfully between home and overseas cultures (Gay, 2010). Khoo and Huo (2022) profess that promoting inclusive learning encourages international students with low English proficiency to express themselves better and communicate ideas. Delivering differentiated culturally responsive pedagogy fosters teachers to recognise and adapt to demands in a changing context and address diverse student needs. Since delivering differentiated culturally responsive pedagogy could be novel to teachers, a shift in teachers' beliefs to be culturally sensitive is essential (Taneri and Özbek, 2023). Gay (2010) argues that teachers should shift towards cultural-centric knowledge to engage with ethnically diverse students to promote a more innovative and inclusive learning environment. Importantly, teachers examine existing norms, and pedagogical assumptions could lead to biased teaching practices and student interactions (Caingcoy, 2023). A mindset shifts in teachers' students' receptivity to gaining knowledge laden with diverse contexts is crucial. Teachers' engagement in self-reflection and re-educating themselves in social and cultural awareness is crucial. Teachers are to prepare lesson materials differently, which includes preparing examples that resonate with students' cultural identities and experiences to promote learning and engage with international students (Sanger and Gleason, 2020). Knowledge of students' cultural backgrounds and learning experiences is essential to preparing teachers (Caingcoy, 2023). Cooperative learning, project-based learning and problem-based learning are some learning activities teachers adopt to create opportunities for students to interact. Hence, teachers use a variety of teaching strategies to help students learn to appreciate different cultures. In addition, placing students in mixed student groups enhances students' exposure to interact, learn and

exchange cultural knowledge with peers, improving students' knowledge. Stage three in the development model is considered a more advanced form of teaching and engagement, requiring a shift in teachers' thinking to be culturally inclined in response to students with diverse learning needs in higher education and professional practices. As a result, there is a development for teachers to promote a more student-centred and inclusive learning environment.

8.2.8 Conclusion

The proposed model of teacher development demonstrates progression through the four components of the cooperative learning implementation process, as shown in Figure 12E. The forward adoption cycle and knowledge-led response cycle influence how teachers implement cooperative learning. Given the variations in cooperative learning approaches, teachers develop differently. Continued use of cooperative learning further enhances teacher development. Figure 13 illustrates the three stages of teachers' development process as they implement cooperative learning. The evolving developmental stages illustrate improving pedagogical knowledge and skills as teachers recognise that increasing students' diversity entails teachers' responsiveness to learn new knowledge in each successive stage to improve student engagement. This knowledge resonates with pedagogical content knowledge, enhances teacher knowledge, and improves student learning, which Shulman (1987, p. 8) emphasises as "uniquely the province of teachers, their own special form of professional understanding." in teaching specific topics. The model suggests that continual use of cooperative learning and the process of reflecting and learning is developmental for teachers to improve their knowledge and engagement with diverse learning needs and preferences.

8.3 How do teachers implement cooperative learning and impact teachers?

This research revealed that academic development supported the eight teachers in implementing cooperative learning. Teachers engaged students more actively as they became increasingly aware of how students learn and partnered with students to encourage their participation. It demonstrated that effective implementation was not accidental; it was teachers' deliberation to involve students in learning differently. The significance of the current study was that teachers' implementation of cooperative learning impacted teaching practices and understanding of teaching and learning in different ways. Furthermore, teachers were motivated to engage students in new ways by using teaching practices that were unfamiliar to

them. Thus, cooperative learning is a development tool for teachers to become more student-centred.

8.3.1 Engagement of teachers with academic development

A distinct feature of this study was that academic development played a crucial role in supporting teachers' implementation of cooperative learning. Academic development included teachers' participation in the academic development training sessions, dialogue with peers to exchange teaching experiences during these sessions and focus groups. Significantly, engagement in academic development developed the teachers to reflect on and adjust their cooperative learning practices to engage students actively. It included teachers shifting group formation approach and adopting it on certain subjects they were hesitant. Teachers' engagement in informal learning and exchanging practical knowledge with peers enhanced classroom effectiveness, and their receptivity to receiving new knowledge is important for improving practices. Evans (2024) and Jones et al. (2017) assert that higher education teachers' engagement in formal and informal learning is crucial for improving teaching quality. However, McCune (2018) argue that informal conversations rarely cover teaching and learning matters, rendering such engagement less effective in improving teaching practices. The current investigation showed that engaging in dialogue with peers focused on classroom practices during academic development and focus group discussion improved teaching practices, which contrasted with McCune's (2018) ineffective peer dialogue. Encouraging collaborative exchange can resulted in teachers developing differently when receiving ideas from peers. In addition, several cooperative learning studies, including those by Johnson and Johnson (2018), Gillies (2016), and Felder and Brent (2007), did not highlight support of teachers in the implementation of cooperative learning. Similarly, empirical research on teachers' cooperative learning experiences overlooked this aspect (Keramati and Gillies 2022; Thanh-Pham, 2011; Tadesse and Gillies 2015) even though teachers in their studies showed teachers' frustration when managing active student learning. Current literature on cooperative learning advocates teachers' participation in training to improve their implementation rather than promoting collaborative exchange and support, which this study demonstrated was crucial to adopting new practices.

Academic development in the form of support was crucial to encourage them to continue using cooperative learning. Tadesse and Gillies (2015) argue that innovative teaching practices often face lukewarm implementation when teachers perceive them as top-down initiatives imposed

by educational institutions. Hence, they were less motivated to adopt innovative practices. Sharan (2010) note that the gap between cooperative learning theory and practical application widens without support, leading some teachers to abandon it over time. Moreover, teachers face challenges in implementing cooperative learning, such as time management and student grouping (Ghaith, 2018) pointed out previously. Learning opportunities, including training and teacher collaboration, are crucial to facilitate the adoption of cooperative learning (Liebech-Lien, 2020). In contrast, the current investigation highlights the use of several academic development platforms, such as training, peer discussion with fellow teachers, academic development, and data collection, to continue supporting the teachers' cooperative learning implementation, which offers several benefits. Teachers were not left unsupported after participating in the academic development training sessions. Importantly, support helped teachers clarify doubts and concerns about incorporating cooperative learning. Hence, the support given to teachers varies depending on cooperative learning knowledge levels and competencies to foster them to develop differently. An academic developer is essential for addressing concerns and bolstering their confidence in their implementation as another benefit. Moreover, support enabled teachers to address gaps between cooperative learning knowledge and practical applications, improving their implementation and engagement with students. As a result, this present investigation was a collaborative process of the researcher as an academic developer in working with teachers in their implementation, which was essential as their cooperation was essential in spending time planning and engaging with students using cooperative learning. Hence, the role play by academic developer was distinct feature of the current investigation.

8.3.2 Teachers' knowledge about students' learning and partnering with students during cooperative learning

In this study, teachers' *knowledge of students* was crucial when developing educational resources, forming student groups, and fostering active learning in collaborative activities. Knowledge of students facilitated grouping students in mixed-ability groups with complementary skills enhanced learning by enabling peer support and knowledge exchange, broadening students' understanding. This underscores the importance of the present investigation to closely followed through teachers' implementation of cooperative learning for extended period to study on how they adapted practices and leveraging students peer support to improve learning. In addition, teachers' awareness of inattentive students from previous

lessons prompted them to actively engage students by assigning tasks such as collecting and presenting information to boost their participation. A strong knowledge of students guides teachers in lesson planning and involving students in active, cooperative learning. Significantly, it underlined teachers' adoption of constructivist teaching to promote active learning by aligning teaching practices based on their prior knowledge of students (Alanazi, 2019; Fernando and Marikar, 2017). Teachers' attention of students limited attentive span prompted them to involve students in active learning to promote engaged learning. Moreover, it encourages the adoption of student-centred practices and fosters students to be more participative rather, unlike Nguyen and Le (2024), who argued that students are resentful of constructivist learning. Knowing students and adapting teaching practices can be a more effective method.

