

**Chinese Physical Education Teacher Education Students'
Professional Growth: Cooperative Learning within
Professional Learning**

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Abstract

Research shows that while policymakers and researchers value cooperative learning (CL) highly for its educational benefits, it is often used superficially, or not at all, by schoolteachers globally because of their misunderstandings and limited experience with CL. Correspondingly, attention needs to be given to the ways in which professional learning can provide student teachers with theoretical understandings of CL and experiences practising it during their initial teacher education (ITE) programmes. This thesis investigated how cooperative learning professional learning (CLPL), in a physical education teacher education (PETE) programme at a Chinese university, influenced students' perspectives on and their implementation of CL. The interconnected model of professional growth was used as a theoretical lens to view the study.

Utilising an interpretive, qualitative case study methodology, I collected multiple types of data from 20 PETE students, a teacher educator, and seven associate teachers. The data sources included focus groups, semistructured interviews, postlesson interviews, classroom observations, concept maps, reflective journals, instructional materials, and field notes. An interactive cycling coding approach was used to analyse the data.

Findings of this study showed that the PETE students developed their knowledge of, commitment to, and beliefs about CL during the CLPL. Eight of the PETE students endeavoured to construct a positive CL environment during their school practicum but encountered problems, such as forming heterogeneous groups. The critical role of microteaching, reflection, and coaching facilitation in supporting the PETE students' professional growth and confidence using CL was identified.

Although CL is a part of education policy and research in China, student-centred pedagogies have not been evident in physical education in authentic educational settings. The outcomes of this study suggest that in school physical education contexts, where CL is new,

student teachers' perspectives will be enhanced by microteaching experience in university course work and coaching facilitation by a CL community of practice in school practicum. This research has implications for CL in ITE, particularly PETE, through identifying the interconnectedness of professional learning, student teachers' school-based practice, and changes in their perspectives on CL in physical education.

Dedication

For my dearest sisters and brother who made me aware of the magical power of
cooperation, sharing, listening, acceptance, support, and trust

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Table of Contents

Abstract.....	ii
Dedication.....	iv
Acknowledgements.....	v
List of Tables.....	xiii
List of Figures.....	xiv
List of Abbreviations.....	xvi
Chapter 1: Introduction.....	1
Introduction.....	1
My Path Toward an Interest in the Study.....	1
Purpose of the Study.....	5
Research Rationale and Research Questions.....	5
Research Context.....	8
Bachelor of Physical Education Teacher Education in China.....	8
Physical and Health Education in Chinese High Schools.....	11
Cooperative Learning in China.....	16
An Overview of the Thesis.....	20
Chapter 2: Literature Review and Theoretical Framework.....	21
Introduction.....	21
Cooperative Learning.....	21
The Theoretical Foundations of Cooperative Learning.....	24
Social Constructivist Theory.....	24
Social Interdependence Theory.....	26
Behaviourist Theory.....	29
Cooperative Learning in Initial Teacher Education.....	31
Rationale for Preparing Student Teachers With Cooperative Learning.....	31
Content and Pedagogy for Preparing Student Teachers With Cooperative Learning.....	33
Student Teachers' Practice of Cooperative Learning in School Placements.....	38
Cooperative Learning as a Pedagogical Model in Physical Education.....	40
Models-Based Practice.....	40

Learning Outcomes of Cooperative Learning in Physical Education	42
Practitioners' Perspectives on Cooperative Learning.....	45
Practitioners' Implementation of Cooperative Learning.....	48
Physical Education Teacher Education Students' Experience With Cooperative Learning.....	58
Chinese Literature on Cooperative Learning in Physical Education.....	61
Effectiveness of Cooperative Learning in Chinese Physical Education	61
Implementation of Cooperative Learning in Chinese Physical Education.....	62
The Interconnected Model of Professional Growth: Theoretical Framework.....	65
Distinct Domains in the Teacher's World.....	66
Mediating Process in Teacher's Professional Growth.....	68
Change Environment	70
Identifying Specific Patterns in Teacher Professional Growth	70
Adoption of the Interconnected Model of Professional Growth	71
Chapter Summary	73
Chapter 3: Methodology	75
Introduction.....	75
Research Methodology	75
An Interpretive Research Paradigm.....	75
Qualitative Methodology	77
A Case Study Design.....	78
Research Settings.....	80
Research Participants.....	84
PETE Students.....	84
Lecturer.....	85
Associate Teachers	86
Role of Researcher.....	87
Data Collection	88
Interviews	92
Classroom Observations	96
Collection of Artefacts and Document Analysis	97
Field Notes.....	100
Data Analysis.....	100

Preparing and Organising Data	103
Transcribing and Describing Data.....	103
Condensing Data	104
Displaying Data	111
Translating	111
Drawing and Verifying Conclusions	113
Trustworthiness.....	114
Ethical Considerations	116
Chapter Summary	117
Chapter 4: PETE Students’ Perspectives on Cooperative Learning	118
Introduction.....	118
“Isn’t Cooperative Learning Just Group Work?”	118
Know What, Know How, but Don’t Believe in It	121
Developing Knowledge of Key Elements of Cooperative Learning.....	121
Importance of Careful Planning and Preparation	126
Concerns About the Implementation of Cooperative Learning	129
Varying Intentions to Employ Cooperative Learning	131
Value of the Notion “Student Centred”	134
Merging Cooperative Learning With Direct Instruction	135
Strengths of Cooperative Learning for Pupils’ Social and Emotional Learning.....	137
“I’m Developing, but Still Need to Improve a Lot”	140
A Nuanced Understanding of the Five Key Elements.....	140
Newly Developed Pedagogical Content Knowledge of Cooperative Learning	145
Changed Personal Philosophy About Physical Education Teaching	147
Strengths of Cooperative Learning for Legitimate Learning Outcomes	149
Advocacy for a Cooperative Learning Community of Practice	150
Chapter Summary	152
Chapter 5: PETE Students’ Implementation of Cooperative Learning	154
Introduction.....	154
Establishing a Positive Cooperative Learning Environment	154
Teaching Lesson Zero	154
Giving Pupils’ Freedom to Form Heterogeneous Groups Within the Criteria.....	156
Starting Small	159

Putting Key Elements Into Practice	165
Three Ways of Structuring Positive Interdependence Among Group Members.....	165
Concurrent Use of Verbal and Written Directions to Reinforce Individual Accountability	167
Complementing Verbal Instructions With Teacher Modelling to Enhance Promotive Interaction.....	169
Showing Rather Than Telling to Develop Social Skills.....	172
Individualised Strategies to Reflect on Group Functioning	174
Becoming a Skilful Teacher-Facilitator.....	177
Being a Director Controlling Learning and Pacing in the Class	178
Switching Between Being Director and Facilitator Monitoring Groups' Work	180
Being a Facilitator Scaffolding Pupils' Learning.....	181
Chapter Summary	184
Chapter 6: Influential Experiences and Factors on Professional Growth	185
Introduction.....	185
Microteaching Experience: Learning by Doing With Cooperative Learning	185
Observing and Participating in Teaching Modelling of Cooperative Learning	185
Experimenting With Cooperative Learning Through Peer Microteaching	188
Immediate Feedback From the Lecturer.....	192
Reflection on Learning and Implementation of Cooperative Learning.....	194
Coaching Facilitation of the Lecturer, Associate Teachers, and Peers.....	196
Sustained Support Received From the Lecturer	197
Acceptance and Trust Demonstrated by Associated Teachers.....	199
Assistance and Sharing Provided by Peers.....	201
Chapter Summary	203
Chapter 7: Discussion	205
Introduction.....	205
Learning Through Microteaching of Cooperative Learning: Important but Insufficient	207
Personal Domain 1: Superficial Understanding of Cooperative Learning	209
External Domain 1: Learning Cooperative Learning Through Microteaching	210
Domain of Practice 1: Practising Cooperative Learning Through Peer Microteaching	211

Domain of Consequence 1: Many Value It, But Not All Adopt It.....	211
Change Sequences: Professional Growth Pathways During the Course	216
Putting Cooperative Learning Into Practice Within the Real-World Experience:	
Problematic but Promising	228
Personal Domain 2: Know What, Know How, But Don't Believe in It	230
External Domain 2: Coaching Facilitation as a Supportive Stimulus of Implementation.....	230
Domain of Practice 2: Creating a Positive Cooperative Learning Environment.....	232
Domain of Consequence 2: Cooperative Learning in Achieving Legitimate Learning Outcomes of Physical Education.....	243
Growth Networks: Professional Growth Pathways During the Practicum	244
Chapter Summary	253
Chapter 8: Drawing Conclusions and Looking to the Future	255
Introduction.....	255
Conclusions.....	255
The Contribution of the Current Research to the Field of Inquiry	257
Theoretical Contribution to the Interconnected Model of Professional Growth.....	257
Contribution to Cooperative Learning Research.....	259
Contribution to Teacher Education	261
Practical Implications	261
Implications for Cooperative Learning Practice.....	261
Implications for Professional Learning and Development	262
Limitations.....	266
Future Research Directions.....	268
Concluding Remarks	269
References.....	271
Appendices.....	330
Appendix 1: Cooperative Learning Structures	331
Appendix 2: Focus Groups Schedule With PETE Students	332
Appendix 3: Semistructured Interview Schedule With PETE Students.....	334
Appendix 4: Semistructured Interview Schedule With the Lecturer.....	335
Appendix 5: Semistructured Interview Schedule With Associate Teachers	336
Appendix 6: Postlesson Interview Schedule With the Lecturer	337

Appendix 7: Cooperative Learning Verification Tool Guided Classroom Observations	338
Appendix 8: Reflective Journal Template in Practicum Experience	340
Appendix 9: Parallel Translation Audit Trail	341
Appendix 10: Node Coding Frequency Regarding PETE Students' Perspective on Cooperative Learning	342
Appendix 11: Node Coding Frequency Regarding PETE Students' Implementation of Cooperative Learning	343
Appendix 12: Node Coding Frequency Regarding the Characteristics of the Cooperative Learning Professional Learning.....	345
Appendix 13: Participant Information Sheet (PETE Students)	346
Appendix 14: Consent Forms (PETE Students)	350
Appendix 15: Concept Maps of Cooperative Learning Drawn by Wei	352
Appendix 16: Pedagogical Strategies of Cooperative Learning Used by Each of the Eight PETE Students in Their Practicum	353
Appendix 17: A Sample of Grouping Sheet Created by PETE Students	354
Appendix 18: A Sample of Group Processing Sheet Created by PETE Students	355

List of Tables

Table 1 Core Principles and Objectives of the Physical and Health Education Curriculum Standards (Trial) for High Schools	13
Table 2 Cooperative Learning in Chinese Education Policies and Physical and Health Education Curriculum Standards	19
Table 3 Definitions of Cooperative Learning	23
Table 4 Enaction and Reflection From One Domain to Another in the Interconnected Model of Professional Growth	69
Table 5 Overviews of the Aims and Learning Activities Covered in Cooperative Learning Course	83
Table 6 Demographic Information of PETE Student Participants	85
Table 7 Demographic Information of Associate Teacher Participants	87
Table 8 The Data-Collection Timetable	90
Table 9 The Data Gathering Sources	91
Table 10 Procedures of Data Analysis	102
Table 11 Data Sources of the Current Study	103
Table 12 Provisional Codes Grounded in Literature on Cooperative Learning.....	106
Table 13 Sample of Coding Process Within In Vivo Coding, Descriptive Coding, and Subcoding	107
Table 14 Sample of Coding Process With Processing Coding	108
Table 15 Sample of Coding Process With Pattern Coding	109
Table 16 PETE Students' Development of the Five Key Elements of Cooperative Learning	122
Table 17 PETE Students' Definitions of Cooperative Learning.....	123
Table 18 PETE Students' Development of the Five Key Elements of Cooperative Learning	144
Table 19 Criteria Designed by the PETE Students for Group Composition.....	156
Table 20 Group Size Defined by the PETE Students for Group Composition.....	157
Table 21 The Seven-Step Structure of Using the Learning Teams to Implement Cooperative Learning in Physical Education	160
Table 22 Roles Designed by the PETE Students to Promote Positive Interdependence	166

List of Figures

Figure 1 Curriculum Structure of Chinese Physical Education Undergraduate Majors	9
Figure 2 Key Competencies for Physical and Health Education in High Schools	14
Figure 3 Structure of Physical and Health Education Curriculum of High Schools.....	15
Figure 4 The Interconnected Model of Professional Growth	66
Figure 5 Examples of Change Sequences and Growth Networks	71
Figure 6 Sample of Coding Cycle From Categories to an Initial Theme	110
Figure 7 PETE Students' Implementation of the Pair-Check-Perform.....	164
Figure 8 Task Sheet With the Definition of Role Responsibility Designed by Hang	169
Figure 9 PETE Students' Growth Network in the Cooperative Learning Professional Learning	207
Figure 10 The PETE Students' Development During Cycle 1 Learning in the Cooperative Learning Course.....	208
Figure 11 The Change Sequence Signifying the Interaction Between PETE Students' Initial Understanding of Cooperative Learning and Microteaching Activities	218
Figure 12 The Change Sequence Signifying the Mechanism of PETE Students' Beliefs About Implementing Cooperative Learning	221
Figure 13 The Change Sequence Signifying PETE Students' Reflection on the Consequences of Experimenting With Cooperative Learning	227
4Figure 14 The PETE Students' Development During Cycle 2 Implementation of Cooperative Learning in the School-Based Practicum	229
Figure 15 Additional Procedures of Cooperative Learning in Physical Education	233
Figure 16 The Growth Network Signifying PETE Students' Changed Perspectives on Group Roles	246
Figure 17 The Growth Network Signifying PETE Students' Changed Beliefs About the Purpose of PE.....	247
Figure 18 The Growth Network Signifying PETE Students' Shift From Directors to Facilitators.....	249
Figure 19 The Growth Network Signifying PETE Students' Appeal for a Community of Practice.....	251
Figure 20 An Operationalisation of PETE Students' Personal Domain at the End of Practicum	254

Figure 21 Additional Interaction in Cycle 2 Implementation of Cooperative Learning in the
Practicum258

List of Abbreviations

CF	Consent forms
CL	Cooperative learning
CLPL	Cooperative learning professional learning
CLVT	Cooperative Learning Verification Tool
CoP	Community of practice
IMoPG	Interconnected Model of Professional Growth
ITE	Initial teacher education
MoE	Ministry of Education
PDP	Professional development programme
PE	Physical education
PETE	Physical education teacher education
PIS	Participant information sheets
ZPD	Zone of proximal development

Chapter 1: Introduction

Introduction

This chapter provides background and contextual information pertinent to the current study. It starts with describing my path toward an interest in studying physical education teacher education (PETE) students' learning of cooperative learning (CL), followed by defining the purpose of the study, research rationale, and the specific research questions addressed by this study. Contextual information, including PETE programmes and the physical education (PE) system in the Chinese context, and CL in China, are described in detail. Finally, an overview of the thesis structure is presented.

My Path Toward an Interest in the Study

This thesis stems from my personal experience as a CL practitioner in PE classes, and the scarcity of research on PETE students' learning and teaching of CL globally.