In this study, teachers *partnered with students* by assuming the role of learning facilitator. It was insufficient for teachers to know students as translating knowledge into action was essential. Importantly, teachers adopted a variety of engagement strategies, such as offering encouragement and leveraging peer support, to stimulate active learning. These diverse engagement methods underscored teachers' commitment to encouraging different learning approaches. According to Amineh and Asl (2015), constructivist principles suggest that teachers should provide minimal guidance, allowing students to engage more independently. However, teachers play a crucial role in actively supporting students through cooperative learning in this study. Moreover, Webb (2009) argue that students' peer discussion was superficial unless teachers intervene. Wibowo, Bähr and Groben (2014) assert that teachers posed questions to engage students in critical thinking. In the present investigation, teachers posed questions for several reasons, including stimulating students to engage in deeper discussions and determining students' knowledge, whereby teachers subsequently support students in closing knowledge gaps. Furthermore, teachers followed up with students in their learning journey when they recognise students encountered learning difficulties and guide students to think differently. Hence, the questioning technique was a practical approach to engage students actively. The role of the learning facilitator proved to be multifaceted, requiring different forms of intervention. As a result, teachers vary in approaches to encourage students' participation resulting in teachers developing differently. Partnering with students supported the argument that facilitating learning involves focused attention on fostering active student participation, especially in multicultural classrooms. Teachers also formed closer bonds with students through cooperative learning, benefiting both teachers and students. Teachers

developed a deeper understanding of their students, allowing them to address knowledge gaps more effectively, while students felt motivated to approach teachers with questions and seek clarification. Van Steenkiste, Soenens, and Luyckx (2006) note that working closely with students fosters a sense of relatedness. The current study highlights the significance of building close relationships with students, which enhances teachers' impact on student learning when students are more receptive to learning new knowledge and encourages students to seek support confidently. Students were more motivated to learn with improved teacher-students relationships. As a result, partnering with students influenced teachers to focus more on promoting student learning. This shift toward a student-centred approach underscores cooperative learning as a developmental tool to foster teachers' development by enhancing their awareness of students led to varied practices impacting them to develop differently.

8.3.3 Impacts on teachers using cooperative learning resulting in changes in teaching practices, conceptions of teaching and relationships with students

Implementing cooperative learning influenced teaching practices, conceptions, and self-improvement shifts. Prior to adopting cooperative learning, teachers primarily imparted knowledge directly to students. However, with cooperative learning, teachers in this current study found that teachers engaged students in contributing information, adopting a more interactive, student-centred approach. This led teachers to broaden their practices, incorporating teacher-centred and student-centred methods. It also allowed for greater flexibility in how they engaged students, enhancing teachers' effectiveness in fostering active student participation rather than relying on a single, distinct approach. Uiboleht, Karm and Postareff (2016) emphasise that teachers should be adaptable, using a variety of approaches rather than a singular method to engage students in learning more effectively. Diversifying their approaches enhanced teachers' ability to engage students and gained a broader perspective on teaching and learning which could shift their teaching beliefs. This argument of teaching practices influences teachers' understanding of teaching differed with Degago and Kaino (2015) and Stes, Donche and Petergem (2014) who argue that teaching beliefs affect student-centred teaching approach. Moreover, development of teachers involved changes in several areas as opposed to Biggs and Tang (2011) and Kember (1997) argue that teachers' development involves shifts in conceptions of teaching. Findings from this study suggest that cooperative learning develops teaching practices and not merely teaching beliefs. The results of the current study support Guskey's (2002) assertion regarding the impact of changes in

beliefs. Furthermore, as teachers engaged students using cooperative learning, they gained additional insights, highlighting cooperative learning's role in teacher development. This present study demonstrated that teachers' adaptation in their implementation of cooperative learning by involving students to switch groups during learning activities to widen knowledge and varied questioning approaches enhanced teachers acquired practical knowledge underscoring the study's importance. However, change was a gradual process. To effectively measure changes in both teaching practices and conceptions, this study employed longitudinal research and collected diverse data at two distinct stages. Collecting diverse information using several data collection instruments is important to pick up nuanced shifts in their development. Additionally, case study research provided insights into how teachers experienced cooperative learning and the changes it prompted. The diversity of collected data allowed for comprehensive comparisons, supporting cooperative learning as a tool for transformative teaching practice.

Another significant impact of this study was teachers' engagement in reflective practices. Teachers noted that reflecting on their practices led them to seek improvements in their cooperative learning delivery, increasing their self-awareness and driving self-improvement. This aligns with Farrell (2016) and Korthagen (2017), who argue that teachers can find effective solutions through reflection. Matthew, Mathew and Peechattu (2017) further highlight that the ability to reflect on actions fosters continuous improvement. In this study, teachers identified two key areas for improvement: relinquishing classroom control and better time management. Relinquishing control allows students to take a more active role in their learning, which is fundamental to cooperative learning and encourages students to assume responsibility for their own learning. Similarly, Tadesse and Gillies (2021) note that one of the most challenging changes for teachers is learning to relinquish control, as they often hesitate to trust students to learn independently. Improved time management was another area of focus when they exceeded the allocated time for cooperative learning. However, teachers spent additional time engaging and supporting students. Although teachers recognised the desire to improve to exert less control over how students learn and efficient time management, it was important for teachers to engage students in learning meaningfully. Hence, teachers' attentiveness in balancing opposing goals is crucial and engaging in reflection is essential for them to navigate this dilemma effectively and for their response to be different when they adopt different measures. Reflective practice allows teachers to understand themselves better and to enhance their competencies (Farrell, 2016; Korthagen, 2017). This study suggests that reflective

practice may be a meaningful alternative to formal training, promoting continuous improvement. By recognising areas for growth, teachers take ownership and commit to changes that positively impact their teaching and student engagement. Hence, this leads to teachers developing differently due to engagement in reflection.

8.3.4 Experimenting using new teaching practices to engage students

In this study, teachers experimented with teaching practices that were new to them, demonstrated their receptivity to learning new knowledge, and engaged students in learning differently. This process contributed to their professional development as they acquired pedagogical content knowledge that supports student understanding. Tadesse, Asmare and Ware (2021) argue that cooperative learning provides a practical means for teachers to explore the effectiveness of student-centred pedagogies. As teachers improve their pedagogical and practical knowledge, they become better equipped to engage students in diverse learning experiences. Teachers' openness to experimenting with various methods is crucial to their growth in teaching and learning. In this investigation, teachers explored new ways to foster student collaboration, such as changing group structures, varying lesson flows, and employing different cooperative teaching techniques. They placed students in different groups and encouraged them to switch groups, which enhanced peer interactions and broadened perspectives. By experimenting with varied instructional strategies, they gained a deeper understanding of how lesson structure could affect student engagement, participation, and comprehension. This approach differs from the practices noted by Johnson and Johnson (2009) and Ghanbari and Abdolrezapour (2020), where teachers typically form either homogeneous or heterogeneous groups. Teachers also experimented with lesson flow, organising activities to encourage students to construct and share knowledge. This approach led to more active student engagement than Butera and Buchs (2019) and Johnson and Johnson (2018), who focus on creating positive interdependence. By organising lessons in varied ways, students could better apply their knowledge and engage in critical thinking. Additionally, teachers in this study employed different cooperative learning methods to encourage students to exchange information and expand their knowledge. Students gain in knowledge and learning.

Adopting new cooperative learning methods requires teachers to shift their beliefs to adjust existing beliefs. McAlpine and Weston (2000) assert that practice changes may not occur if new knowledge does not align with teachers' beliefs. Piaget (1964) also emphasises the importance of assimilation, where new knowledge is integrated into existing frameworks, and

accommodation, which requires changing beliefs. Hence, there are variations in the receptivity of new knowledge depending on the extent to which it aligns with existing beliefs, which impact their development differently. This current study showed that adopting new practices encourages teachers to support belief shifts as they gain practical knowledge and gauge students' participation. Implementing new teaching methods addresses teachers who may have concerns about their ability to engage students to learn effectively. In addition, teachers' engagement reflected in their practices improves the adoption of cooperative learning methods. Hence, engagement in reflective practices is closely interconnected in enhancing teacher knowledge and skills. Teachers' adjustment of their beliefs is essential for effectively adopting innovative teaching methods and development when they gain knowledge, skills, and varied ways to promote students' learning. The various outcomes highlighted the importance of conducting the present investigation.

8.3.5 Conclusion

Section 8.3 examined teachers' implementation of cooperative learning and its effects on their practices. Teachers demonstrated a student-centred approach based on the knowledge of students, where they adjusted teaching and fostered partnerships with students, all of which engaged students more actively in cooperative learning. Teachers benefitted in becoming student-centred. Although responding to diverse student needs required considerable effort, teachers' practice adjustments were essential to promote active learning in engaging a varied student population. Significantly, teachers shifted toward a more student-focused approach, which likely influenced the shift in conceptions of teaching. Importantly, teachers were receptive to exploring unfamiliar teaching practices, allowing students to experience learning in new ways. Therefore, implementing cooperative learning led to teachers developing when they acquired varied teaching practices.

8.4 Cooperative learning as a developmental tool for teachers in higher education

8.4.1 Original contribution of the study

This study's contributions include research in a new context within an existing field of cooperative learning, academic development that supports teachers' implementation of cooperative learning, and a catalyst for reflection. These areas cover the overarching insight of the current investigation's contribution and suggest a novel way of understanding cooperative learning and teacher development and the connecting links between them.

Importantly, these insights could be applied to private and public higher education, influencing teaching and learning.

a. Research in a new context within an existing field

The current investigation showed that teachers implementing cooperative learning differed when they acknowledged that students possessed different learning needs, resulting in adapting their engagement with and partnering with students in the learning process. Teachers recognised that teaching and learning was not a one-size-fits-all approach. Instead, they were responsive to students' learning needs when engaging students with diverse learning preferences in multicultural classrooms. Engaging students actively led to two important outcomes. The first outcome was when teachers assumed learning facilitators' roles to engage students and reshape their thinking about teaching and learning. Teaching was more than giving students knowledge; instead, it was engaging students to construct knowledge with peers, influencing them to shift from a teacher-centred to a constructivist mindset. The changes in teachers' roles and practices were more effective when accompanied by a shift towards constructivist beliefs. Secondly, teachers' adaptation of cooperative learning implementation showed they recognised and responded to different students' learning needs. Teachers took the extra steps to be with the students to engage with them in the learning process rather than leaving them on their own. The change in roles adopted and towards student-centred teaching practices is a development for teachers. However, they vary in roles and teaching approaches, hence, they develop differently. Notably, the shift in the roles of teachers and students was a transformational practice whereby teaching influenced learning and learning interactively shaped teaching. Teaching and learning are integrated as a whole rather than a separate process. This study differed from the approaches proposed by Johnson and Johnson (2002) and Slavin (2014), where teachers adhered to a sequence of stages to facilitate cooperative learning among students with less focus on teachers. Other cooperative learning studies indicated that teachers facilitated cooperation (Tadesse and Gillies, 2015; Malatji, 2016), with how teachers engaged students less detailed, and the development of teachers not considered, which was crucial since teachers play essential roles in promoting learning. The findings in the current research of encouraging teachers to adopt a student-centred strategy might be a valuable approach to trigger their development of a broader understanding of teaching. Hence, the outcome of the present study, although in a private higher education context, can be applied to public higher education in encouraging teachers to shift to student-centred approach. Research shows that teachers persist in adopting content-focused practices (Mendo-Lazaro et al., 2022; Moges,

2019) even though they are encouraged to engage in constructivist teaching (Biggs 2014). Hence, engaging active students' learning with interactive teaching practices resulted in a shift to constructivist teaching beliefs, an effective way to encourage teachers to change their practices, thereby impacting their development differently.

b. Integrating cooperative learning into lessons

The conduct of in-house development training had a distinct advantage over stand-alone courses conducted in centralised locations, which provided teachers with theoretical knowledge but not practical knowledge in the classroom context. Despite attending several training sessions, teachers gained cooperative learning knowledge, and its implementation was not straightforward since their teaching practices were shaped by their teaching beliefs and educational context. Effective cooperative learning implementation was less likely to be achieved through one-off training sessions as gradual, repeated, and varied activities were necessary to internalise practical knowledge in teachers. Hence, changing teaching practices occurred over time. Gibbs and Coffey (2004) acknowledge a lengthy period for training to shift teachers' beliefs of teaching toward student-centred learning. Exposing teachers to lengthy training can be challenging as busy workloads discourage them. Cooperative learning was considered a developmental tool in developing teachers toward constructivist beliefs and interactive practices discussed previously. Therefore, integrating cooperative learning into lessons was essential to improve teachers' knowledge and encourage them to experiment with new ideas to improve their engagement with students differently, enhancing teachers' pedagogical knowledge and skills. Knowledge enhancement affected varied development of teachers. The current study, through its empirical investigation of teachers implementing cooperative learning, provided rich knowledge and an in-depth understanding of its impacts on teachers and students. This contrasts with Kaendler et al. (2015) and Johnsons' and Slavin's cooperative learning models who rely on past research studies rather than examining lived experiences, offering unique context-specific knowledge. Gaskell (2000) argues that empirical studies are based on the knowledge application rather than grounded in theory. This study emphasised the importance of conducting empirical research to advance cooperative learning practices effectively. Furthermore, implementing cooperative learning gave teachers insight into how one aspect of teaching practices can affect one another. Teachers recognise varying students' learning preferences, and adaptation of teaching practices promotes active student learning. Moreover, they engaged students to learn differently by grouping students, monitoring and intervening to engage students more actively. Gradually, teachers and students

developed trusting relationships when they interacted more closely and changed the learning environment to be more vibrant. Hence, teachers adopt varying approaches as they recognise student cohorts learn differently, resulting in them developing differently. To comprehend how development occurred, in this study, information was collected throughout the implementation to capture subtle and nuanced changes. This approach differs significantly from studies by Thanh-Pham Gillies and Renshaw (2008) and Tran et al. (2019) rely on data gathered only before and after implementation and lacked the depth to reveal how development unfolds over time. Continuous, in-depth information collection is necessary to uncover the complexities of teacher development. The current investigation's methods of incorporating cooperative learning into lessons as a form of teacher development and collecting information throughout the implementation process are novel ways in which private and public educational institutions could potentially use to train teachers.