After completing my master's degree in education from the School of Physical Education and Sport Science, South China Normal University in 2015, I became a PE teacher in Zhejiang Industry Polytechnic College (ZJIPC), teaching students Chinese traditional sports, such as tai chi and health qigong. At the start of my second year of teaching, I attended a professional development programme (PDP) with 21 novice teachers from various disciplines. The facilitator of the PDP introduced the latest national educational policies and the new round of teaching reform in the ZJIPC. He suggested we abandon the teacher-directed approach and employ some innovative teaching and learning approaches, such as blended learning, flipped classroom, and CL. We were also informed that there would be a teaching competition at the end of the academic year to evaluate the teaching performance of these creative pedagogies. Although we had a brief introduction and recommendation of

these innovative approaches, we received little training about why and how to revolutionise our teaching.

After discussion with my mentor teacher, I decided to respond to the call for innovative student-centred teaching by learning about and using CL. During my university courses, I had experienced group work and believed I had already learned about CL, that is, I just needed to put students in groups and work for a common goal. In each of my classes, I grouped students into several small groups of mixed abilities and gender. Students were assessed and rewarded based on their group performance. I usually started with whole-class instruction through direct explanation and demonstrations before asking students to practise and consolidate the previously taught movements in groups. During the group learning, as I walked around and provided students with assistance when it was requested, I was aware of the positive learning atmosphere in my classes. Most students actively engaged in the physical activities, unlike my previous courses in which students endeavoured to repeatedly reproduce my demonstration while standing in lines.

Positive feedback from my students and the teaching competition review committee further increased my confidence in initiating CL. The evaluation survey at the end of the semester suggested that the students valued my teaching practices. Most stated that they had enjoyed the PE classes, especially when they cooperated with their groupmates to acquire new movements. The judges of the teaching competition spoke highly of my teaching performance and the learning atmosphere in my CL class.

However, despite these positive comments, I was cognisant that there was still a lot to explore further. At a practice level, I was concerned about how to tackle the free riders who were passive and got to enjoy and benefit from the effort exerted by actively involved peers. I was also concerned about how to facilitate students' learning more effectively. At a theoretical level, I did not understand why CL made a difference, why grouping was

important, and how groups should be developed. I searched for books on CL in the library, such as the *Teaching Strategy of Cooperative Learning* (Y.-J. Liu & Gao, 2011) and the *Design of Cooperative Learning* (Sheng & Zheng, 2006). Y.-J. Liu and Gao (2011) introduced international researchers' propositions regarding the definition, theoretical foundations, key elements of CL, and some specific CL structures applicable in classroom teachings. I realised my understanding of CL was very superficial, and that, to my surprise, CL was more than grouping per se. However, even though these books helped improve my theoretical understanding of CL, practical issues associated with my use of CL in PE classes remained unresolved.

Because of my enthusiasm for, but confusion about, CL I decided to pursue a PhD, a theoretical and practical study of CL in PE, at the University of Auckland with Dr. Ben Dyson. During an initial review of the existing literature, I was surprised to find that while scholars and policymakers in different geographical or cultural contexts value CL highly for its educational benefits, it is often used superficially, or not at all, by teachers in schools throughout the world (Antil et al., 1998; Blatchford et al., 2003; Gillies & Boyle, 2011; Sharan, 2010). Galton and Hargreaves (2009) in the UK reported that while pupils were placed in groups for social reasons, they rarely worked together as groups. The authors concurred with previous research on CL in Australia (Gillies, 2003) that suggested that few schools systematically include CL in teachers' teaching practices. Almost 20 years on, it seems that little has changed. A recent study in Poland by Abramczyk and Jurkowski (2020) reported that although the participating teachers espoused the benefits of CL in students' academic and social learning, they used CL in class infrequently. Similarly, Fernández-Lozano et al. (2012) found that CL was seldom used and, when it was used, aligned basically with traditional group work with most expert students asked to assist those who had difficulties through pair work.

Many researchers have suggested that a contributory factor to the gap between the endorsement of CL and its poor implementation relates to practitioners' experience with, beliefs about, and knowledge of CL (Koutselini, 2009; Ovens et al., 2012; Sharan, 2010). For example, a teacher who believes that teaching is the transmission of a prescribed body of knowledge may practise CL with fixed content and little room for student contribution (Sharan, 2010). Fernández-Lozano et al. (2012) reported that the limited opportunity to learn about and experience CL in teacher education programmes constrained the participating teachers' use of CL.

To overcome the discrepancy between advocacy and implementation of CL, previous researchers have emphasised the importance of teacher education (Brody & Davidson, 1998; E. G. Cohen et al., 2004; Johnson & Johnson, 2017). They argue that initial teacher education (ITE) could help student teachers understand the theories and nature of CL, develop the required beliefs, values, and behaviour patterns, and engage in a community of practice (CoP) to implement CL authentically (Johnson & Johnson, 1994). Studies on CL in ITE, however, have focused primarily on learning areas such as science, mathematics, and English (S. Chan et al., 2021; McAlister, 2012; Wallestad, 2009). When I started this thesis, only two studies¹ focused explicitly on PETE students' learning and teaching of CL (R. Cohen & Zach, 2013; Zach & Cohen, 2012) with little known about how PETE programmes influence PETE students' perspectives on and ability to use CL. Recently, many scholars have highlighted the necessity for PETE to provide PETE students with learning opportunities to engage with different pedagogical models, such as CL (Dyson & Casey, 2012; Fletcher & Casey, 2014; Zach & Cohen, 2012). I believe that it is critically important to understand how students

¹ A few more papers have been published since Zach and Cohen's work on CL in PETE, which are reviewed in Chapter 2.

develop their understandings of, beliefs about, and pedagogical competency in PETE programmes.

Purpose of the Study

The purpose of this thesis is to explore and interpret PETE students' perspectives on and implementation of CL during cooperative learning professional learning (CLPL)² in their PETE programme. The first part of the study investigates PETE students' initial and developing beliefs about, understandings of, and experiences with CL during a CL course and while implementing CL in their school practicum. The second part of the study investigates how PETE students implement CL, focusing on their pedagogical strategies concerning CL, during their school practicum. The final part of this study examines the characteristics of the CLPL that have influenced PETE students' perspectives on and practice of CL.

This study will contribute to knowledge in regard to how CLPL in PETE programmes can influence PETE students' understanding and implementation of CL. It will provide valuable implications for developers of CLPL who want to understand the following issues: (1) the developmental changes in students teachers' knowledge, beliefs, and understandings of CL; (2) how student teachers put their knowledge and beliefs into practice in their practicum; (3) and how training programmes influence student teachers' most salient notions of an innovative model, such as CL in this study, when they are in contexts where the innovative model and student-centred teaching are newish to them.

Research Rationale and Research Questions

The importance of ITE programmes for teachers to learn and practise CL has been supported by substantive research (Baloche & Brody, 2017; E. G. Cohen et al., 2004; Jolliffe

² The CLPL was a part of a Chinese PETE programme. In this CLPL, a cohort of PETE students were involved in learning and experiencing a CL course. Following on the CL course, the PETE students had specific focus on CL during their practicum that followed. I will refer this ongoing process of learning and teaching in CLPL throughout the thesis. More details about the CLPL have been introduced in Research Setting in Chapter 3 Methodology.

& Snaith, 2017; Nattiv et al., 1991; Veenman et al., 2002). Extant studies generally reported the positive outcomes of CL courses in student teachers' knowledge of, attitudes towards, and confidence about their ability to use CL in classrooms (Bouas, 1996; Jolliffe, 2015; McAlister, 2012; Veenman et al., 2002). Few studies, however, have explored the process of student teachers' growth in their knowledge of, beliefs about, and experiences with CL (Ruys et al., 2010).

While a large body of research suggests that student teachers appreciate CL activities in ITE programmes and intend to implement CL in their future classes (Gisbert et al., 2017; Nattiv et al., 1991; Schniedewind, 2004), few empirical studies have examined how student teachers implement CL in their field experiences. Whether student teachers are capable of putting learnings about CL (e.g., understandings of key elements of CL) from their university classes into practice is unclear. A key challenge for ITE programmes is to enable student teachers to integrate academic and practical knowledge (M.-M. Cheng et al., 2010; Zeichner, 2010). Further empirical research is needed to investigate not only student teachers' perspectives of CL but also their practice of teaching with CL in real-world classrooms.

As research has demonstrated that preparing student teachers for CL in ITE programmes is essential, it is critical to understand what student teachers need and want to learn, what kind of instructional approach could be effective, and what helps sustain effective implementation of CL (Baloche & Brody, 2017). An investigation of student teachers' shared perspectives of their learning experiences and practice of CL can contribute to the literature in the field. Researchers and teacher educators should therefore reflect on their own pedagogical practices to improve student teachers' preparation for CL (Dyson, Howley, & Shen, 2021a; Todd et al., 2016).

Research on CL in ITE programmes has generally focused on learning areas such as science, geography, and English (S. Chan et al., 2021; McAlister, 2012; Tochon & Gwyn-

Paquette, 2003; Wallestad, 2009). Although there are few insights into CL in the field of PETE, CL has been recognised as a significant pedagogical model in moving beyond the dominant multiactivity, physical education-as-sport-techniques approach in the discipline of PE (Casey & Kirk, 2021). There is substantial evidence demonstrating CL's contribution to students' cognitive, physical, social, and emotional learning in PE classes (Casey & Goodyear, 2015; Dyson, Howley, Shen, 2021a). To establish effective CL environments requires coherence and continuity in teacher education (Legrain et al., 2021). A scarcity of research indicates there is a need for studies focusing on PETE students' learning of CL in PETE programmes.

CL has been an established and espoused policy in education reforms in China for a long time. There is a broad agreement that any reform designed to make fundamental changes requires the active involvement of teachers (Y. Xu, 2009). As PETE students (i.e., future PE teachers) play an essential role in implementing new educational visions and curriculum standards, Chinese PETE programmes need to support PETE students' professional learning of innovative teaching models.

Moreover, Chinese PE scholars have generally utilised quantitative methods to assess the feasibility and validity of CL as a pedagogical strategy for teaching various sports to students (for example, see Guan, 2015; J.-F. Lin, 2009). However, to thoroughly understand and interpret Chinese perspectives and the pedagogical use of CL, more qualitative studies are needed to capture how individuals make sense of these experiences from diverse perspectives (Corti & Thompson, 2006; Pope, 2006).

To investigate how PETE students develop their perspectives on CL and their practice of CL through CLPL, three key research questions are asked in this thesis:

1. What are PETE students' perspectives on cooperative learning throughout cooperative learning professional learning?

2. How do PETE students implement cooperative learning during their practicum experience?
3. What characteristics of cooperative learning professional learning influence PETE students' perspectives on and practices of cooperative learning?

Research Context

A study of student teachers' learning process in isolation from the context in which it occurs cannot be comprehensive because, "learning is an integral part of generative social practice in the lived-in world" (Lave & Wenger, 1991, p. 35). The social, cultural, institutional, and physical contexts in which student teachers are situated have a crucial impact on their development (Clarke & Hollingsworth, 2002). The section that follows the context of the current study is provided to present a background to Chinese PETE students' developmental changes in their perspectives on and practice of CL. The context is a Chinese PETE undergraduate programme and physical and health education classrooms in a Chinese high school in which the PETE students teach with CL.

Bachelor of Physical Education Teacher Education in China

Although PETE was first officially recognised as a learning area in ITE in 1988 (X.-L. Zhang & Yang, 2008), it has developed mainly in the last 3 decades. Due to the long-term shortage of PE teachers in China, PETE has grown faster than other PE undergraduate majors (i.e., coaching, social sports guidance and management, martial arts and traditional Chinese exercises, exercise and sports sciences, sports medicine, and sports recreation) in colleges/universities across China (Huang et al., 2016; J.-H. Wang et al., 2017). According to the *National Standards of Teaching Quality for Physical Education/Sports in Higher Education* document issued by the People's Republic of China Ministry of Education's (MoE) Physical Education Guidance Committee (MoE, 2014a, p. 77), the goal of PETE major is to:

Master theories and methods of modern education, basic theory and methods of physical education curriculum, teaching, physical activity outside physical education classes, and intermural sports; possess specific motor skills and strong teaching ability, and competent physical education teachers.

PETE students are expected to become professionals with “one specialty but with multiple abilities” (MoE, 2012, p. 1). PETE undergraduates in China are qualified to teach in both elementary and secondary schools, unlike some other countries, such as New Zealand, where PETE programmes focus specifically on preparing future secondary school PE teachers (Philpot, 2016).

Figure 1

Curriculum Structure of Chinese Physical Education Undergraduate Majors

General Education Courses	Major-specific Courses	Practice Courses
<ul style="list-style-type: none"> • Required courses • Selective courses determined by college/university 	<p>7+3+X model</p> <ul style="list-style-type: none"> • Basic courses (required) • Major-oriented courses (required & elective) • Major development courses (elective) 	<ul style="list-style-type: none"> • On-site observation • Practicum • Social practice • Innovation and entrepreneurship practice • Design and writing of thesis • Academic communications

In China, the curriculum structure of PETE undergraduate programmes requires students to take several general education courses, major-specific courses, and practice courses over 4 years (see Figure 1). Some of the compulsory general education courses include courses prescribed by the MoE (2014a), such as ideological and political theory, military doctrine and training, college English, and basic computer applications. Individual

colleges and universities may have other required and elective courses for undergraduates according to their own district characteristics and features.

The 7+3+X model is used to balance the required knowledge and skills specific to the PETE major and the features of all colleges and universities (Huang et al., 2016). In Figure 1, “7” refers to the seven basic courses that PETE students are required to take: introduction to sports, exercise anatomy, exercise physiology, sports psychology, sports sociology, health education, and research methods in sports sciences. The number “3” refers to the three most important core major-oriented courses, while “X” refers to the major-oriented courses that are determined by the specific PETE major according to its goals. The three, core major-oriented courses for PETE students are school physical education, physical education curriculum and pedagogy, and motor skills learning and control. The “X” course could be selected based on the national standards (MoE, 2014a) or features of the college or university. Through the core major-oriented courses, PETE students are expected to acquire a fundamental knowledge of pedagogy and psychology, fundamental theories of school PE and sports, and fundamental theories of extracurricular activities, coaching, and competition (Huang et al., 2016). In addition, some major development courses are based on the national standards (MoE, 2014a) and others specific to the college or university are available for PETE students to select according to their own interests. The CL course during the CLPL in this thesis is one of the major development courses in the participating university.

In addition to these university-based courses, PETE students are expected to take courses such as on-site observation, practicum, and research training (MoE, 2014a). On-site observation often takes place in the third year for 1–2 weeks to make PETE students familiar with the context of school PE. In the fourth year, PETE students are required to complete a school-based practicum for 12–20 weeks. The predominant form of supervision in Chinese PETE programmes is a clinical supervisory approach with three stages: preconference,

observation, and postconference (Glickman & Bey, 1990; Metzler, 1990). The supervisors are usually a university teacher educator and an associate teacher in the practicum school who both play an important role in assessing PETE students' practicum performance (Huo, 2017; S.-Y. Li et al., 2003).

Physical and Health Education in Chinese High Schools

Over the past 2 decades, curriculum standards for physical and health education in Chinese high schools have had two important rounds of reform. The first reform took place between 2000 and 2017, and the second from 2017 to the present. The development of the physical and health education curriculum standards is closely aligned with the Chinese social needs, education visions, and curriculum policies during the given periods. Thus, I introduce each of the curriculum standards alongside an analysis of China's social and educational background.

The first round of physical and health education curriculum reform (2000–2017) in high schools included four significant changes in the focus of the programmes, the name of the document, the guiding ideology, and the educational vision. First, the concept of “physical and health education” replaced the name of “physical education” and was, for the first time, officially used in the *Physical and Health Education Syllabus for High School (Trial Revised)* (MoE, 2000). The change in the documentation name demonstrated the shift in school PE programmes from a traditional sports-oriented and performance-based focus to a more health-oriented focus (Jin, 2013). The focus on health promotion in this syllabus was attributed to the general decline in students' strength, endurance, and lung capacity and the rising rates of obesity and myopia among Chinese young people since the 1990s (MoE, 2015).

Second, the name of the document was changed from a “syllabus” to “curriculum standards” with the release of *Compulsory Education and High School Education Physical*

Education Curriculum Standards (Grade 1–6) & Physical and Health Education Curriculum Standards (Grade 7–12) (Trial) (MoE, 2001a).

Third, the 2001 curriculum standards (trial) defined the guiding ideology of “Health First”. Health from the policymakers’ view was not only a lack of illness but also included health in multiple dimensions in terms of physical, mental, psychological, and social aspects (MoE, 2001a). The physical and health education curriculum standards have five key areas of learning: sports participation, sports skills, physical health, mental health, and social adaptation (see Table 1 below).

Last, but not least, the first round of physical and health education curriculum reform aimed to focus on developing well-rounded individuals and established the education vision of “student development as the key” (G.-Y. Liu & Li, 2008). The educational ideas behind this round of curriculum reform that commenced in 1999 throughout the Chinese educational settings (Dello-Iacovo, 2009) are generally referred to as the shift from examination-oriented education to *suzhi jiaoyu*³.

³ *Suzhi jiaoyu* has been translated to quality education, competence education, essential qualities-oriented education, or character education. The multitude of translations reflects the inability of a few English words to convey the broader connotations of the term *suzhi* in the Chinese context. Therefore, the original term of *suzhi jiaoyu* is used in the thesis.

Table 1

Core Principles and Objectives of the Physical and Health Education Curriculum Standards (Trial) for High Schools

Core principles	
1. Adhere to the guiding ideology of “Health First” and promote students’ healthy growth	
2. Stimulate students’ interests in sports and cultivate students’ awareness of lifelong physical activity	
3. Appreciate the notion of student-centre learning to promote students’ learning initiatives and capacity	
4. Pay attention to individual differences and needs to ensure every student benefits	

Objectives	
1. Sport participation	1a. Positive attitude towards and active engagement in physical activities and exercises 1b. Scientific methods for participating in physical activities and exercises
2. Sports skills	2a. Obtain basic knowledge of sports 2b. Master and apply sports techniques and methods 2c. Engage in physical activities and exercises in a safe way 2d. Acquire basic skills for outdoor physical activities
3. Physical health	3a. Develop health-related physical fitness 3b. Be aware of body and health 3c. Understand the impact of nutrition, environment, and poor behaviour on health
4. Mental health	4a. Understand the effects of physical activities on mental health and the relationship between physical and mental development 4b. Recognise the relationship between physical activities and self-esteem and self-confidence 4c. Learn to regulate emotions through physical activities 4d. Demonstrate strong resilience
5. Social adaptation	5a. Develop harmonious interpersonal relationships, a spirit of cooperation, and sports ethics 5b. Learn how to acquire knowledge about physical education and health in modern society

Based on the preparatory work in the first round of curriculum reform, the announcement of the latest *Physical and Health Education of High Schools (2017 Edition)* retained the guiding ideology of “Health First,” which aimed to develop well-rounded individuals (MoE, 2017). In contrast to the 2001 curriculum standards, the 2017 version added the concept of “subject key competencies” to signify the main objectives of discipline education in developing individuals’ values, essential characters, and key competencies (Ji, 2018). The political background to the promotion of key competencies was the advocacy of *lide shuren* as the fundamental mission of education in China since the *Outline of National Plan for Medium and Long-Term Education Reform and Development (2010–2020)* published by the Chinese State Council in 2010. The term *lide shuren* generally means that educational enterprise should develop well-rounded individuals, emphasising the cultivation of individuals’ sense of social responsibility, integrity, creative minds, and practical competency (MoE, 2014b). The key competencies for physical and health education encompass three main aspects: athletic competencies, health-related behaviours, and sports ethics (MoE, 2017). Figure 2 illustrates the specific objectives under each of the three main aspects of key competencies.

Figure 2

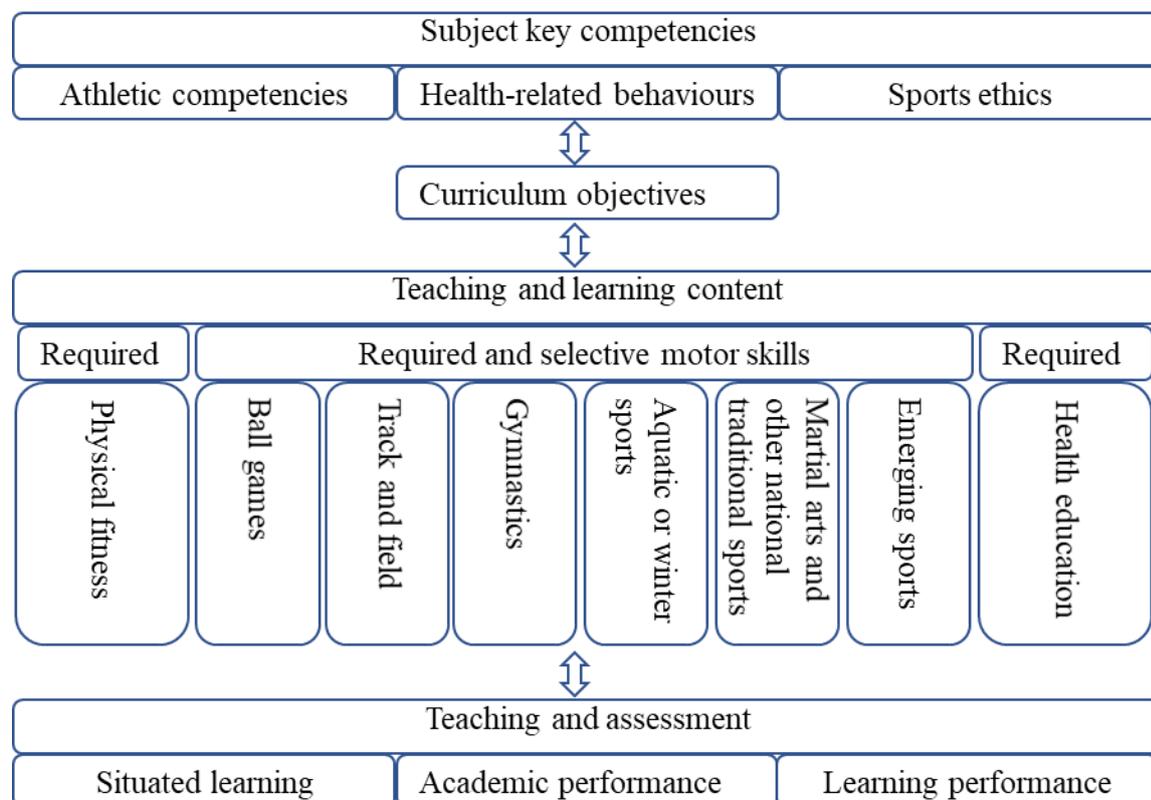
Key Competencies for Physical and Health Education in High Schools

Athletic Competencies	Health-related Behaviours	Sports Ethics
<ul style="list-style-type: none"> • Develop physical fitness • Apply motor skills • Improve cognition of sports 	<ul style="list-style-type: none"> • Develop exercise habits • Improve the ability to regulate emotions • Improve the ability to adapt to new environment 	<ul style="list-style-type: none"> • Develop proactivity, self confidence, and self-esteem • Respect and follow the rules • Develop the sense of social responsibility

As well as the identification of key competencies, the 2017 curriculum standards illustrated a comprehensive structure of physical and health education courses for high schools (see Figure 3). Notably, the most recent curriculum standards stressed the equal status of sports learning, physical fitness, and health education in the process of physical activities and exercises (MoE, 2017). There is a clear expectation for PE teachers to cultivate students' interests in sports, their sports specialisation, and their exercise habits to lay a foundation for students' lifelong participation in physical activity (MoE, 2017). Moreover, under the banner of developing well-rounded individuals, the content of physical and health education teaching is required to shift from discrete sports to integration units and to respect students' needs and interests (C.-Z. Chen et al., 2020).

Figure 3

Structure of Physical and Health Education Curriculum of High Schools



Cooperative Learning in China

The concept of “cooperation” or CL, as noted previously, has long been established in Chinese educational philosophy, practices, policies, and physical and health education curricula. Several propositions in ancient Chinese masterpieces infer the idea of CL. For example, ancient Chinese people wrote in *Shi Jing • Wei Feng*⁴ that “有匪君子，如切如磋。” It means that the decent person stands there refined, like ivory polished, like precious stone finished, open and brave, highlighting the crucial role of discussion and mutual encouragement with others for being a knowledgeable person. In *Xue Ji*⁵, there was a saying that “独学而无友，则孤陋而寡闻。” It refers to that one studying alone without exchanges with others will be ignorant and ill-informed. This statement implies the importance of cooperation and discussion in the learning process and encourages learners to exchange personal experiences with others to improve learning efficiency. Besides, it was said in *Analects of Confucius*⁶ that “三人行，必有我师焉。” This means that “when walking with other people, I will always find a teacher among them,” thus stressing the importance and advantages of communication and interaction in the process of learning.

In addition, there is a long history of group-work practice that originated in Chinese education settings. In the earlier *Song* dynasty (960–1127 AD), Hu created the *Su Hu* pedagogy and grouped students based on their homogenous ability and interest, encouraging them to discuss, negotiate, and explore (X.-B. Gao, 2002). Another well-known Chinese

⁴ *Shi Jing* refers to the classics of poetry. It is the oldest existing collection of Chinese poetry, comprising 305 works dating from the 11th to 7th centuries BC. It is one of the “Five Classics” traditionally said to have been compiled by Confucius. It is a rich source of *chengyu* (four-character classical idioms) that are still a part of learned discourse and even everyday language in modern Chinese (X.-M. Wang, 2015).

⁵ *Xue Ji* is the work of Kele Zheng in Chinese Warring States Period (475–221 BC). It is the first Chinese article that comprehensively elucidates the objectives and benefits of education, the system of education and teaching, as well as teaching principles and methods. It also illustrates the status and functions of teachers and teacher–students relationships and student–student relationships (S.-L. Gao, 2016).

⁶ *Analects of Confucius* is an ancient Chinese book composed of a large collection of sayings and ideas attributed to the Chinese philosopher Confucius and his contemporaries. It has been one of the most widely read and studied books in China for the last 2,000 years, and remains a substantial influence on Chinese thought and values today (Analecst of Confucius, 2021).

educationist in the *Southern Song* dynasty (1127–1279 AD), Xi Zhu, highlighted the role of questioning, cooperation, and argumentation. He created and developed peer-assisted learning and reciprocal learning in his teaching (W.-N. Zhang, 2012). These forms of group work are regarded as the prototype of CL and are believed to be the foundation of the introduction of CL from the western world (J.-L. Liu, 2009; Y.-J. Liu & Gao, 2011).

Along with the increasing collision, and integration, of Chinese and western cultures, the theory and approaches of CL developed in the United States of America were introduced to China in the 1980s. Initially, several published papers were translated from Slavin's work about CL (Fu, 1982; Y.-W. Zhang, 1987). Subsequently, B.-P. Ding (1988) systematically reviewed and described CL in terms of the social background of CL in the US, the theoretical framework of CL, and the benefits of CL for students' social and academic learning outcomes. More importantly, he provided several practical guidelines about the implementation of CL, such as methods of group composition, teacher as a facilitator or consultant, and the design of group tasks. Since then, Chinese scholars have moved beyond translating and introducing CL in the theoretical lens to conducting a series of empirical projects on CL in local schools (Y.-J. Liu & Gao, 2011).

There are three significant research projects on CL that identify the localisation of CL in the Chinese context. First, the Hangzhou University (incorporated into the current Zhejiang University) conducted the Cooperative Learning and Small Group Teaching project in 1989 and did quasi-experimental research in a high school in Hangzhou (Sheng & Zheng, 2006). This intervention study highlighted students' proactivity and suggested a new teaching pattern to the traditional teacher-directed approach that included five procedures: the design of learning tasks for discussion, defining learning goals, small-group discussion, whole-class discussion, and teacher debriefing and assessment. Second, researchers from the Beijing Normal University explored the theoretical framework and learning objectives of CL, the

definition of cooperation and social skills in CL, the teacher's role in CL, CL methods and strategies, as well as Chinese students' cooperation conceptions and skills (Pei, 2005). The Institute of Education Science carried out another project on CL in Shandong from 1993 to 1999 that investigated the efficacy of CL with more than 100 elementary and middle schools across nine provinces in China (T. Wang, 1995).

With the growing number of CL researchers and practitioners, the Chinese National Cooperative Learning Research Committee was established in 1997 in Shandong, China (S.-Y. Ma, 1997). This committee facilitated a great deal of research on CL in China and supported several academic exchanges and communications between Chinese scholars and researchers in America, Canada, and Israel (Y.-J. Liu & Gao, 2011).

CL, thus, has gained attention from Chinese decision makers for more than 2 decades. A series of education policies and physical and health education curriculum standards in China has emphasised the use of CL (see Table 2), giving rise to the proliferation of CL in the Chinese school system (Dyson, Shen, et al., 2021). As mentioned previously, there have been continuous education reforms in Chinese general education and physical and health education. Alongside the new establishment of education vision and curriculum objectives, teachers' pedagogy has had to change to ensure that the reforms could make a difference (Ji, 2018; Jin, 2013). For example, the *suzhi jiaoyu* reforms attempted to cultivate students' creative, independent thinking skills; integrated practical skills; and teamwork spirit and cooperation competency (Chinese State Council, 1999). Thus, MoE directives ordered the traditional rote-learning, examination-oriented teaching methodology to be replaced by modern teaching methods, such as autonomous learning, CL, and inquiry learning (MoE, 2001b). Teachers are encouraged to employ these innovative methods so that students actively participate in the learning process, and develop their sense of inquiry and investigative strategies, and to encourage their communication and cooperation.

Table 2*Cooperative Learning in Chinese Education Policies and Physical and Health Education Curriculum Standards*

Reference	Policy document/curriculum	Relevant discourse
Chinese State Council (2001)	<i>The Decision of the State Council on the Reform and Development of Basic Education</i>	Teachers are encouraged to employ cooperative learning to promote mutual exchanges and development among students.
Ministry of Education (2001b)	<i>Outline of Basic Education Curriculum Reform (Trial)</i>	The curriculum reform aims explicitly to change from traditional receptive learning, rote learning, and mechanical training to students' active learning and inquiry in order to improve their communication and cooperation competency.
Chinese State Council (2010)	<i>Outline of National Plan for Medium and Long-Term Education Reform and Development (2010–2020)</i>	Advocates for teaching to be heuristic, exploratory, discussion based, and participatory and help students learn how to study.
Ministry of Education (2011, p. 44)	<i>Compulsory Education Physical and Health Education Curriculum Standards</i>	PE teachers should create a cooperative learning environment and allow students to study in small groups ... students are likely to improve their motor skills and social, interpersonal skills in the process of cooperative learning.
Ministry of Education (2014b)	<i>Opinions on Deepening Curriculum Reform and Implementing the Fundamental Tasks of Lide Shuren</i>	The cultivation of students' talents should be further deepened, while the approaches of self-autonomous learning, cooperative learning, and inquiry learning should be encouraged and promoted.
Ministry of Education (2017, p. 3)	<i>Physical and Health Education Curriculum Standards of High Schools (2017 Edition)</i>	It is proposed the diversified teaching approaches ... have an emphasis on students' autonomous learning, cooperative learning, and inquiry learning.