c. Catalyst for teachers' reflection and academic support

Another contribution to this study was teachers' involvement in reflection. Instead of teachers' participation in self-reflection, the catalyst for teachers' reflection arose from three external sources. Firstly, data collection encouraged teachers to reflect on their practices during interviews and focus group interviews were discussed previously in chapter four. Secondly, teachers intentionally review students' interaction during learning activities when giving feedback to students. This may cause teachers to review and adjust their implementation of cooperative learning in future sessions. Thirdly, peer sharing of teaching practices during focus groups and training sessions caused teachers to review their classroom management and promote active student participation. Fourthly, practices can promote teachers' reflection on their roles and foster a deeper understanding of their actions when implemented in a different environment, potentially leading to more effective changes in their practice. The current study demonstrates that teachers' reflection was externally prompted, which differs significantly from the literature on teachers who are involved in self-reflection (Huang 2015; Bharuthram, 2018). Teachers' reflections give rise to diverse interpretations of lessons, which encourage adjustment in their practices. Instead of implementing cooperative learning uniformly, teachers adopt varied approaches. This reflection and practice adjustment process contributes to differences in their professional development. Teachers face challenges in reflecting, which can be a lack of awareness (McAlpine and Weston, 2000) or concern about delivering ideas that may go against existing norms (Le Fevre, 2014). To encourage reflection, support to be

given to teachers to encourage them in Saric and Steh (2017) concur it is unrealistic to expect teachers to take the initiative to engage in reflection as either they are not given much support or adequately trained to do it. Supporting peers and academic developers to engage teachers in conversation regarding teaching and learning could prompt teachers to review lessons conducted and adjust how they conduct classes in the near future. In this study, teachers' cooperative learning implementation with academic support is distinguished from most studies, which emphasise the implementation of cooperative learning and active learning initiatives and not the support given to teachers. This suggests that offering support to teachers is crucial to encouraging the adoption of innovative teaching practices. The study indicates that teachers were encouraged to reflect on their teaching practices and the implementation of cooperative learning. This process may not have occurred without their involvement in this research. The support given to teachers could foster development and has the potential to be applied to private higher educational institutions since the focus on reflection and the use of innovative practices is not given priority. Significantly, Darling-Hammond (2021) argues that universities in Singapore adopt a self-management approach. This study distinguishes a variety of approaches, including academic development, to support teachers' development and reinforce the significance of the current study. As a result, it has the potential to be introduced to public higher education institutions.

In my PhD study, support was central to teachers' implementation and students' engagement with cooperative learning, my learning journey and my professional role as an academic. In the current study, I, as the academic developer, support given to teachers was essential for encouraging teachers' adoption of cooperative learning. Similarly, teachers as learning facilitators supported students during lessons in monitoring and encouraging was crucial to promote active participation. Throughout my PhD journey, my supervisory team provided invaluable support, offering feedback on my writing and holding numerous supervisory meetings that prompted me to reflect and refine my ideas. Hence, support leads to myself, teachers and students developing differently with improvement in knowledge progressively. As an academic in my professional practice, the PhD journey has profoundly improved my understanding of how I can better support my master's degree students in their research. Academic support aligns with Vygostsky's (1978) notion of scaffolding support to enable the enhancement of knowledge and skills. In these highlighted areas, support has been central in facilitating the adoption of innovative practices in enhancing teachers' development.

Encapsulating the original contributions of this PhD study covers three main areas. The first area was the cyclical effect of engaging in active student learning, leading teachers to shift their perspectives and beliefs on teaching and learning, thereby affecting their practices. Hence, implementing cooperative learning has a more profound developmental impact on teachers, affecting their professional practice. The second area was integrating cooperative learning as academic development in order for teachers to gain more knowledge and skills in their implementation. Practices encouraging reflection led to teachers' involvement in reflection being the third area in the study's contribution. The teaching and learning environment serving as catalysts for reflection suggests an alternative way of understanding reflection. Academic support was a central element throughout the teachers' implementation of cooperative learning. These three areas contribute new ideas and knowledge on cooperative learning and teachers' development.

8.4.2 Reflection journal

Reflecting on my PhD reveals four key moments. These include changes in my understanding of research, experimenting with teachers in their implementation and connecting my study with current professional practices. Firstly, there has been a change in the current research focus. When I started my PhD journey, my emphasis was on using cooperative learning as a teaching tool to change teaching and learning in Shine Academy. Conducting pre-test and post-test studies was initially proposed. Subsequent in-depth discussions with my supervisory team and conducting further reading led me to shift my focus to exploring teachers' experiences using mixed research methods to collect diverse information, reluctant to let go to collect quantitative data. Although I collected quantitative data with the Approach to Teaching Inventory (Trigwell and Prosser 2004) and Approaches and Study Skills Inventory (Tait, Entwistle and McCune, 1998), I decided against using quantitative data as it did not complement the qualitative information collected. Inventories were limited to obtain rich, insightful information in understanding the complexities of teachers' development. In contrast, the qualitative data I gathered offered rich insights into how teachers evolved over time. Thus, my research journey transitioned significantly from quantitative to qualitative research. The change in my perspective and understanding of research occurs over time rather than within a short span of time. The research I conducted similarly demonstrated teachers' development as an incremental process. Notably, putting knowledge into practice helped deepen my comprehension and led me to adjust my prevailing understanding of research. Reading literature, writing research

proposals, and obtaining feedback were part of my learning journey. This shift in my research perspectives parallels how teachers develop their practices as they adopt and adapt cooperative learning implementation. Talking through their implementation process with me during interviews and sensing students' participation deepened the teachers' comprehension of cooperative learning concepts. Significantly, I was part of the research itself being immersed in the research as opposed to being an outsider to gauge how the teachers implemented cooperative learning. The progression in my understanding of research and teachers' development underscores the intricate nature of development as a learning process.

Next, when I reflected on this current study, cooperative learning took on a whole new meaning. Cooperative learning is very much of me as a researcher working with the teachers in their implementation. Teachers dedicated time to taking implementation seriously as they planned and designed learning activities, as evidenced in the findings. In turn, the teachers worked with students to engage actively in learning, wherein students cooperated with peers in the learning process. Significantly, while this current research on cooperative learning initially started to engage students actively, on a broader scope, cooperative between researchers-teachers, teachers-students and management cooperate to allow teachers to adopt teaching practices which is central in cooperative learning. Teachers and students engage interactively, which transforms Shine Academy's teaching and learning environment towards a constructivist work culture which entails teachers working with students to construct knowledge instead of giving students the knowledge. This has significant potential for private and public higher education institutions to encourage cooperation between teachers -teachers and teachers-students within academic divisions and extend, foster a greater level of trust. This would be a transformative change in the higher education industry.

The third area was reframing the existing perspectives, which can enhance or hinder change. In undertaking research, it is important to challenge and question the prevailing viewpoints to be receptive to allowing new information to surface. My study has demanded a shift from a quantitative approach to a qualitative one, requiring me to develop new ways of understanding, analysing and interpreting the information collected. This requires a shift in insights into teachers developed in varied ways. Immersing myself in writing, editing, thinking, reading literature, and subsequent writing has been vital to reframing and reshaping my mindset to connect seemingly disjointed ideas to form a coherent whole. Time spent with my supervisors during supervisory meetings, informal peer chats, and follow-up thinking and writing were

beneficial. Piaget's (1936) assimilation and accommodation parallels my journey to let a new mindset take hold in my understanding of cooperative learning and development. It shows that dedicated time spent in my PhD study was essential to comprehend cooperative learning and teachers' development, allowing me to gain more refined perspectives of these concepts in practice.