An Overview of the Thesis

This thesis has eight chapters. Chapter 1 has provided an introduction to the study, including an explanation of my interest in the study, the research purpose and rationale, and the research questions. It also describes the research context of the Chinese undergraduate PETE programmes, physical and health education curriculum in Chinese high schools, and CL in China.

Chapter 2 reviews the relevant literature on the definitions and theoretical underpinnings of CL, CL in ITE programmes, CL in the discipline of PE, and CL in the Chinese PE system. The theoretical framework of the current study is also presented.

Chapter 3 outlines the research methodology. It presents an overview of the interpretative research paradigm, qualitative methodology, and case study research design, which is followed by a description of the research settings, the participants, and the researcher's role. Detailed descriptions of data collection and data analysis are provided, and the methods used to ensure the trustworthiness of the study are summarised.

The findings are presented in the following three chapters: Chapter 4 reports findings that aligned with the first research question, "What are PETE students' perspectives on cooperative learning throughout cooperative learning professional learning?" Chapter 5 addresses the second research question, "How do PETE students implement cooperative learning during their practicum experience?" Chapter 6 presents findings of the third research question, "What characteristics of cooperative learning professional learning influence PETE students' perspectives on and practices of cooperative learning?"

Chapter 7 discusses the research findings through the lenses of the existing literature and the Interconnected Model of Professional Growth (Clarke & Hollingsworth, 2002) described in Chapter 2. Chapter 8 concludes the thesis by reviewing the contributions, practical implications, limitations, and recommendations for further research.

Chapter 2: Literature Review and Theoretical Framework

Introduction

In this chapter, I consider a range of literature on the theories and research, that have informed this study. The literature review begins with a detailed overview of CL including the definition and theoretical foundations of CL. Subsequently, literature advocating for the inclusion of CL in ITE programmes is examined. I then review international research that investigates the learning outcomes of CL, practitioners' perspectives on CL, and the practice of CL, in relation to PE and PETE. Chinese literature on CL and the effectiveness and implementation of CL in the Chinese context in PE is also reviewed. Finally, the theoretical framework of this thesis is presented.

Cooperative Learning

CL has been an extensive field of inquiry in education since in the 1970s, especially in the US. Multiple factors have contributed to the popularity of CL: for example, CL addresses and integrates multiple educational goals in relation to students' academic performance and cognitive processes, as well as social and interpersonal development (Antil et al., 1998; Johnson et al., 2000; Siegel, 2005). A conceptual shift in the nature of human learning also promoted the prominence of CL; that is, the belief that learning is not a simple case of knowledge transmission from expert to novice, it is the social construction of knowledge (Vygotsky, 1978). As Dewey (1972) suggested, each child "may contribute to the common stock, while he [*sic*], in turn, participates in the production of others" (p. 64). Through encouraging greater interaction and communication among students, CL has fostered new ideas about peer-mediated instruction. A further cause of the growth of CL has been the acknowledgement that in CL classes individual differences serve to promote

learning, and that student learning can be maximised for all classroom participants (E. G. Cohen, 1994a; Johnson & Johnson, 1989; Slavin, 1996).

Although CL as an instructional model has been advocated for and studied for nearly 5 decades, individual scholars have defined CL in slightly different ways (see Table 3). For example, some researchers defined CL as a learning activity (E. G. Cohen, 1994b), while others viewed CL as an instructional technique (Slavin, 1980), a method (Brody & Davidson, 1998), or strategy (H.-Y. Wang, 1993; T. Wang, 1994), each with a focus on the act of teaching. In the field of PE, CL has been described as a pedagogical model to highlight the interdependence and irreducibility of learning, teaching, curriculum, and context (Dyson & Casey, 2012; Haerens et al., 2011). Defining CL as a pedagogical model focuses on the inclusive and comprehensive nature of learning in which the teacher and students are co-learners co-constructing knowledge in CL classes (Casey & Kirk, 2021). The present study focuses on a cohort of PETE students' perspectives on and practices of CL in PE classes. I follow, therefore, Dyson and Casey's (2012) definition to investigate PETE students' beliefs, understandings, and knowledge of CL, and their use of CL in practice.

Table 3*Definitions of Cooperative Learning*

Researchers	Descriptions
Slavin (1980, p. 315)	CL refers to “classroom techniques in which students work on learning activities in small groups and receive rewards or recognition based on their group’s performance.”
Johnson et al. (1991, p. iii)	CL “is the instructional use of small groups so that students work together to maximise their own and each other’s learning.”
H.-Y. Wang (1993, p. 2)	CL refers to “a set of systematic instructional strategies that use small groups as the organisational form, based on specific cooperative procedures and methods to stimulate students learning together in the heterogeneous groups, and contribute to students’ cognitive and affective development through cooperative interpersonal interactions.”
E. G. Cohen (1994b, p. 3)	CL “will be defined as students working together in a group small enough that everyone can participate on a collective task that has been clearly assigned. Moreover, students are expected to carry out their task without direct and immediate supervision of the teacher.”
T. Wang (1994, p. 63)	CL “is a set of systematic instructional strategies using group reward to motivate students to cooperate in heterogeneous groups for achieving the common goals.”
Brody & Davidson (1998, p. 8)	CL most commonly refers to “a method of instruction that organises students to work in groups toward a common goal or outcome or share a common problem or task in such a way that they can only succeed in completing the work through behaviour that demonstrates interdependence while holding individual contributions and efforts accountable.”
Dyson & Casey (2012, p. 173)	CL “in physical education could be tentatively defined as a pedagogical model that, through its five elements, explores the social-cultural significance of human movements through the use of individual- and group-learning outcomes to enhance student development, interaction, and task-mastery with the physical, cognitive, and affective domains.”

The Theoretical Foundations of Cooperative Learning

Three main theories explain CL: social constructivist theory (E. G. Cohen, 1994b; E. G. Cohen & Lotan, 2014), social interdependence theory (Johnson & Johnson, 2009), and behaviourist theory (Slavin, 1996).

Social Constructivist Theory

Social constructivist theory arose from the work of child development psychologist Lev Vygotsky. Through the lens of social constructivist theory, students are viewed as active, social, and creative learners who construct their own knowledge through social interactions with peers and the teacher in a range of environments (Rovegno & Dolly, 2006; Woolfolk, 2013). Social constructivist theory emphasises three key principles of cognitive development (Sivan, 1986). First, cognitive activity is a dynamic process that develops through interaction with more skilled and mature individuals within a society (Vygotsky, 1978). Second, the tools, signs, and knowledge that facilitate learners' psychological processes arise within the social context and the culture (Sivan, 1986). Third, learning is the outcome of a process of socialisation that occurs "through the construction and negotiation of mutually shared understanding of the sociocultural environment" (Sivan, 1986, p. 214).

From the social constructivist perspective, four specific features of assisted learning distinguish it from other means of socialisation. First, *scaffolding* is where a more experienced individual provides support to extend the learner's knowledge and skills to a higher level of competence (Palincsar, 1998; Vygotsky, 1978). Scaffolding occurs in the *zone of proximal development (ZPD)*, that is, the distance between the level at which a learner can solve a problem or acquire new knowledge and/or skills independently and the level at which a learner can solve the problem with help of a more capable person (Vygotsky, 1978). The concept of the ZPD explains how individuals acquire new knowledge with the assistance of more capable others and "allow[s] children to participate in activities that would be

impossible for them alone” (Rogoff, 1990, p. 16). Rather than viewing socialisation as changes in behaviours, social constructivists perceive the process as *internalisation*, in which a learner transforms social-cultural knowledge to individual knowledge which becomes an internalised capacity (Sivan, 1986; Vygotsky, 1978). Ultimately, assisted learning is likely to lead to *independent functioning* that transfers the responsibility of meaning-making to the learners themselves (Sivan, 1986).

The fundamental assumption of social constructivist theory in relation to CL is that interaction between students, around appropriate tasks, accounts for their mastery of knowledge. With an emphasis on discovery resulting from engaged, active, and creative learners, social constructivists argue that a more productive way for students to develop knowledge and understanding is to interact with others through cooperative activities (Rovegno & Dolly, 2006; Vygotsky, 1978). Compared to learning individually, students of similar ages, but with different experiences or academic performance, are more likely to achieve with peers who model more advanced behaviours, thus operating within their ZPD (Kuhn, 1972; Vygotsky, 1978). In CL situations, when students complete projects or activities in groups, the internalisation of knowledge occurs for each group member at a different rate according to their own experience. Internalisation occurs more effectively when social interaction occurs (Powell & Kalina, 2009; Vygotsky, 1978).

From the perspective of social constructivist theory, three key elements should be considered in relation to learning through CL: the delegation of teacher’s authority, ill-structured problems and group tasks, and the interaction resulting from interdependence. As individuals construct knowledge through social interaction, students are expected to carry out their tasks without the direct and immediate supervision of the teacher (E. G. Cohen & Lotan, 2014). The teacher should encourage students to solve problems on their own, with peer support, rather than the teacher providing the solution. Group members become closely

linked when they listen to others, share learning materials, explain their own opinions, give assistance and feedback, make suggestions, and make joint decisions. To enhance substantive and high-quality interactions among students, group tasks in CL settings should be complex, with ill-structured problems that require group members with multiple abilities and insights (E. G. Cohen & Lotan, 2014). E. G. Cohen (1994b) investigated different kinds of discourse and interactions among small group members to identify the conditions under which group work could be most productive. The findings of this research indicated that when students are given an ill-structured problem, group-work productivity depends heavily on interaction. The reason appears to be that the simple frequency of interaction does not guarantee students' achievements. But, if given a genuine group task and an ill-structure problem, students are likely to provide detailed and elaborate explanations for group members, which will facilitate cognitive development following high-level thinking and positive problem-solving performance (E. G. Cohen, 1994b; Ross, 2008).

Social Interdependence Theory

Social interdependence theory has educational, psychological roots that can be traced back to one of the founders of the Gestalt psychology school, Kurt Koffka, who stated that groups are dynamic wholes (Johnson, 2003). Kurt Lewin refined Koffka's notion, arguing that the essence of groups is interdependence among members (Johnson, 2003). Lewin's thinking was extended by Morton Deutsch (1962), who put forward that the types of interdependence could be divided into positive interdependence, negative interdependence, and no interdependence. Deutsch's student, David Johnson, and his brother, Roger Johnson, first proposed and developed the social interdependence theory in the 1970s. They conducted a number of quantitative studies to validate the variables that mediate the effectiveness of cooperation and competition. Based on Deutsch's (1949, 1962) work, Stanne et al. (1999) suggested that the premise of social interdependence theory is that the ways in which

participants' goals are structured determines how they interact, and the interaction pattern determines the outcomes of the situation.

Johnson and Johnson (1989) proposed that the process of controversy, debate, and perspective seeking exists during CL tasks, which can lead to students' development. In a cooperative situation, individuals first tend to organise information and derive a conclusion, and then cognitively reflect on and elaborate their own position before presenting it. Once they are challenged by opposing views, individuals are likely to be motivated to learn other positions, develop understanding, and appreciate others' views. Afterwards, students may experience conceptual conflict, uncertainty, and epistemic curiosity, motivating them to search for more information and reconceptualise their conclusions. Before arriving at new conclusions, individuals might use a "high-level thinking and reasoning process, critical analysis of information, and both deductive and inductive reasoning" (p. 103). Not only does this process positively influence students' cognitive learning, but it also plays an essential role in group productivity and achievement.

According to social interdependence theory, the effectiveness of CL relies primarily on positive interdependence. Positive interdependence exists when individuals perceive that they could achieve their own goals only if they cooperatively link with others' goals. They, therefore, interact with others, following promotive patterns and experiencing positive psychological processes, such as positive cathexis, substitutivity, and inducibility (Deutsch, 1949, 1962). The positive psychological processes ultimately result in individuals' efforts to achieve positive relationships and psychological health (Johnson & Johnson, 2009; Johnson et al., 1989). Specifically, in cooperative situations, individuals should be positively interdependent. If there is positive interdependence among group members, individuals are believed to interact in a promotive fashion with others to achieve the group goals, moving

from self-interest to mutual interest (Slavin, 1980). In this way, individuals are likely to provide their peers with encouragement and facilitation to achieve the group's goals.

Five key elements of CL align with the social interdependence theory. The first and foremost is *positive interdependence*, when individuals “perceive that they are linked to group members in such a way that they cannot succeed unless other group members do” (Dyson et al., 2010, p. 113). Positive interdependence is thought to motivate individuals to try harder, facilitate the development of new insights, and promote higher achievement and greater group productivity (Johnson & Johnson, 2009). There are several ways of structuring independence: setting goals, offering rewards and resources, structuring roles, and promoting task independence (Johnson & Johnson, 2005; Johnson et al., 1989). The second key element is *individual accountability and personal responsibility*, that is, when individuals take responsibility for completing their part of the task for their group. This element was included to avoid the “free-rider” or “social loafing” phenomenon that can occur in cooperative settings (Johnson & Johnson, 1999, 2009). The third element of *promotive interaction*, that is, group members “encouraging and facilitating each other’s efforts to complete tasks and achieve to reach the group’s goal” (Johnson & Johnson, 2002, p. 97) is also explicated. Johnson and Johnson (2009) proposed that group members must have *social skills*, the fourth element, for cooperation before cooperating effectively. Social skills required for CL include communication skills, trust, acceptance, and support, as well as skills to solve group conflicts constructively (Johnson & Johnson, 2009). *Group processing*, the fifth key element of CL, occurs when group members assess the process of their learning and group functioning (Johnson & Johnson, 2009). During group processing, individuals can clarify the group’s goals, understand their own and peers’ contributions, and increase collective efficacy and members’ involvement in cooperative efforts (Johnson & Johnson, 2009).

Behaviourist Theory

Behaviourist theory proposes that behaviours are reflexes produced by a response to certain stimuli in the environment. Skinner (1983), one of the most famous proponents of behaviourism, argued that “my behaviour at any given moment has been nothing more than the product of my genetic endowment, my personal history, and the current setting” (p. 25). In contrast to the assumption that humans possess free will and are moral thinking entities, behaviourists claim that external stimuli and responses can generate valid knowledge (Boghossian, 2006; Mutch, 2005). From a behaviourist perspective, extrinsic stimulus or rewards play a critical role in encouraging students to express overt behaviours (Skinner, 1968; Thanh, 2013). Behaviourism argues for a direct instruction form of teaching (Burton et al., 2004; Rout & Behera, 2014).

Slavin (1996), a well-known proponent of CL, adopted the key views of the behaviourist theory; he suggested that it was the group incentive that induced students’ goal-directed behaviours in CL. Once there is a group contingent, for example, group rewards are given based on the group members’ behaviours, while individuals are motivated to help and encourage group members to provide social reinforcement (e.g., praise, encouragement) because of their own interests. Consistent evidence suggests that a cooperative reward structure is closely and positively linked to social connectedness (Slavin, 1991, 1996). Social connectedness refers to “the degree to which an individual feels attracted to others and feels and acts the part of a valued group” (Slavin, 1977, p. 644). Slavin (2010) argued that group rewards for cooperation would contribute to interpersonal attraction, friendliness, positive group evaluation, helpfulness, and so forth.

Drawing on these three theories, CL protagonists developed four separate approaches to maximise learning and achievement within CL. Building on the social interdependence theory, Johnson and Johnson (2009) developed the conceptual approach and suggested that

teachers can learn the five key elements of structuring CL and then adapt these to fit their own situations and classrooms. They proposed that the key process and structures of CL can be adapted to any curriculum context (Johnson & Johnson, 2009). The focus of the conceptual approach is to encourage students to work cooperatively and collaboratively. Slavin (1996) built on the behaviourist theory and developed a curricular approach to develop curriculum-specific structures designed to support learning in heterogeneous classrooms. Similar to Slavin, S. Kagan and Kagan (2009) developed a structural approach, emphasising the use of specific and well-defined strategies or techniques as a method for teaching through CL. In contrast, E. G. Cohen (1994a) and her colleagues built upon the social constructivist theory and developed a complex approach that is the least structured in adherence to the formalised prescription of elements or structures (Dyson & Strachan, 2000).

While it is beyond the scope of the present thesis to explore the four approaches to CL in detail,⁷ the conceptual approach (Johnson & Johnson, 2009) has been applied as the overarching theoretical framework for CL in PE (Casey & Quennerstedt, 2020; Goodyear, 2013). However, Casey and Quennerstedt (2020) cautioned that there is a potential risk in using Johnson and Johnson's five elements exclusively; they advocate for alternative views to those of Johnson and Johnson to be considered when using CL in PE (Casey & Quennerstedt, 2020; Darnis & Lafont, 2015).

In this thesis, I situate CL within both social constructivist theory and social interdependence theory. The social constructivist theory helps explain how students make sense of information and construct knowledge through social interaction with group members. Complementing social constructivism, the social interdependence theory provides insights into students' cognitive processes when interacting with peers.

⁷ For more details about the four approaches to CL, see Casey (2010), Dyson and Casey (2012), and Goodyear (2013).

Cooperative Learning in Initial Teacher Education

An analysis of extant CL literature on ITE programmes raises some significant concerns that will be explored in the following three sections within this chapter. These include: a rationale for preparing student teachers with CL; content and pedagogy for preparing student teachers with CL; and student teachers' practice of CL in school placements.

Rationale for Preparing Student Teachers With Cooperative Learning

The philosophical rationale for CL rests on the philosophy of Dewey (1938) and his beliefs that "education, to accomplish its ends both for the individual learner and for society, must be based upon experience" (p. 89). Similarly, Y. Yang (2011) proposed that a teacher's professional knowledge is based on personal experience, which continuously and actively constructs and transforms prior experiences into new living practices through definition, internalisation, and a series of complex accumulation and restructuring processes. With ITE students, their life experiences together with experiences of being educated provide a crucial foundation and filter through which they learn to become teachers (Richardson, 1996).

It has been argued that familiarising and training student teachers to implement CL during ITE is important (E. G. Cohen et al., 2004; Ruys, 2012). A fundamental aspect in justifying the teaching of CL in ITE is that ITE programmes can help student teachers to acknowledge and reflect on their beliefs about teaching and to learn new ways of teaching. Pescarmona (2017) carried out an ethnographic study with a group of student teachers in Italy who learned about and experimented with *complex instruction* (E. G. Cohen, 1998). The results of this study showed that complex instruction empowered the student teachers to investigate their beliefs and propositions relevant to teaching and learning and be more aware of equal participation in class. Likewise, student teachers in Wallestad's (2009) study were observed to change their beliefs about quality teaching from believing initially in the

importance of learning individually to favouring learning together due to the learning and microteaching experience in the methods course about CL.

Experience with and training for CL has also been shown to contribute to student teachers' expanded knowledge of CL. Ruys (2012) examined the changes in 210 second-year student teachers' knowledge of CL over one year of teacher education. The author reported that although the participating student teachers experienced difficulty remembering the key elements of CL, they made significant progress in the pedagogical knowledge required for the implementation of CL. Ledford and Warren (1997) used the evaluation scale and concept maps to investigate the changes in perceptions of CL before, during, and after several CL activities of 128 senior-year student teachers. The authors reported that student teachers exhibited an understanding of CL as a result of their experience with and reflection on CL, in contrast to their initial misunderstanding of CL. However, these papers fail to provide comprehensive insights into the development process of student teachers' perspectives on CL. The question as to how these student teachers developed their understandings and beliefs about CL remains less clear.

Furthermore, research has indicated that the inclusion of CL in ITE programmes increased student teachers' desire to use CL in their future teaching. Gisbert et al. (2017) conducted mixed-methods research in Spain to examine student teachers' expectations of CL use. The findings indicated that CL-related conceptual training and experience in the university classroom directly led to improved expectations of CL success among student teachers, and their predisposition to use it when teaching in the future. This echoes the findings from other studies that reported that student teachers decided to employ CL in their future teaching after learning CL in ITE (Jolliffe & Snaith, 2017; Nattiv et al., 1991; Veenman et al., 2002). Student teachers involved in CL-related training in ITE programmes reported that they regularly used CL in their teaching placement (Jolliffe, 2015; Lyman &

Davidson, 2004). One reason for student teachers deciding to adopt CL appears to be CL's positive effect on students. Several studies have espoused the benefits of CL, claiming that the benefits for their future students motivated student teachers to practise CL (Hilikirk, 1991; Schniedewind, 2004; Tochon & Gwyn-Paquette, 2003; Watson, 1995). It was apparent that the increase in knowledge and experience associated with CL in ITE accounted for student teachers' willingness and capability to employ CL in their own classrooms (Bouas, 1996).

Content and Pedagogy for Preparing Student Teachers With Cooperative Learning

Within ITE, teacher educators of CL need to consider the content taught and the process used to teach that content (Johnson & Johnson, 2017). While the choice of what to teach and how to teach student teachers varies in different fields, it is believed that ITE should provide student teachers with sound content knowledge and pedagogical content knowledge as well as an understanding of the potential working environment (Darling-Hammond, 2006; Gurvitch, Blankenship, et al., 2008; O'Leary et al., 2015). Shulman (1986) defined content knowledge as "the amount and organisation of knowledge per se in the mind of the teacher" (p. 9). Pedagogical content knowledge consists of several methods that teachers utilise to transform content for teaching to their students (Shulman, 1987). Within CL, the content knowledge includes the theoretical foundations of CL, the key elements of CL, and the expected learning outcomes of cooperative efforts (Brody, 2004; Johnson & Johnson, 2017; Jolliffe, 2005). To implement CL effectively, teachers and student teachers should develop the required pedagogical content knowledge, such as the instructional procedures of CL, the delegation of teacher's authority, and organisation and management of cooperative activities (Brody, 2004; Johnson & Johnson, 2017; Y. Sharan & Sharan, 1987). ITE educators should consider learners and teachers' experiences as an essential starting point for practising CL (Casey & Quennerstedt, 2020; Darling-Hammond & Bransford, 2005)

because of the pivotal role of knowledge about learners and how they learn and develop within social contexts (Arnon & Reichel, 2007; Bullock, 2015; Darling-Hammond, 2006).

As all knowledge is situated (Brown et al., 1989), teacher educators should consider the historical, physical, and social context in which activities occur in a learning environment. For the process of development of learners' cognitive understanding, *how* something is learned is as important as *what* is to be learned (Bouas, 1996). More than 40 years ago, Lortie (1975) pointed out that ITE students arrive at ITE having undergone an "apprenticeship of observation" (p. 61), that is, thousands of hours as schoolchildren observing and evaluating professionals in action. This apprenticeship appears to shape student teachers' deep-seated beliefs about teaching and learning when they begin their teacher education; they interpret new knowledge and experience through their existing beliefs (Feiman-Nemser, 2008; Green, 2000, 2002; Timperley, 2013). Research demonstrates that student teachers' beliefs about teaching, learning, content, and instruction are very strong and difficult to change (Richardson, 2003; Tillema, 1998). It is, therefore, important for successful student teacher training to address student teachers' existing beliefs, especially when teaching innovative pedagogical models (Darling-Hammond, 2006; Feiman-Nemser, 2001, 2008; Loughran, 2010).

Hammerness et al. (2005) suggested that student teachers might find it challenging to develop a deeper, more nuanced understanding of new concepts and practices without confronting their existing beliefs. When critically examining their existing beliefs, student teachers can deconstruct and reconstruct teaching and behaviours of teaching (Loughran, 2010). For example, in a case study that examined the different beliefs about the nature and purpose of PE among a group of beginning and graduating PETE students, Philpot and Smith (2011) showed that the beginning PETE students saw physical education as being synonymous with sports. In contrast, the graduating PETE students described physical

education as being more than sport. The evidence from this study suggests that graduates from a programme that challenged student beliefs and provided alternate conceptions of PE, beyond sports discourse, had beliefs that differed from students just entering the programme.

Brody and Davidson (1998) proposed that it was critical to connect the values inherent in CL and teachers' beliefs regarding the locus of control and authority in teaching, the nature of knowledge, and the teacher's role in decision making. More recently, a review of research on in-service teacher and student teacher learning of CL concluded that examining beliefs was required for powerful training on CL (Baloche & Brody, 2017). Pescarmona (2017) observed that student teachers reflect on their experience and beliefs in terms of the context of their school culture, their experience of group work, and barriers to equity. Although these student teachers experienced disorientation and uncertainty during the reflection process, the uncertainty encouraged them to investigate their own beliefs, attitudes, and cultural expectations more critically.

In addition to the examination of student teachers' existing beliefs, inviting student teachers to participate actively in the learning process has been advocated for enhancing conceptualisation of CL and developing their beliefs and behaviour patterns required for the implementation of CL (Brody & Davidson, 1998; Gisbert et al., 2017; Legrain et al., 2021; Sharan, 2010). Several studies have affirmed the positive influence of student teachers' first-hand experience of CL (DelliCarpini, 2009; Foote et al., 2004; Jolliffe & Snaith, 2017; Nattiv et al., 1991). Schniedewind (2004) demonstrated the great potential of *experiential learning* (Kolb, 2015) to introduce various concrete formats for structuring CL through student teachers' experience, discussion, and experimentation. Lyman and Davidson (2004) suggested the value of microteaching for student teachers to have positive learning experiences of CL. Many researchers have also argued that modelling practice plays an important part in student teachers' understanding of and expertise in CL (Jolliffe, 2005;

Koutselini, 2009; McAlister, 2012; Rolheiser & Anderson, 2004; Stevahn & McGuire, 2017; Tochon & Gwyn-Paquette, 2003; Veenman et al., 2002). Ruys (2012) suggested that teacher training following the “teach as you preach” principle is valuable for developing the professional, pedagogical knowledge base of student teachers (p. 79). All the studies mentioned above conclude that student teachers need to learn CL through experiencing CL.

Grossman et al. (2009) claimed that student teachers’ knowledge, skill, and professional identity are developed through opportunities to engage with practice such as microteaching. Student teachers need to engage in “intensive, focused opportunities to experiment with aspects of practice and then learn from that experience” (Grossman & McDonald, 2008, p. 190). A typical microteaching format comprises a presentation or input phase for learning the introduced skills, a practice phase that allows student teachers to plan and experiment with teaching skills, a feedback phase for oral and/or written feedback from peers and/or teacher educators, and a reteach phase for re practising the target skills (Long, 1994; Macleod, 1987). In microteaching, the complexities of the regular teaching and learning process are simplified and scaled-down in class size, time, task, and content (He & Yan, 2011). The positive effect of microteaching on student teachers’ professional learning, such as their content knowledge and pedagogical content knowledge (Pekdağ et al., 2020), increased confidence and teaching skills (He & Yan, 2011; Ismail, 2011; Sen, 2009), and sense of self-efficacy (Arsal, 2014), has been well documented. However, microteaching has also been subjected to considerable criticism due to the contextual nature of the experience (He & Yan, 2011; Sen, 2009). There is no guarantee that student teachers will risk implementing innovative teaching practices they learned in ITE when entering their school placement (Amobi, 2005; Fuller & Brown, 1975).

4 decades ago, Zeichner and Tabachnick (1981) suggested the influence of teacher training in university classrooms might be “washed out” when confronted with the influence

of real-world contexts. It is critically important that ITE programmes create a coherent set of learning experiences for student teachers (Darling-Hammond, 2006; Forzani, 2014), making conscious connections between CL and their future teaching contexts (Baines et al., 2003; Gillies, 2008; Jolliffe, 2015).

In addition, as learning is profoundly relational and social (Corte, 2010; Lucas & Claxton, 2010), it has been suggested that sustained, ongoing, and intensive coaching facilitation could be conducive to student teachers' learning to teach (Darling-Hammond, 2006; Feiman-Nemser, 2001; Hammerness et al., 2005; Korthagen et al., 2006; Loughran, 2010; Samaras & Gismondi, 1998). This can be in the form of peer coaching where student teachers share ideas, experiences, and knowledge with their peers; feedback from teacher educators helping student teachers distinguish features of complex practice; or other opportunities for collective solving of problems in contexts where support and trust are established (Joyce & Showers, 2002; Neubert & Stover, 1994; Stanulis & Russell, 2000). A meta-analysis of seven studies on CL in pre- and in-service teacher education, by Baloch and Brody (2017), reported that the creation of communities for inquiry, experimentation, and support was identified consistently as an essential factor for effective teacher-training programmes on CL. In a study of student teachers' trial use of CL in their practicum placements, Rolheiser and Anderson (2004) described how observation and on-the-spot feedback from teacher educators in the university facilitated the participants' implementation of CL. Other research on CL has suggested cluster meetings and supportive group discussions from peers and/or teacher educators helped enhance student teachers' understandings of CL and manage concerns that occurred in CL classrooms (Gwyn-Paquette & Tochon, 2002; Harris & Hanley, 2004; Jolliffe & Snaith, 2017; McAlister, 2012).

Finally, given that experience is educative only when accompanied by problem solving and reflective thinking (Dewey, 1904/1965; Schön, 1983; Shulman, 1987), reflection

has been a high priority in many ITE programmes (Darling-Hammond & McLaughlin, 2011; Rovegno, 1992; Tsangaridou & O'Sullivan, 1994). Student teachers need to incorporate real-world settings and concrete experiences with opportunities to reflect on their own thoughts, perspectives, biases, teaching performance, and the classroom events (Slade et al., 2019; Tsangaridou & Siedentop, 1995). Pescarmona (2017) found student teachers benefited from reflecting on the questions and challenges associated with their own contexts and habits when first experiencing complex instruction. Specific reflective strategies include written logs, video commentaries, discussion groups, and/or reflective journals (Standal & Moe, 2013; Tsangaridou & O'Sullivan, 1994, 1997; Tsangaridou & Siedentop, 1995).