Finally, the PhD study has been meaningful due to the strong connection between my study and professional practice. Spending significant time supervising thesis writing and research has benefitted my thesis work. On numerous occasions, I recognised the numerous mistakes I made in my writing, which helped me to be more conscious of my students' writing, allowing me to identify and address mistakes. Furthermore, reflecting on my learning journey helped me share my learning experience, which resonated with students more clearly and meaningfully. Importantly, when students realised that I was studying and learning, it motivated them to open themselves up and respond to me by providing guidance. This learning experience has deepened my understanding of information interpretation and refined my writing skills. Consequently, my PhD research has enhanced my teaching practices and impacted my approach to teaching and supporting students, which I find most rewarding.

8.4.3 Study limitations

While this research has revealed several significant insights, it is essential to acknowledge its limitations. One major limitation was the restricted timeframe for conducting the study. A constraint was the uncertainty surrounding the potential departure of participating teachers from the educational institution. To minimise the impact of teacher resignations, the research was conducted within a nine-month period from its commencement, although conducting the research for a longer period would allow for changes to be discerned more clearly. Despite this constraint, the present study was able to yield in-depth information on teachers' development due to the usage of varied data collection methods.

Closely related was conducting research over a longer span of time, which allowed the teachers and students to familiarise themselves with cooperative learning. It is essential to recognise that learning new teaching and learning methods takes time for knowledge to be internalised. Teachers' and students' hands-on practices were crucial in enabling them to adapt and become acquainted with cooperative learning.

Despite extensive planning, conducting the research with teachers who had compressed

teaching schedules was challenging, both for them to find the time to conduct cooperative learning and for me to schedule interviews and class observations. Hence, flexibility in making the arrangements with the teachers was essential. In addition, my busy schedule compounded the difficulty in carrying out the research. Conducting the present study required grace and understanding from colleagues to accommodate to research demands and scheduling arrangements.

8.4.4 Conclusion of the thesis

This research showed that cooperative learning functions as a developmental tool for the eight teachers, facilitating a shift toward more participative teaching practices that improve their engagement with students. Teachers' knowledge of students and collaboration with them significantly improved their effectiveness in resolving learning gaps, as students became more inclined to seek explanation and assistance, hence boosting their understanding. Additionally, the shift in interaction between teachers and students has fostered a more vibrant learning environment. Teachers who adopt cooperative learning strategies to engage students better gather more information and insights. This transition to interactive teaching practices—including diversifying learning facilitator roles, relinquishing control of the classroom, and encouraging in-depth peer discussions—has significantly contributed to the development of teachers. However, the extent of this development varies as teachers implement these approaches and develop differently. Teachers understanding of teaching and learning has evolved, reinforcing the argument that cooperative learning can foster teacher development.

Through the implementation of cooperative learning, teachers engaged in reflection, which has been crucial for adjusting learning materials, activities, and student interactions. They have modified their delivery of cooperative learning sessions based on reflective practices between classes, demonstrating their receptiveness to improving their teaching methods. Their journey in learning to implement cooperative learning, embracing self-critique to enhance their lesson delivery and strengthening their effectiveness in engaging students was imperative in influencing development. This engagement in reflection and continuous improvement benefits teachers, as they acquire knowledge primarily through experiential learning in the classroom. This increased knowledge influences their future use of cooperative learning and shapes how they actively engage students in the learning process.

Furthermore, this study illustrates that teacher development encompasses multiple dimensions

rather than focusing solely on one aspect. It impacts teaching practices, alters conceptions of teaching, and enhances relationships with students. Furthermore, teachers have demonstrated increased receptivity to employing various innovative practices to foster student engagement. Academic development sessions have been crucial in encouraging them to integrate innovative teaching methods that incorporate cooperative learning. Conversing with colleagues about classroom practices and even drawing inspiration from student feedback was beneficial in enabling teachers to improve their practices. Hence, impacting development in understanding teaching and learning better. Recognising these diverse developmental pathways is crucial, as it underscores the varied backgrounds, teaching experiences, and strategies teachers employ to engage students from different cohorts. As reiterated, the development of teachers is not uniform, which is crucial since they each develop differently and specialise in different subjects, varied backgrounds, and cohorts of students. Significantly, engaging students through cooperative learning requires teachers to demonstrate empathy in recognising students' strengths and areas for improvement, diverse skills in fulfilling learning facilitator roles, and a willingness to take risks in altering traditional learning methods. The growth of these attributes reinforces cooperative learning as a developmental tool for teachers to become effective in their roles.

This research highlights numerous benefits of cooperative learning. In addition to serving as a developmental tool for improving teaching techniques, it promotes teachers' ability to engage a diverse student population. As a result, teachers varied in their development when they shifted their practices interactively which engage students to adopt active learning. This present study underlines the crucial role teachers in utilising cooperative learning to establish and shift to a conducive learning environment. Adopting student-centred teaching and learning in higher education encourages students to engage in learning and contribute meaningfully to their communities actively.

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Appendix 1: Academic Development Session

To prepare teachers for cooperative learning, a total of five academic development sessions were conducted once a week to provide the teachers with the foundation knowledge of cooperative learning.

Session 1: Traditional classroom and Cooperative learning.

Content	Purpose
What is learning to you?	To understand from teachers' perspectives where they are coming from?
Traditional classroom vs Cooperative learning	Illuminate a contrast between the two forms of learning.
What is cooperative learning	A brief introduction of cooperative learning.
Benefits of using cooperative learning	Outline of the benefits
What are the challenges of using cooperative learning?	Ask the teachers to identify

Purpose: Perception, prior experience, beliefs & assumptions underlying teaching and learning
Challenge teachers' status quo of teaching.

Perception, preconceived assumption & understanding of cooperative learning. Teachers' views of what they think is the potential of using cooperative learning in learning

Activity 1: <u>What is learning</u>?

Show 2 pictures, picture A: students diligently listening and writing in an orderly manner, typical didactic teaching. Picture B shows, students and teacher interacting with one another. Classroom setting is less "orderly".

Ask a question, "What is learning? Share your thoughts. Should learning involve listening/ writing or interacting and helping one another?

<u>Activity</u>: Participants (volunteer teachers) think aloud, write pointers on post-it and stick on space beneath 2 printed pictures. 10 minutes then review through the ideas/ opinions expressed. The purpose is to collect and gather different inherent perceptions and assumptions of participants.

Activity 2: <u>Traditional versus Cooperative learning classroom</u>

A follow-up extension of the activity 1 where traditional classroom is what we are all very familiar (students display obedient stereotype behavior or a "less conventional" classroom style where there is tolerance of certain level of non-conformity that encourages lateral and creative thinking?

Which type of classroom promotes learning? List the characteristics of what students and teachers will be doing.

Activity: think aloud and write short pointers but this time work in pairs (think-pair-share).

Activity 3: Reflect on your own teaching

[Homework to be given to participants 2 – 3 days prior to session 1]
Task; teachers to reflect on their own teaching experience, what are the highlights of your own teaching and challengers you faced?

Activity: find a partner (critical friend) and share with each other story. Thereafter, have one partner share with the rest of the "class" (all participants) highlights and challengers faced without identifying teachers facing these. This is to encourage them to share more truthfully instead of feeling "embarrassed" especially when it comes to challengers.

Activity 4: Cooperative learning and its potential

What is your understanding and your idea of cooperative learning (CL)?
In your opinion and awareness, is CL a form of non-conformist way of learning?
Do you see CL has its role in teaching and learning in TMC context and students?

Activity: form groups of 2 or 3 members and write on A3 paper provided collective views (consists of aggregation of each member).
Next present the feedback to the class. Have the rest of the class/ groups pose a question or two.