Student Teachers' Practice of Cooperative Learning in School Placements

As stated previously, student teachers who engaged in CL-related ITE programmes overwhelmingly stated their desire to use CL in the future. However, few studies followed up with these student teachers to establish whether they did employ CL in practice settings, with the few follow-up studies generally depending on student teachers' self-reported practice of CL. Jolliffe (2015), for example, adopted questionnaires and semistructured interviews to elicit the types of CL structures student teachers practised in their school placement. Ruys (2012) asked student teachers to complete a series of questionnaires and self-assessment tasks about their implementation of CL during their practicum. Other research on CL in ITE (Lyman & Davidson, 2004; Tochon & Gwyn-Paquette, 2003) described student teachers' practice and CL experience in their practicum utilising the self-reflection and self-evaluation data. One study which observed student teachers' actual practice of CL, Veenman et al. (2002), compared pre- and postcourse observations of a group of student science teachers in the Netherlands. They found that student teachers benefited from a training course about CL to practise the five key elements of CL, monitor workgroups, and promote pupil engagement rates. While this research is important for understanding the transition from ITE courses to

student teachers' actual practice of CL upon entering the teaching profession, it observed only two lessons to examine the course's impact on student teachers' use of CL. Multiple occasions are needed to demonstrate student teachers' instructional behaviours in a CL environment. Another limitation is the lack of detail about student teachers' pedagogical strategies and behaviours during their implementation.

According to studies that use student teachers' reflections as data, multiple factors positively and negatively impacted their implementation of CL during their school placement. Whereas Tochon and Gwyn-Paquette (2003) reported that pupils' positive attitudes towards CL contributed to the student teachers' regular use of CL in their practicum, pupils' disruptive behaviours, curriculum constraints, and lack of support from the cooperative teachers constrained their implementation of CL. Similar struggles have been reported by other researchers indicating that behavioural management issues; associate teachers' negative attitudes towards CL and limited knowledge of and experience with CL; and time-consuming planning were typical challenges student teachers experienced (Bouas, 1996; E. G. Cohen et al., 2004; Gurvitch, Blankenship, et al., 2008; Jolliffe, 2015; Jolliffe & Snaith, 2017; Smagorinsky et al., 2004; Veenman et al., 2002).

This section has justified, from a philosophical and practical perspective, the necessity for ITE programmes to prepare student teachers to engage with CL. While I have described the content and pedagogy suggested by researchers for effective professional learning, most of the studies reviewed so far reflect academics' and teacher educators' perspectives. There is little evidence of how student teachers perceive CL and learning to use CL in ITE. Gaining student teachers' own perspectives will give greater insight into what professional learning is perceived as most useful. Moreover, there is very little qualitative evidence of student teachers' employment of CL in their school placements or other practice settings. In addition, there appears to be little empirical evidence of how the characteristics of professional

learning in ITE programmes influence student teachers' learning of CL. To strengthen our understanding of student teachers' learning to teach with CL, there is a need to focus on integrating an individual's perspectives, actions, and the meanings given to experiences within the training. Further exploration of the process by which student teachers learn about CL, and the conditions that support and promote that learning, is required.

Cooperative Learning as a Pedagogical Model in Physical Education

CL is one of many well-researched instructional models in PE (Metzler, 2011). This section starts with a description of models-based practice as a pedagogical approach in the field of PE. An overview of learning outcomes about the CL model in PE, and the practitioners' perspectives on and implementation of CL is provided, and I conclude the section with an overview of research on PETE students' experiences with CL.

Models-Based Practice

In recent years, tension has existed between the PE curriculum and dominant pedagogical practices in many countries. That is, several countries have initiated reforms of the PE curriculum targeting pupils' learning that incorporates physical, cognitive, and affective domains, emphasising youth development of prosocial behaviours, problem solving, lifelong learning, and health issues (Cothran, 2001; H. Ding et al., 2014; Ennis, 2006; MoE, 2011, 2017; Penney, 2008; L.-J. Wang & Ha, 2013). Nonetheless, the current dominant form of PE in schools remains a multiactivity, sport-technique-based approach (Hastie & Mesquita, 2017; Kirk, 2010; Quennerstedt, 2013; Tinning, 2010; Ward & Griggs, 2018), which, it has been suggested, does not support or enhance the lives of young people (Casey, 2017; Ennis, 2014). This approach has been criticised for privileging white, relatively affluent, and able-bodied pupils while underserving those who are disabled, female, and low-socioeconomic status (Standal, 2015). Furthermore, the focus on practising isolated skills and de-contextualised drills in relatively short units in this approach offers pupils limited

opportunity to capture the purpose of the activity (Kirk, 2010). Thus, it is unlikely to develop pupils' physical competence and knowledge about and through physical activities in any depth (Casey & Kirk, 2021). Moreover, within the multiactivity, sport-technique-based approach, pupils in PE classes are expected to acquire sport techniques rather than enjoy the activities themselves or engage in sports as an opportunity for socialisation. This form of PE is primarily taught through direct instruction. Unsurprisingly, pupils who have experienced the multiactivity, sport-technique-based PE often describe PE as boring and irrelevant (Hastie & Mesquita, 2017).

As a means of addressing the shortcomings of multiactivity, sports-technique-based PE, an increasing number of scholars have advocated a models-based approach to PE (Casey, 2014; Casey & Kirk, 2021; Haerens et al., 2011; Metzler, 2005; Siedentop & Tannehill, 2000). Models-based practice refers to:

A mechanism or pedagogical approach through which to move away from privileging physical education subject matter (i.e., curriculum) or the teacher (i.e., instructional) and instead align outcomes with students, needs, and the teaching/instructional style. (Casey, 2017, p. 55)

In contrast to content as the organising centre (Metzler, 2011) as in multiactivity, sport-technique-based PE, the organising centre of models-based practice encompasses content, teaching, learning, and assessment (Casey & Kirk, 2021). Models-based practice aims to promote educationally beneficial outcomes for pupils within the cognitive, physical, social, and affective domains through creating pedagogical conditions with several pedagogical models in PE classes (Casey & Kirk, 2021; Kirk, 2013; Metzler, 2011). In addition to CL, whose origins lay in general education, other models that originated in the subject of PE, included Sport Education (Siedentop, 2002), Teaching Games for

Understanding (Thorpe & Bunker, 1986), Tactical Games (Griffin et al., 1997), and Teaching Personal and Social Responsibility (Hellison, 1973).

While models-based practice suggests the use of two or more models to achieve the desired learning outcomes for pupils (Casey & Kirk, 2021; Kirk, 2013), successful use of models-based practice requires comprehensive knowledge of the individual pedagogical model (Silva et al., 2021a). In this study, I choose to explore the CL model, due to its great potential for achieving legitimate four learning outcomes in PE, including cognitive learning, physical learning, social learning, and affective learning (Bailey et al., 2009; Kirk, 2013).

Learning Outcomes of Cooperative Learning in Physical Education

A group of scholars (e.g., Casey & Goodyear, 2015; Dyson, Howley, & Shen, 2021a; Fernandez-Rio et al., 2017) have empirically demonstrated promising results from CL practices in all grades of PE classes. The most frequently assessed learning outcomes associated with CL in PE occur in the social learning domain (Bores-García et al., 2021). First, CL benefits students' development of interpersonal and social skills, such as listening to others, taking responsibility, sharing decision making, giving and receiving feedback, encouraging each other, and leadership skills (Bjørke & Moen, 2020; Casey, 2013; Casey & Dyson, 2009; Casey & Goodyear, 2015; Casey et al., 2015; Dyson, 2001, 2002; Dyson, Howley, & Wright., 2021; Dyson et al., 2010; Dyson & Strachan, 2000, 2004; Goodyear, 2017; Goodyear et al., 2014; Guzmán & Payá, 2020). Second, the promotion of interpersonal relationships among students is apparent in the CL research in PE (Bayraktar, 2011; Hortigüela-Alcalá et al., 2020; Polvi & Telama, 2000). Due to decreased dependence on teachers in CL classes, students have more opportunities to interact and cooperate with each other, benefiting positive class climate, social bonds, and friendships among classmates (Casey et al., 2009; Polvi & Telama, 2000). Third, CL has been effective in developing students' prosocial behaviours regarding feelings of empathy; taking care of others; and being

concerning for, supporting, and respecting each other (Dyson, Howley, & Shen, 2021b; Goudas & Magotsiou, 2009; Velázquez Callado, 2012;). As a result of the improved interpersonal interactions and prosocial behaviours in CL classes, inclusion has been promoted (Hovdal et al., 2021). Students in PE classes within CL have been observed to increase their acceptance of students with learning disabilities (André et al., 2011; André et al., 2013; Grenier et al., 2005; Grenier & Yeaton, 2019; Klavina et al., 2014; Lafont et al., 2017), others genders (Sánchez-Hernández et al., 2018), and multiple ethnicities (Wallhead & Dyson, 2017). For example, Sánchez-Hernández et al. (2018) conducted a year-long intervention constructed as a form of critical pedagogy to create an inclusive learning environment in a high school in Spain. This study reported that CL lessons with the use of Jigsaw for students' football skills led students to reflect on gender inequalities in sport and challenged them to value and include more girls in PE classes.

Given that the relationships between the four domains of learning outcomes in PE are not linear but reciprocal (Metzler, 2005), students' social learning within CL has been closely linked to other domains, especially to cognitive learning. It has been evident that CL promotes social interactions between peers which leads to a greater understanding of tactics, strategies, and skills of physical activities (Casey, 2013; Casey et al., 2009; Dyson et al., 2010; Dyson & Strachan, 2000; Goodyear et al., 2014). The increased opportunities for peer interactions enabled students to solve problems using higher order thinking and contribute to their acquisition and retention of skills and strategies (Casey & Goodyear, 2015; Gorucu, 2016; Guzmán & Payá, 2020). Darnis and Lafont (2015) reported that while low-skilled pupils benefited from the verbal interactions in the CL environment, high-skilled pupils benefited from dyadic interactions through explaining their solutions to initially low-skilled partners and group members.

Within the physical learning domain, CL has been demonstrated to be effective in enhancing students' basic motor skills (Altınkök, 2017) and motor performance (Barrett, 2005; Velázquez Callado, 2012). It has been suggested that the positive social environment in CL classes facilitates the intensity of gameplay and physical activities (Dyson, 2002; Dyson & Strachan, 2000; Rink, 1996). In CL situations, students also have more opportunities to replicate skills and practise different activities accurately (Altınkök, 2017; Dyson et al., 2010). Moreover, many scholars have suggested that the oral discussions promoted among peers enable students to develop their motor and tactical skills (Darnis & Lafont, 2015; Lafont et al., 2007).

Since Casey and Goodyear's (2015) call for more research exploring CL's contribution to students' affective learning in PE, there have been more studies focusing on motivation, self-confidence, self-esteem, self-control, and regulation (Casey & Fernandez-Rio, 2019; Dyson, Howley, & Shen, 2021b; Engels & Freund, 2020; Fernandez-Rio et al., 2017; T. Liu & Lipowski, 2021; Pérez et al., 2021). For example, in Spain, Fernandez-Rio et al. (2017) found that, as a result of CL instruction over 16 weeks (2 hours every week), 137 high school students in the experimental group increased their intrinsic motivation. In the class, in which students had to work cooperatively in CL, students' relatedness appeared to increase which promoted their self-determined motivation, which, in turn, produced their sense of enjoyment in PE classes (Fernandez-Rio et al., 2017). Similarly, Engels and Freund (2020), in Germany, reported that CL had a positive impact on students' enjoyment of PE, mediated by social relatedness. Many researchers have suggested that the sense of cooperation, participation, and feeling part of something in CL situations contribute to students' boosted motivation (Alcalá et al., 2019; Bjørke & Moen, 2020; Casey, 2013; Dyson, Howley, & Shen, 2021a; O'Leary & Griggs, 2010; Velázquez Callado, 2012). In addition, CL has been effective in increasing students' self-confidence (Bayraktar, 2011),

self-approach goals, and their emotional control and regulation (Pérez et al., 2021), facilitating their self-sufficiency and enabling students to value contribution rather than performance (Casey & Fernandez-Rio, 2019).

CL has emerged as key to developing students' learning in various domains in PE. Bjørke and Moen (2020) warned, however, that the positive learning outcomes associated with CL do not happen by chance but require the teacher to implement this model carefully. Because of methodological limitations (e.g., lack of video-recorded lessons), some of the above-reviewed studies lack details of the implementation of CL and how the participating teachers perceived CL in their practices. Rather than merely concluding that CL in PE can work, we need to examine practitioners' knowledge of and beliefs about CL and how they conduct CL in their pedagogical process.

Practitioners' Perspectives on Cooperative Learning

The focus of educational research paradigms has shifted from teachers' pedagogical actions to teachers' thinking, which are variously defined as teachers' perspective, perception, conception, belief, and knowledge (Adler, 1984; Calderhead, 1991; Clark & Peterson, 1984; D. Kagan, 1992; Pajares, 1992; Thompson, 1984). These concepts all acknowledge that teachers' mental thoughts are closely related to their educational practices and outcomes (Calderhead, 1991; Clark & Peterson, 1984). However, because they have been used often, almost interchangeably, it can be difficult to differentiate between them. Dyson (2006) reviewed the research on teacher perspectives in the field of PE, concluding that it "is a recent phenomenon in the area of research on teaching in physical education" (p. 328), which is commonly used in qualitative interviewing and observation research methods. To ensure consistency when referring to concepts about teachers' thinking, I use "perspective" in the thesis to encompass participants' experience, knowledge, understanding of, and beliefs about CL. More precisely, I investigate PETE students' perspectives on CL in terms of their

thoughts about what CL is (i.e., CL's definition and key elements), how CL is structured (i.e., pedagogical knowledge of CL), what CL activities they have experienced, how they think about CL (i.e., the effectiveness of CL), and what they believe they would do in their teaching (i.e., the desire to use CL).

As a review of literature on CL reveals a scarcity of research on PE educators' perspectives on CL, this section reviews some studies in general education that have examined teachers' perspectives on CL. Abramczyk and Jurkowski (2020), investigating 1,495 teachers' knowledge of CL through surveys across school levels in Poland, identified a discrepancy between teachers' theoretical and practical knowledge of CL, which indicated an emphasis on their practical knowledge. Koutselini (2009) conducted action research that investigated changes in 94 secondary school teachers' concepts of CL in Cyprus through teachers answering "yes" or "no" questions in the CL checklist. The results demonstrated that action research and reflection on experience and ideas enhanced teachers' understanding of CL structures and the difference between simple group work and CL.

By comparison, Hennessey and Dionigi (2013) used interviews as a method to explore 12 Australian generalist primary teachers' understanding of CL. Framed by Johnson and Johnson's (2009) key features of CL and Bain et al.'s (2009) list of CL terms, the authors reported that two of the 12 teachers showed a detailed understanding of CL, which included an understanding of three key elements of CL and the teacher's role as a facilitator. Four teachers, who highlighted the importance of positive interdependence for effective CL implementation, were assessed as having a general understanding of CL. Six of the participating teachers demonstrated limited CL knowledge as they equated group work with CL and did not appear to realise that CL extended beyond traditional group work.

A series of studies by Gillies and Boyle (2008, 2010, 2011) used audiotaped lessons and interview data to explore science teachers' pedagogical content knowledge of CL in

Australia. The participating science teachers stressed the importance of structuring groups effectively in terms of the tasks and composition. Tasks are needed to motivate pupils and encourage them to think critically and reflectively, while group composition should consider gender, ability, and friendship (Gillies & Boyle, 2008, 2010). Preparation was also seen to be important for pupils to work in groups with teachers suggesting that pupils needed to learn the appropriate social skills before CL could be implemented (Gillies, 2011).

While research has suggested that most teachers demonstrate a positive attitude towards CL (Saborit et al., 2016; Veldman et al., 2020), several factors influence teachers' use, or rejection, of this model. For example, through the Cooperative Learning Implementation Questionnaire, Abrami et al. (2004) identified that teachers' motivation, specifically the expectancy of success, appeared to be the most important factor differentiating CL users from nonusers. They claimed that teachers need to believe that they have both the skill to practise CL successfully and a supportive context before implementing CL. Lopata et al. (2003) examined self-reported use of CL among exemplary teachers and found a marked disparity overall between reported actual and preferred use of CL. Relevant influential factors included increased pressure to meet academic standards using individualised tests, class size, student-behaviour problems, and number of students included. Teachers in Ishler et al. (1998) suggested that involvement in a collegial teaching team, personal encouragement, support for using CL, and personal commitment to CL influenced their use of CL.

In the field of PE, however, there is less knowledge about teachers' perspectives on CL. 2 decades ago, studies by Dyson (2001, 2002) investigated American elementary PE teachers' perspectives on the CL practice through multiple qualitative data. In these two studies, the participating teachers reported their goals of the lesson for motor, cognitive, and affective dimensions. The findings of these studies also elicited teachers' thoughts about the

time-consuming teaching plan and changes in their perspectives on group roles in CL classes. Velázquez Callado et al. (2014), in Spain, investigated seven school PE teachers' content knowledge of CL. Several teachers in this study expressed uncertainty over the definition of CL, although they knew the general elements of CL that differentiated it from group work. Dyson et al. (2016) explored a group of generalist classroom elementary teachers' understandings of CL in New Zealand and found that the teachers lacked knowledge of, and experience with, a variety of CL structures. Fernández-Rivas and Espada-Mateos (2019) analysed differences between state school and semiprivate school PE teachers' perspectives on the contributions of CL and their attitudes towards this model. An inferential statistical analysis showed that PE teachers in state schools expressed more positive attitudes toward CL, and pupils' learning in the state schools indicated the greater effectiveness of CL. The authors of this study, however, did not explain the difference.

Practitioners' Implementation of Cooperative Learning

There is agreement among researchers and teachers that the implementation of CL is complex and challenging (Abramczyk & Jurkowski, 2020; Casey et al., 2009; Dyson, 2002; Dyson et al., 2016; Sharan, 2010). For one thing, implementing CL requires teachers to acquire new pedagogical behaviours and attitudes towards learning, rather than learning new teaching techniques (Sharan, 2010). Many studies have reported that it usually takes time for teachers to feel comfortable with CL (Casey, 2010; Dyson, 2002; Dyson, Howley, & Shen, 2021b; Gurvitch, Lund, et al., 2008; Stran et al., 2012). Casey and MacPhail (2018) suggested that a consistent challenge for teachers when adapting pedagogical models in PE, such as CL, was the reduction of teachers' overt involvement in pupils' learning. Furthermore, teachers have been reported to find it time consuming and labour intensive to prepare lessons with CL, prepare pupils for cooperation, explain task sheets, and review roles in CL classes (Abramczyk & Jurkowski, 2020; Dyson et al., 2010; Dyson & Rubin, 2003).

Loughran (2010), in reference to general education, claimed that the discomfort experienced during the process of learning to teach in a new way is an important attribute for learning itself “as it leads to a heightening of the senses” (p. 97). Likewise, this discomfort may occur when practitioners move away from teacher-led instructions to CL in PE (Casey, 2010; Gurvitch, Lund, et al., 2008). Casey (2010) employed action research and autobiography inquiry to explore his own use of CL and other pedagogical models for teaching secondary pupils sports in the UK. As a result of the innovative practice, he proposed that his philosophy about PE teaching had moved away from a sole concern about techniques and performance to concern for pupils’ academic, social, and emotional learning. Moreover, he reported that viewing pupils differently, appreciating their learning, and trusting pupils with their own learning, facilitated his shift towards an indirect, pupil-centred approach (Casey et al., 2009; Casey & MacPhail, 2018). Similarly, Dyson (2001) and Dyson et al. (2016) found that CL helped classroom teachers use a more pupil-focused pedagogy in their PE lessons, which enhanced pupils’ learning in various domains. One teacher reported that CL allowed her to shift some responsibility for learning from herself to the pupils while pupils in the CL environment were able to share more ownership of their learning and solve some problems on their own (Dyson, 2001).

It has been suggested that practitioners should work out divergent strategies to create a positive CL climate or environment for students’ learning (Dyson & Casey, 2016; Rivera-Pérez et al., 2021). Dyson and Casey (2016, p. 47) proposed nine “additional procedures” for effective practice of CL including heterogeneous groups, CL structure, teacher-facilitator, group goal, positive interdependence, individual accountability, promotive face-to-face interaction, social skills, and group processing. Each of these additional procedures can be achieved through specific pedagogical strategies (Dyson & Casey, 2016). For example, students are assigned a role to achieve positive interdependence (Goodyear, 2015). In the

following, I examine researchers' propositions and practitioners' practices of these procedures.

Findings as to effective group composition in research on CL are mixed; for example, who should take responsibility for group formation? Shimazoe and Aldrich (2010) suggested that the teacher assigns pupils to groups because random grouping or self-selection by pupils was likely to exclude or negatively affect minority pupils. In practice, many teachers appear to seek some sort of balance between teacher control and pupil choice of group members (Kutnick et al., 2005; Velázquez Callado et al., 2014). For example, in Kutnick et al. (2005), teachers composed 42% of the grouping while pupils were responsible for 37% of group composition. To achieve heterogeneity of CL groups, teachers must collect data relevant to pupils and know their pupils well (Metzler, 2011; Oakley et al., 2004). Various factors should be taken into consideration, such as pupils' personality (Nastasi & Clements, 1991), ability (Gillies, 2016), gender (Gillies & Boyle, 2006; Lafont et al., 2017), and social relationships (Karmina et al., 2021; O'Leary et al., 2015; Silva et al., 2021b). Karmina et al. (2021) found friendship groups yield more positive social interactions and a high level of pupils' engagement because of trust and a sense of intimacy.

CL structures have been the focus of research for some time. S. Kagan (1989) first promoted and refined a series CL structures that were "based on the creation, analysis, and systematic application of structures, or content-free ways of organizing social interaction in the classroom" (p. 12). These structures usually involve a series of steps, with prescribed behaviour at each step, which enable teachers to organise the learning environments in a content-free way. In the field of PE, Dyson and Grineski (2001) built on the work of S. Kagan (1992), Johnson et al. (1984), Slavin (1980), and Aronson (1978), and modified several CL structures that are applicable to the PE environment, such as Pair-Check-Perform and Learning Teams. The details of these CL structures are provided in Appendix 1.

In the 20 years since Dyson and Grineski (2001) proposed these modified CL structures for PE, very few studies have examined how teachers implemented them in classrooms comprehensively. Goodyear (2013) observed a group of secondary PE teachers' use of Learning Teams in the UK and found some of the participating teachers retained a traditional sequential path of lessons in their initial stage of CL practice, following the format of warm up, skill practice, and then games. Velázquez Callado et al. (2014), using semistructured interviews, reported that PE teachers tended to modify the techniques and key elements that were described in the literature of CL according to their contextual needs. However, this study is limited because of uncertainty as to how these PE teachers contextualised CL structures in their settings due to limitations of the self-reported data.

More recently, Casey et al. (2021) claimed that how well a pedagogical model, such as CL, works depends on how well the teacher can appropriately apply the model to a specific context. Teachers have a critically important role in CL classes because, as a teacher-facilitator, they are required to delegate their authority and facilitate pupils' learning (Casey, 2014; Casey & Dyson, 2009; E. G. Cohen, 1994b; Darnis & Lafont, 2015; Dyson & Rubin, 2003; Gillies, 2014). Priest et al. (2000) suggested that facilitation includes teachers mediating behaviours before, during, or after learning experiences to enhance "reflection, integration, and continuation of lasting change" (p. 19). Facilitation differs from guided convergent discovery. Rather than eliciting the answers teachers have in their mind, facilitation requires the teacher to utilise strategies and techniques to support student interaction and collaboration for the co-construction of knowledge as well as increase pupils' level of understandings of the tasks and activities (Bähr & Wibowo, 2012; Barker et al., 2015a; Casey et al., 2015; Gillies, 2016; Sharan, 2015). Three essential steps clarified by Goodyear and Dudley (2015) include: teachers diagnose what is occurring, respond to pupils' learning using multiple interactional strategies, and evaluate the impact of the facilitation.

Many researchers have suggested strategies for teacher-facilitators that are specific to learning in the CL environment. First, teachers should provide pupils with challenging and uncertain tasks and appropriate resources to explore solutions in their own way (E. G. Cohen et al., 2004; Dowler, 2012; Goodyear, 2013; Velázquez Callado, 2012; Wallhead & Dyson, 2017). E. G. Cohen (1994b) suggested ill-structured problems with more than one answer for productive interaction. Second, as groups are accountable for their group products (Lotan, 2004), the teacher needs to help pupils develop interpersonal skills and language to be able to work together effectively and equitably (Casey, 2010; E. G. Cohen, 1994b; Gillies, 2006; Gillies & Boyle, 2005). Because equal opportunities for success are of importance for successful CL lessons, teachers must endeavour to balance participation in groups (E. G. Cohen, 1994b; Slavin, 1991). Third, there is a need to avoid direct intervention even if pupils make mistakes; teachers, instead, must listen intently and diagnose the problem pupils are experiencing (E. G. Cohen & Lotan, 2014). The teacher's role is to channel pupils' understanding of the tasks and practices with open and divergent questions based on pupils' abilities and prior knowledge and experiences, explanations, meaningful and specific feedback, and encouragement to reflect on both the product and process of discussion (Dyson, 2005; Gillies, 2008, 2016; Goodyear & Dudley, 2015; Metzler, 2011; Wallhead & Dyson, 2017). Last, since the authority over the content and form of discourse in the CL environment is shared (Gillies, 2016), the teacher's language should be positive and encouraging rather than authoritarian, rigid, and less friendly (Gillies, 2014).

Few examples of PE teachers' facilitation strategies have been provided in the literature; however, Dyson and Strachan (2004) described how one PE teacher empowered her pupils by giving them more responsibility for problem solving and decision making and facilitated learning by monitoring and interacting with pupils depending on their needs. However, they did not report how the teacher mediated pupils' learning using such strategies.

Goodyear (2013) used data from field notes to show how a teacher supported a group of pupils to create their own group goals and learning tasks through questions and feedback. Similarly, Casey et al. (2015), using evidence of teacher–students conversations and explicit statements, explained how a teacher-researcher used thought-provoking questions to develop pupils’ understandings of how to perform the skills and refocused them on the learning cues. Recently, Silva et al. (2021b) reported a beginner teacher’s use of CL and claimed that the teacher’s combination of directive and indirective strategies had been important to support pupils’ learning and sharing of responsibility with the teacher. This is particularly important when pupils had previously been exposed to teacher-centred experiences and had not been prepared for student-centred approaches, such as CL, that required the level of cognitive, social, and personal responsibility (Rogers et al., 2014).

As noted earlier, positive interdependence can be achieved through establishing shared goals, shared resources, tasks, and rewards (Johnson & Johnson, 2009). Goodyear (2017) explored six secondary PE teachers’ implementation of CL through video-recorded lessons and postlesson interviews. In many of the observed classes, the teachers created situations that gave students agency to choose how they would be positively interdependent with peers. Another approach for positive interdependence is to assign complementary and interconnected roles which should be seen as vital and equal (Dyson, 2001), such as recorder, coach, encourager, checker, manager of equipment (E. G. Cohen, 1994b; Dyson & Rubin, 2003; Johnson & Johnson, 2009). However, Dyson (2002) found the participating teachers initially disagreed with the role of “encourager” and thought there was no need to assign one person to this role. The role of encourager, however, plays a critical role in facilitating a group’s work as a team and promoting the achievement of social and affective goals (Dyson, 2001; Johnson et al., 1989). Another role that has been questioned in later research is the role of a “group leader.” While the use of leaders has some advantages in the adult world of work,

there are some drawbacks in the role of group leader, as it suggests an unequal status of group members and is inconsistent with the concept of shared responsibility in CL (E. G. Cohen & Lotan, 2014; Ross, 2008).

Individual accountability has been reported to be a key factor in motivating group members to keep on task (Pérez et al., 2021). Strategies to make individual group members accountable include peer feedback, the use of roles with relevant responsibility, task sheets for checking and recording skill performance, each group member explaining what they have learned, and randomly selecting an individual's product to represent the entire group (Dyson & Rubin, 2003; Dyson & Strachan, 2004; Johnson & Johnson, 2002). For example, Dyson et al. (2010) reported the participating PE teacher in their study used task sheets, assigned CL roles, formed small groups, and randomly chose pupils to demonstrate their competence for achieving individual accountability in CL lessons.

Promotive interaction between members of a group refers to the cognitive and interpersonal dynamics that occur when pupils get involved in exchanging resources, mutually providing efficient and effective assistance and feedback, challenging each other's reasoning, and trying to take others' perspectives accurately (Johnson & Johnson, 2002, 2009). Previous education research has suggested that teachers can guide pupils on how to talk and reason together in ways that promote pupils' interaction and learning (Gillies, 2006, 2016; Mercer et al., 2004). In PE, Wallhead and Dyson (2017) proposed that participating teachers enact promotive interaction by creating consistent learning teams and reiterating teachers' expectations and accountability. Another approach for interactive dynamic CL lessons suggested by Lafont (2012) is peer tutoring in which pupils are paired in asymmetrical dyads (highly skilled with low-skilled students). However, Barker et al. (2015b) pointed out that although the asymmetrical relationships were necessary for learning

according to social constructivism, this approach appeared to neglect the reciprocal nature of learning relationships and privileges the tutor as the active role.

It is generally agreed that placing pupils in groups does not guarantee productive interaction (Dyson & Rubin, 2003; Gillies, 2003; Johnson & Johnson, 1998; Lafont et al., 2017; O’Leary et al., 2015). This is particularly true in PE classes due to the competitive nature of PE as well as traditional direct teacher-led approaches in this discipline (O’Leary et al., 2015). To support group functioning in PE, Dyson et al. (2018) proposed that teachers should focus on teaching the prerequisite social skills, such as active listening, providing specific and appropriate feedback, and working together. Although there is agreement that pupils need to process these skills for cooperation, there is no consensus on the most appropriate approach to develop such skills. Some research has proposed that teachers need to provide direct instruction, explicitly teaching these skills through oral and written instructions (Dyson, 2002; Sapon-Shevin, 2010; Shimazoe & Aldrich, 2010; Slostad et al., 2004). For example, Lafont et al. (2017) found that training pupils to endorse tutor and tutee roles helped them to acquire social skills to work in groups. In contrast, Casey and Quennerstedt (2020), referring to Dewey’s educational theory, argued that cooperation was not learned but instead was practised over successive lessons and units. Other researchers have also suggested teacher modelling of good interaction skills (Gillies & Haynes, 2011; Gillies & Khan, 2008; Grenier & Yeaton, 2019; Veldman et al., 2020).