Activity 5: Cooperative learning challengers

Does CL leads to teachers having "less control" over students or should students be given "voices on their own"?
Does using CL seems scary to you?
What are the obstacles, challengers or difficulties that may be encountered when use CL to TMC classroom context?

Session 2: Cooperative learning challenges and Group formation.

Content	Purpose
Handling of cooperative learning challenges	Recommendation Overcoming the challenges
Cooperative learning activity – Pyramid building	Illuminate a contrast between the two forms of learning.
What is a group?	Characteristics of group.
Group formation – how are groups formed with 5 types of groups: introduction, homogeneous, heterogeneous (mixed), friendship, random & assigned group members	To distinguish the differences in how groups formed.
Identify the advantages and disadvantages	Teachers to brainstorm on the advantages and disadvantages
Different forms of grouping: formal, informal groups, base grouping (permanent grouping).	Differentiating the different types of grouping

Purpose: Does cooperative learning leads to teachers having "less control" over students or should students be given "voices on their own"?

What are the obstacles, challengers or difficulties that may be encountered when use CL to Shine Academy classroom context?

Teachers' opinion & feedback on cooperative learning having less control over their classes.

Encourage diversity of feedback on cooperative learning challengers

Chance for teachers to evaluate & reflect (difference between literature vs their own feedback)

Compile lists from teachers

Compare cooperative learning challengers from literature against what teachers shared
Invite teachers to evaluate, think about and feedback.

Activity 5: Continuation of cooperative learning challenges

Activity: individual task, write on "Post-it" provided, collect individual 'Post-it" notes, group similar points together, share and discuss. Diversity of feedback is encouraged.

Activity 6: Overcoming Cooperative learning challengers

After having group the challengers (example 8 to 10), each pair of participants will randomly select 3 to 4 challengers, think of and brainstorm "solutions" to overcome the challengers. Mutual discussion, sharing, exchange of viewpoints, brainstorming & tap on collective wisdom.

Activity 7: Reflect on today's session

Design as homework where participants are requested to write a short piece of reflective journal what they think of the session they just attended, feedback and suggestions to be provided on how future sessions can be facilitated in a more appropriate manner. In addition, also on some of concepts, discussion areas – example traditional versus CL classroom, CL potential and challengers to what extend they agree, disagree or any other feedback.

Participants will have approximately 1 week before the next session to reflect and pen in writing. They will submit to myself which I can use as inputs for the first interview session.

Activity 8: Overcoming Cooperative learning challengers

When participants come back for next session, the first activity is to discuss challengers faced with cooperative learning.

Activity: Each pair is given 10 minutes to re-collect, compare and compile their notes. They will share with the class what they thought was the "solutions" of ways to overcome learning challenge. After sharing, the rest of the participants are encouraged to pose questions or clarify doubts for the presenters to answer. So some thinking is involved.

Activity 9 (CL activity)
Building an "Eiffel tower" with satay sticks.
Teachers have a chance to experience a Cooperative learning session where they are divided into groups of varying abilities, an activity being given with specific instruction and at the end reflect upon what they have done.

The whole idea is the "experiencing of what's it is like in cooperative learming session how each group member help one another, contribute and being accountable to a task. A chance to also work under time constraint. For the teachers, the activity can be different though may not as "fun" as this.

Build on what participants have to share in your experience both benefit and also obstacles in working in groups. This can proceed onto a short session on team formation and working in small group.

Session 3: Group formation

Content	Purpose
Recommendation to assist students in forming groups. Five recommendations given to teachers	Helping group started and formation of different types of groups.
Seating arrangement in group formation.	How classroom furniture can be arranged to facilitate students' discussion
Advice is given to teachers on the use of cooperative learning.	Includes structuring of tasks, monitoring students, and extent of assistance to students overcoming of learning challenges.
Introduction on 9 different types of cooperative learning strategies.	Cooperative learning strategies include think-pair sharing, team interviews, three-step interviews, Buzz groups, concept mapping, analytical teams, group investigation and jigsaw.
Summary of the different cooperative learning strategies.	Recap and include advice given to the teachers.
Preparation of mock cooperative learning session.	Next session come prepared to have a go of conducting a cooperative learning session.

Collective opinion and perception of teachers on; understanding of team, formation, potential or obstacles in learning.

Activity 10: Forming groups

Getting students to form groups. How were the groups being formed (random or otherwise)? What was the experience like? Were there engagement and interaction among group members? Are some members more responsive than others?

How is ad-hoc group formation different from CL group m formation? What is your understanding of students forming groups? How should teams be formed? Do you see it as an opportunity to learn or obstacles in learning? Activity: in pairs, discuss 3 areas.

Share amongst one another and write down your thoughts on A3. I will pose the A3 on the

wall for everyone to read and provide feedback.

Time for discussion: 20 minutes with another 20 minutes for sharing with the "class".

Session 4: Mock practice

Content	Purpose
Briefing to teachers on how to conduct cooperative learning session.	
An hour was allocated for the conduct of mock cooperative learning session.	Mock practice session.
Preparing cooperative learning in your class.	Group formation, assigning students' roles & creating a friendly and conducive learning environment.
Preparing students for cooperative learning.	Nurturing of social skills among students and process-oriented skills
Facilitating students for cooperative learning.	Including the introduction of activities to students, instruction and expectation.
Monitoring groups and managing unequal students' participation	Handling of students that pose challenges.
Advice to teachers.	Handling of shy students, reinforcing active learning and ways of fostering students' participation.
Recap of cooperative learning and cooperative learning methods.	

Session 5: Recap the key points of cooperative learning

Content	Purpose
Benefits and challenges using cooperative learning	Outline of the benefits and challenges.
Group formation	To distinguish the differences in how groups formed.
Advice and summary to teachers on the use of cooperative learning.	Includes structuring of tasks, monitoring students, and extent of assistance to students overcoming of learning challenges.

Recapped on the implementation of cooperative learning including visiting students' groups to eavesdrop on their conversation, encouraging passive students to be more participative, managing of time for students' discussion, and constraints including classroom size and furniture arrangements.

Formation of mixed groups, homogeneous groups, assigning students to groups and assigning students' roles.

Cooperative learning methods including pair-share, buzz share, team interviews and jigsaw.

The session provides the platform for the teachers to gather and talked about things in the classrooms and exchange of ideas.

Appendix 2: Data collection schedules

1. There are 2 main groups of students who are 18 years & above. Higher diploma & degree students.

2. Terms for Higher diploma: 5 March – 6 April 2018 (9^{th} – 10^{th} Apr exam).
   23 April – 1 June (4^{th} – 5^{th} Jun exam)
   18 Jun – 21 July (24^{th} – 25th Jul exam)

   Term for Degree: 19 March – 31 May' 18
   25 July – 17 Sept' 18; 1^{st} Oct – 20 Dec

3. First set of Data collection commence from March (degree) & Apr (higher diploma). Refer to schedules in calendar.

   Sample size: 10 teachers.
   : 20 – 25 students – degree + higher diploma

4. Briefing to Teachers: 27 Feb (after Chinese New Year break).

5. Staff development (volunteer teachers): 1^{st} & 2^{nd} March (2 sessions, each at least 2 hrs). Staff development session 3 & Interview (1) to be held between 6 to 9 March (few days intermission to reflect).

6. Volunteer teachers who are ready can try out CL in term (5 Mar – Apr) just to have a go at it.

7. Teachers who are teaching Degree classes will be the first to use CL (end March) to be followed by higher diploma (end Apr).

8. All data for 1^{st} set should complete by mid July (latest) that include students' interview. Students' interview can only be conducted after they returned from 2 weeks term break after exam (3^{rd} & 4^{th} June).

9. Interview (2) for teachers will complete by end August' 2018.

10. Balanced number of students for data collection will be collected around Sept/ October term.

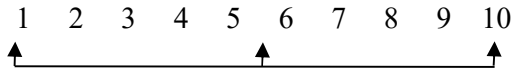
Appendix 3: Semi-structured Interview 1

Research question 1: What are the current teachers' teaching practices?

- In your opinion, what is the best way to teach so that your students will understand your lesson?
- What do you think is the most effective way for students to learn?
- If I were to come to your class and sit in for 20 – 30 minutes, describe how your typical lesson will be conducted? (probe, lecture or a combination of lecture and class activities?
- What do you hope students will gain most from your class?
- During your lesson, how do you engage your students in learning?
- The learning activity which you have described, how does it help students in their learning?
- How long does each activity last in a typical 3 hours class lesson (one activity at least 15 minutes)?
- In your usual class, do students typically ask questions?
- Why do you think your students will or will not ask questions?
- For a typical lesson, what challenges do you usually encounter? Name 2 challengers,
- How do you attempt to overcome each of the challenge?
- Let's have a chat, what is Cooperative Learning (CL) to you?
- What is your view about incorporating CL as part of learning strategies in your class?
- What experience you had with CL before this training, if any?
- Have you ever used a CL before this training? Please describe your experience.
- Do you think CL will help students' in their understanding? Explain further.
- How do you plan to incorporate CL as part of learning strategies in your class?
- Are looking forward to use CL in your lesson?

Appendix 4: Semi-structure Interview 2

Research question 2: How teachers implement cooperative learning and impact of using cooperative learning

- Now that you use CL for a term or two terms, what is your feedback about using CL as part of your teaching strategies?
- Are you satisfied with how your lessons have been delivered with CL? Explain.
- Compared your current semester to the previous semester, how different you think you have delivered your lessons?
- With the use of CL, have you noticed any change in students' behaviour in class? Name 2 students' behaviour which may have changed.
- In the last interview, you had highlighted 2 difficulties and how you overcame them. Do you still face the same difficulties for this term?
- If no difficulties faced, why do you think those difficulties have not surfaced anymore?
- Have you encountered other difficulties apart from those you have previously mentioned? If yes, please explain what they are.
- Basing on your experience, what context influence most in students' learning?
- How does context affect CL to be used effectively?
- How might context be overcome?
- Will you continue to use CL in your future class? Explain why yes or why no.
- On a scale of 1 to 10, rate your overall satisfaction with the use of CL.
- 

- What approach to teaching are you now adopting?
- Will you continue to use CL in the near future? Why or who not.
- How do you think the staff development session has helped you in your preparation for CL in class?
- Has it been useful? Explain your answer.

Appendix 5: Focus group questions

Research question 2: How teachers implement cooperative learning and impact of using cooperative learning.

- You have been using Cooperative learning (CL) in your class for over 2 weeks or a term, what are your views about CL?
- How are CL group formed?
- What CL activity/ activities have you used in your class? Name at least one activity.
- Do you think students enjoy the CL activities? Explain further.
- What CL activity has been most useful to help students in their learning?
- Provide either one (1) successful case or not successful case to share regarding students' participation.
- What are the positive effects on your students, if any?
- What are the negative effects on your students, if any?
- What adjustments (if any) have you made in your lesson to incorporate CL?
- What difficulties have you encountered with CL? Identify 2 such difficulties.
- How do you attempt to overcome the difficulties identified above?
- Going forward, what adjustments do you hope to make to improve your lesson delivery using CL?
- Is CL helpful or not helpful to students in their learning?
- Has your approach to teaching change or largely remain the same as before you use CL?
- If there is a change, what do you think has changed?
- What approach to teaching best engage students in learning?
- Do you think educational context contribute an important factor in influencing CL effectiveness?
- Name any 3 educational contexts how they affect CL to be implemented successfully.
- How does the identified context affect CL?

Appendix 6: Class observation and field notes

Observation Form

Teacher: _____ Date: _____

Venue: _____

Class size: _____

1. Describe the make-up of a typical group?

_____

2. What is the group size?

_____

3. What type of group activity was conducted?

_____

4. Describe the group activity.

_____

5. How teacher introduces CL activity to students?

_____

6. How does teacher communicate task expectations, ideas, and goals clearly?

_____

7. Was each group member given a particular task/ responsibility?

_____

8. Describe what did the teacher do during class activity?

_____

9. How do teacher check/ monitor student participation in each group?

Appendix 7: Categories and codes

1. List of codes and categories

Sub-themes	Categories	Codes
5.1 Teachers understanding of cooperative leatning, planning and group studets	Knowledge of Cooperative learning	student-centric learning
		Active learning
		Collaborative interaction with peers
		Engaged in learning
5.2 Teachers' roles	Lesson planning	Structure task differently among groups
		Planning lessons
		Lesson objectives
		Context class size
		Design learning activities
	Learning activities	Presenting answers
		Case analysis
		Peer share
		Jigsaw
	Group formation	forming mixed groups
		mixing students' capabilities
		assign roles for students to contribute
		group shy students in pairs to hv them participate
	Knowledge of students	Knowledge of students in their knowledge level
		Knowledge of students group students
		Knowledge of students in their capability
		Students' personalities
		Provide feedback
	Facilitator intentions	Not give info students provide own info, take charge of learning
		Involve
		Learn on own, independent by students themselves
		Motivate students
		Promote active learning
5.2 Teachers' roles	Facilitating students' learning	Encourage students' interaction
5.3 Teachers involvement in active		Impart knowledge
		Feedback on students' participation

students' learning		Answer students' query
	Active engagement	Engagement help students in their learning
		Engage students exchange ideas
		Engage learning responsibilities
		Engage to create info
		Encourage students to discuss
		Active engagement share peer perspective
		Active engagement variety of perspectives
		Active engagement with case studies & activities
		Engage students thinking
		Learning meaningful
		Learning interesting
		Clarify students' answers
		Active interaction bet teachers & students
	Monitoring \	Monitor to ensure students participate
		Monitor students closely
		Follow-up with students to help them in learning
		Visiting groups
		Observe students' conversation
	Direct intervention	Direct intervention - teach
		Direct intervention to bring up weaker students
		Direct intervention to have students to participate
		Direct intervention to lead to answers
		Guidance to higher diploma students
	Interaction between students	engagement interact among students
		students help one another
		peer learning
		students learn interactive
		contribute (rotate roles)
		students contribute ideas
		Students taking effort in learning less teaching
		Support one another
		Teamwork
		Share, discuss
		Students' adaptation
		Better relationships
7.2 Impact on teachers	Changes in teaching practices	Participative teaching
		Adopt diverse teaching practices
	Shift in beliefs of teaching	Student-centred teaching
		Focus on students
	Perception of cooperative	Not limited by subjects
		Flexible in usage

	learning	Adopt various CL methods
	Bonding with students	Establish relations with students
Impact on teachers in multicultural classrooms	Challenges faced by teachers	Tight Curriculum
		Engage students to participate
		Quiet students
		Language proficiency
		Sufficient time set aside
		Unwilling to participate

Case studies

Ashoka

Sub-themes	Categories	Codes
How the planning and grouping of students during cooperative learning influenced Ashoka's development as he planned and grouped students	Planning of lessons	Preparation of activity link to learning objective
		Preparation of activity to engage students in learning
	Knowledge of students	Knowledge of students group students
		Knowledge of students to gauge students' receptivity
		Knowledge of students whether students can manage
		activity
	Learning activities	Problem-sums
		Peer discussion
	Students grouping	Form mixed groups
		Grouping by nationalities
	Active engagement	assign roles for students to contribute
		engagement among students
		engagement help students in their learning
		engagement in finding info
		engagement in responsible for learning
		engagement interact among students
		engagement students apply in different context
		Ask Q to engage students to participate
		Engage students differently according to subjects
Influences on Ashoka's development as he adapted in his teaching practices	teaching different	Flexible
		do not follow the usual way
		Teaching more interesting
	Educational context	Nature of subjects
		Educational level

Win

Sub-themes	Categories	Codes
How Win engage students in active learning	Grouping students	By where they sit (convenience)
		Mixed group gender and nationalities
		Knowledge of students in their knowledge level
	Learning activities	Presentation
		Problem-sums
		Case studies analysis
	Active engagement	Active engagement bet teacher & students
		Active engagement – peer learning
		Active engagement students participation
		Active engagement to encourage interaction among students
		Active engagement to have students participate
		Active engagement with case studies & activities
		Encourage students share info
		Provide feedback
		Giving advice how to divide tasks
		Provide examples
		Show students
		Engage students to do presentations
	Direct intervention	Direct intervention – force them participate
		Direct intervention - teach
		Direct intervention to lead to answers
		Advice students
Challenges in conducting	Challenges	encourages competition
Cooperative learning		rank groups
		instil urgency to complete tasks
		control
		Highlight theories to apply
		Guide students
	Educational context	Educational levels of students
		Nature of subjects
		Assessment types
		Weak students
		Capable students

Gina

Sub-themes	Categories	Codes
Adjustments in teaching practices	Knowing students	Know my students – skills they have
		Knowledge of students' capabilities
		Assign students to groups
Adoption of students-centred cooperative learning	Learning activities	Practical learning
		Case studies
		Group discussions
	Active engagement	Assign students to groups
		Engage students hands-on skills
		Independent learning - own answers
		Engaging students to participate
		help one another
		Foster peer teaching n learning
		Involve students sharing task
		Adapt and modify engagement
	Giving encouragement	Give encouragement – you can do it
		Encouragement – think of some more
		Verbal encouragement
		Giving examples (Stakeholders)
		Facilitator – walk around
		Facilitator - monitor students whether they participate
		Facilitator – ask Questions to help students
		Guide & assist learning
	Context	Asian students
		Students previous learning experience
		Recognise culture
		Passive students
		Assessment types

Appendix 8: Compilation of categories and codes

Main themes	Knowledge of Cooperative learning	Teachers' teaching style	What teachers do while students are working in groups	Small group learning	Nature of learning	Learning Behavior
Sub-themes	Awareness level	Teachers centric	Monitor students	Learning activities	Types of skills	Active learners
Codes	Aware, express key words, student-centric	impart knowledge	ask questions	problem-solving sums	communication	contributing ideas
			asking for feedback	project work	interpersonal	
	Unsure whether it is CL	Student-centric	clarify answers	presentation	problem-solving	Passive learners
		student focus, students construct knowledge	Walk around classroom	case studies analysis	decision-making	not task focused
Sub-themes	Distinguish group work from CL		Observe students' conversation	draw conclusion	critical-thinking	quiet
Codes	Able to distinguish		Intervention	answer Q & A	consensus-building	
	Unsure				negoitation	Roles contribution
			Facilitate understanding	Group features		leader
Sub-themes	Prior knowledge of CL		Answer query	group size	Types of learning	spokesman
Codes	Yes, undergone formal training		Provide feedback	group formation	independent learning	
			Provide examples	group members	active learning	Peer support
	No knowledge		guide students		deep learning	assisting/ helpful
			Highlight theories	Other features	interactive learning	moral support
				activity duration		encourage
				Members task allocation		

Appendix 9: Consent forms

Teacher interview Consent form

How does the introduction of cooperative learning through professional development influence teachers' development in a Singapore private higher education?

Name of researcher: Raymond Loh
Principal lecturer, School of Business and Law

Teacher's interview

1. I confirm that I have read and understand the information provided 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 a reason and that this will not affect my legal rights. ☐

3. I understand that any personal information collected during the study will be anonymised and remain confidential. ☐

4. I agree to take part in the above study which will involve a face-to-face interview. ☐

For studies involving the use of audio recording of interviews where there is a possibility that verbatim quotes from participants may be used in future publications or presentations please include the following:

5. I understand that the interview will be audio recorded and I am happy to proceed. ☐

6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised. ☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature
Name of Person taking consent *(if different from researcher)*	Date	Signature

Note: When completed 1 copy for participant and 1 copy for research

Appendix 10: Focus group consent form

Focus group consent form.

How does the introduction of cooperative learning through professional development influence teachers' development in a Singapore private higher education?

Name of researcher: Raymond Loh
Principal lecturer,
School of Business and Law

Teacher's focus group

1. I confirm that I have read and understand the information provided 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 a reason and that this will not affect my legal rights. ☐

3. I understand that any personal information collected during the study will be anonymised and remain confidential. ☐

4. I agree to take part in the above study which will involve a focus group discussion ☐

For studies involving the use of audio recording of focus group discussion where there is a possibility that verbatim quotes from participants may be used in future publications or presentations please include the following:

5. I understand that the focus group discussions will be audio recorded and I am happy to proceed. ☐

6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised. ☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature
Name of Person taking consent *(if different from researcher)*	Date	Signature

Note: When completed 1 copy for participant and 1 copy for researcher

Consent Forms Page 1 of 1

Appendix 11: Class observation consent form

Class observation consent form.

How does the introduction of cooperative learning through professional development influence teachers' development in a Singapore private higher education?

Name of researcher: Raymond Loh
Principal lecturer,
School of Business and Law

Teacher's focus group

1. I confirm that I have read and understand the information provided 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 a reason and that this will not affect my legal rights. ☐

3. I understand that any personal information collected during the study will be anonymised and remain confidential. ☐

4. I agree to take part in the above study which will involve a focus group discussion ☐

For studies involving the use of audio recording of focus group discussion where there is a possibility that verbatim quotes from participants may be used in future publications or presentations please include the following:

5. I understand that the focus group discussions will be audio recorded and I am happy to proceed. ☐

6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised. ☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature
Name of Person taking consent *(if different from researcher)*	Date	Signature

Note: When completed 1 copy for participant and 1 copy for researcher

Appendix 12: Student interview consent form

Student interview consent form.

How does the introduction of cooperative learning through professional development influence teachers' development in a Singapore private higher education?

Name of researcher: Raymond Loh
Principal lecturer,
School of Business and Law

Teacher's focus group

1. I confirm that I have read and understand the information provided 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 a reason and that this will not affect my legal rights. ☐

3. I understand that any personal information collected during the study will be anonymised and remain confidential. ☐

4. I agree to take part in the above study which will involve a focus group discussion ☐

For studies involving the use of audio recording of focus group discussion where there is a possibility that verbatim quotes from participants may be used in future publications or presentations please include the following:

5. I understand that the focus group discussions will be audio recorded and I am happy to proceed. ☐

6. I understand that parts of our conversation may be used verbatim in future publications or presentations but that such quotes will be anonymised. ☐

Name of Participant	Date	Signature
Name of Researcher	Date	Signature
Name of Person taking consent *(if different from researcher)*	Date	Signature

Note: When completed 1 copy for participant and 1 copy for researcher

Consent Forms Page 1 of 1