Another way for pupils to develop interpersonal and social skills is group processing, through which they express themselves about what goes well, and not well, and what they need to work on (Dyson & Casey, 2016). Group processing has long been recognised as a critically important ingredient for productive CL (Dyson, 2002; Dyson et al., 2010; Johnson & Johnson, 2003). Ironically, it is often overlooked or neglected due to lack of time, an overloaded curriculum, or the teacher’s limited knowledge of the facilitation needed for

effective group processing (Dyson & Casey, 2016; Dyson & Rubin, 2003; Sutherland et al., 2019). Goodyear (2017) reported that teachers in her study needed support and help from the PDP to enact group processing. The findings in Velázquez Callado et al. (2014) demonstrated that the participating teachers used either unstructured procedures, such as assemblies or individual tutoring, or utilised checklist or evaluation sheets for group reflection. Recently, Sutherland et al. (2019) constructed the “Sunday-afternoon drive” model for group processing. It allows the teacher as a facilitator to guide pupils’ reflection.

Since CL may present both a new way of teaching for teachers and a new way of learning for students, many authors have highlighted the importance of the orientation lesson, lesson zero, or crash course (Casey & Dyson, 2009; E. G. Cohen & Lotan, 2014; Dyson & Casey, 2016; Gillies & Boyle, 2006, 2011). In general education, Golub and Buchs (2014) conducted a short intervention with a group of six graders who were engaged in constructive conflicts. The authors found that pupils who were prepared with cooperation skills demonstrated more constructive interactions with peers than those who were not prepared. Karmina et al. (2021) found group orientation improved positive interactions among group members, while E. G. Cohen and Lotan (2014) specified the need for pupils to understand “how they are supposed to behave, what they are supposed to be doing, and where they can turn for help if problems develop” (p. 132). Similarly, other researchers underlined the importance of explicitly stating their expectations and reminding pupils of the norms, roles, and tasks of a CL episode (Dyson & Casey, 2016; Dyson & Rubin, 2003). Furthermore, teachers need to prepare pupils with the required social skills for effective cooperation, such as listening, working together, and giving and receiving feedback (Casey & Dyson, 2009; Gillies & Boyle, 2011). However, despite researchers’ suggestions and guidelines, there is limited empirical evidence of how teachers initiate such introductory lessons in PE classes.

There is a consensus among scholars that a CoP can contribute to teachers' use of CL, providing them with an opportunity to share experiences and accommodate feelings (Casey, 2014; Dyson, 2002; Lund et al., 2008; Metzler et al., 2008b; Ovens et al., 2012; Veldman et al., 2020). Kirk and MacDonald (1998) defined a CoP as "any collectivity or group who together contribute to shared or public practices in particular spheres of life" (p. 380). The CoP is a fundamentally self-organising system encompassing three dimensions: joint enterprise, mutual engagement, and shared repertoire (Wenger, 1998). Dyson et al. (2016) found that the group of generalist teachers in their study made improvements in their implementation of CL and became more comfortable with the CL pedagogy due to the establishment of a CoP. The fairly intensive, ongoing, embedded support received from a critical friend and colleagues helped these teachers reflect, identify, and overcome some of the obstacles in CL lessons. Similarly, Goodyear (2017) reported that individualised, departmental, and sustained support positively impacted teachers' ability to practise CL.

Although proponents of CL advocate the benefits for pupils' cognitive, physical, social, and affective learning, many researchers have argued that models are neither capable of encapsulating and delivering the breadth and depth of learning in a specific context nor fixed; instead, each model is sufficiently flexible for local adaptation (Casey et al., 2015; Hastie & Casey, 2014; Kirk, 2013; Lund & Tannehill, 2010; Metzler, 2011). Casey et al. (2021) suggested that one avenue for model adaptation, negotiation, and renegotiation is model hybridisation. Almost 2 decades ago, Dyson et al.'s (2004) examination of the theoretical foundations of CL, which provided a theoretical rationale for the hybridisation of CL with other models, called for studies to explore the intersection of CL, Sport Education, and Tactical Games as each of these models allow participation to occur in a student-centred learning curriculum. Recently, several empirical studies have investigated the hybridisation of CL with Sport Education (Evangelio et al., 2021), Teaching Games for Understanding

(Casey & Dyson, 2009; Fernandez-Rio, 2014, 2015; Guijarro et al., 2020), Adventure Education (Fernandez-Rio, 2015), and Tactical Games (Casey & MacPhail, 2018).

Physical Education Teacher Education Students' Experience With Cooperative Learning

As described above, it is necessary and of great importance to prepare student teachers to use CL in their teacher education programmes. With specific reference to PETE programmes, Metzler and his colleagues at Georgia State University demonstrated that the PETE faculty played an essential role in providing PETE students with a sufficient level of knowledge to implement pedagogical models such as CL (Gurvitch, Blankenship, et al., 2008; Gurvitch, Lund, et al., 2008; Metzler et al., 2008a, 2008b). However, compared to the large body of literature on CL in general student-teacher education programmes, the voice of PETE programmes has been largely silent (Fletcher & Casey, 2014). Many researchers have proposed that a PETE faculty should provide PETE students with a sound professional learning experience with CL (Dyson et al., 2018; Ovens et al., 2012; Zach & Cohen, 2012)

Although few studies have examined PETE students' experience with CL, in their groundbreaking study of PETE students' learning and practice of CL, Zach and Cohen (2012) conducted a 15-week intervention with a group of 25 junior PETE students in Israel to understand the impact of teaching CL in PETE. This study, based on responses in teaching-efficacy questionnaires and rubrics, reported that the participating PETE students felt unsure of their teaching abilities and had relatively lower self-efficacy to implement CL compared to their counterparts who used a direct-instruction approach. The authors of the study suggested a longer exposure to the pedagogy of microteaching was needed to ensure PETE students' fundamental knowledge of, and practical experience with, CL.

O'Leary et al. (2015) utilised an action research design investigated three undergraduate students' use of jigsaw learning teaching pupils gymnastics during a secondary school placement. The findings of this study indicated that it is difficult for students to

translate theory to practice. Pupils' limited practical ability, their minimal teaching capabilities, and their problematic social relationships were identified as the main challenges that influenced students' use of jigsaw learning.

Legrain et al. (2019) conducted quasi-experimental research in France, with 69 PETE students, to examine the influence of a scaffolding procedure (CLS⁸) on participants' knowledge, skills, and self-efficacy in comparison to a CL and a direct-instruction experience. The study revealed that, although no difference was found in PETE students' self-efficacy between the three different training conditions over time, CL and CLS participants' pedagogical knowledge and motor skills were significantly stronger. The authors argued that assigning PETE students the role of learner and teacher in a Jigsaw design generated personal and vicarious experiences that positively influenced instructional knowledge acquisition, which enhanced their practice.

In Spain, Cañabate et al. (2019) carried out a mixed study with 63 PETE students and pupils to explore PETE students' reflection on CL practice in schools. A qualitative analysis of reflective narratives identified that, although the PETE students had positive experiences with CL, they encountered some difficulties with implementation, which included pupils socialising during group activities, poor individual awareness of being a member of a group, and poor regulation of the roles, time management, and organisation required to implement CL. PETE students in this study reported that they facilitated promotive interaction for the whole group, promoting responsibility for contributing to their group's challenge, suggesting that dialogical intrapersonal bonds helped the groups to progress.

Similarly, the PETE students in Hortigüela-Alcalá et al. (2020) did not meet their expectations of success because of resistance from both the pupils and associate teachers as well as classroom management issues in CL classrooms. These findings align with reports on

⁸ CLS means that students learn in a CL environment, including pre-activity scaffolds for instruction.

PETE students' difficulties when implementing other pedagogical models in schools, such as Teaching Games for Understanding (Vollmer & Curtner-Smith, 2016; L.-J. Wang & Ha, 2012a, 2012b), Tactical Games (Wright et al., 2009), and Sport Education (Deenihan & MacPhail, 2013, 2017).

Indeed, it is implausible to expect PETE students to apply all features of a pedagogical model in school classrooms. Vollmer and Curtner-Smith (2016) found that neither of the two PETE students in their study could enact the full version of Teaching Games for Understanding during the internship even though they understood elements of this model. Curtner-Smith et al. (2008) classified the different versions of implementation as the full version (i.e., all key elements of the model are used), watered-down version (i.e., selective features of the model are used), and cafeteria-style (i.e., incorporate parts of the model but reluctant go too far). As Hordvik et al. (2019) pointed out, it would be more productive to view PETE students' delivery of pedagogical models as translating that PETE students "make sense of their PETE learning in a specific setting and a set of circumstances" (p. 13).

To conclude, in this section CL has been presented as a pedagogical model in PE that has great potential for pupils' cognitive, physical, social, and emotional learning. Despite the evidence, such research must be interpreted with caution. To make sure CL functions appropriately and thoroughly, teachers are required to implement CL carefully and authentically based on sound knowledge of CL. However, there is still insufficient evidence for us to understand the extent to which PE teachers, and student PE teachers, understand CL theoretically and practically. Furthermore, there is little evidence as to how teachers' use of pedagogical strategies ensures the authenticity of CL as, to date, most research has been descriptive based on practitioners' self-reported practice. There is also a lack of observational data documenting teachers' use of CL in PE classrooms and little research on PETE students'

learning and use of CL. Consequently, there is a need for further research to investigate these aspects of CL's development.

Chinese Literature on Cooperative Learning in Physical Education

As the current study is conducted in China, Chinese literature on CL in PE has been analysed, raising two significant issues. The first concerns the effectiveness of CL in teaching students various sports, while the second relates to the investigation of Chinese practitioners' implementation of CL in PE classes.

Effectiveness of Cooperative Learning in Chinese Physical Education

Much of the current Chinese literature on CL pays particular attention to comparing CL's effectiveness with the traditional, and more common, teacher-driven approach to teaching the various sports and physical activities in the Chinese PE curriculum. Guan (2015), reporting a quasi-experimental study with university basketball students, claimed that students in CL classrooms were more motivated and engaged in their learning, achieving better learning outcomes for skill performance, and demonstrated higher levels of cooperation and teamwork than their counterparts. Similarly, H.-S. Zhang (2009) investigated the impact of CL on a group of PETE students learning of volleyball; the evidence suggested that CL positively impacted participants' basic volleyball skills and knowledge. Several other quantitative studies have examined CL as an innovative approach to teaching Chinese students tai chi (L. Chen et al., 2003), martial arts (Dang, 2017), callisthenics (S. Wang et al., 2006), gymnastics (G. Zhang, 2015), track and field (H.-L. Hu et al., 2015), swimming (L.-N. Ma, 2017), badminton (Y.-H. Zhang, 2007), soccer (C.-Q. Xu, 2007), table tennis (Z. Zhou & Xing, 2016), and tennis (Tang & Li, 2013).

Aligned with western studies, a large number of empirical studies in the Chinese context have claimed that CL contributes to student learning in terms of sport participation, psychological health and social adaptation, sports skills, and knowledge (L. Chen et al., 2003;

Dang, 2017; Lu, 2014; W.-L. Yang et al., 2016; Yi, 2012). For example, Lu (2014) conducted a 16-week instructional quasi-experiment with middle-school students during a unit of study focused on basketball. Based on data collected with questionnaires on students' learning motivation, group cohesion, and cooperative awareness, Lu (2014) reported that implementing CL benefited students' reasoning, their valuing of community, awareness of cooperative concepts, and motivation to learn, and accelerated their acquisition of motor skills. The author posited that because the CL model concentrated more on student-oriented teaching and learning than teacher-centred instruction, students increased their sense of responsibility and were willing to contribute to the whole group.

The announcement of several education reform policies and the introduction of physical and health education curriculum standards in China (MoE, 2001a, 2011, 2014b, 2017) might be a contributory factor to the increasing research on the effectiveness of CL in PE. Didactic, teacher-directed teaching methods are engrained in Chinese schooling (Han, 2018; H. Li, 2013), especially in Chinese PE teaching, where PE teachers are used to explaining sports techniques in detail and demonstrating each movement to students (Ji & Wang, 2004; Meng et al., 2020; Yuan et al., 2019). Within the publication of new policy documents, PE teachers are now being asked to utilise innovative teaching methods such as CL. It is, thus, unsurprising that research is being conducted to validate the effectiveness of CL.

Implementation of Cooperative Learning in Chinese Physical Education

A major issue reported in Chinese literature regarding the implementation of CL concerns the instructional procedures in classrooms. H.-X. Chen (2007) suggested a five-step approach for teachers to practise CL, which included: preclass preparation, development of goals and tasks, collective teaching, student group work with teacher feedback as needed, and assessment. In H.-X. Chen's (2007) five-step approach, however, the teacher is still

authoritarian and the conveyor of knowledge, possibly because ways of teaching and learning in Chinese schools are based on Confucian ideas (Choi, 2016; Ho & Hau, 2010). Chinese students are used to learning within the do-after-me pedagogy (Zhao, 2020). Another CL instructional approach proposed by X.-L. Lin and Yang (2008) included two stages: preparation for a CL class and implementation in the class. The first stage requires the teacher to complete goal setting and task design. The second stage comprises cooperation between the teacher and students to present the goal and task. Students engage in self-study, cooperation, and group discussion, concluding with cooperation between the teacher and students to evaluate learning outcomes. These procedures are essential for front-line teachers when implementing CL in their regular classes.

Nevertheless, all these procedures fail to reflect the key elements of CL adequately. For example, interpersonal and small group skills are elements highlighted by researchers when implementing CL in PE classes (Dyson & Casey, 2016). Teachers must develop social skills with their students, especially in the Chinese context, where Chinese people are accustomed to being collectivists (Bond, 1991). For example, K.-W. Chan (2014) proposed that teachers should teach students relevant social skills, such as how to give face to their group members to maintain group harmony.⁹

Several Chinese scholars have noted that teachers faced challenges in implementing CL in PE classes (Y.-C. Liu, 2012; Yi, 2012). Based on the analysis of 20 video cases of PE classes in the Chinese National Youth Teachers' Teaching Competitions, Y.-C. Liu (2012) found that limited time was provided for students to learn how to cooperate with peers. Teachers did not design objectives that incorporated students' physical skills, social learning,

⁹ Confucian philosophy has heavily influenced Chinese culture. The concepts of *ren* (goodness), *yi* (rightless), *li* (ritual), *zhi* (wisdom), *xin* (honesty), which relate to how people behave and treat one another in society suggested by Confucianism, lie at the core of social practice and communication in Chinese. Conflict and confrontation are generally seen as disrupting the harmony of the group (Bond, 1991), while giving face to each member of the group is regarded as important to maintain good relationships with groupmates.

and affective learning, and neither reward interdependence nor task interdependence were evident in these classes.

An important issue that may be related to the limited uptake of CL is Chinese PE teachers' limited competency in delivering the CL model (Huang et al., 2016; X. Li, 2008; Sun, 2017). Chinese PETE programmes have not prepared the teachers with the required knowledge and pedagogical skills of CL at an early stage (Dyson, Shen, et al., 2021). Furthermore, Chinese PE practitioners have limited access to professional development on CL (Dang, 2017; Dyson, Shen, et al., 2021).

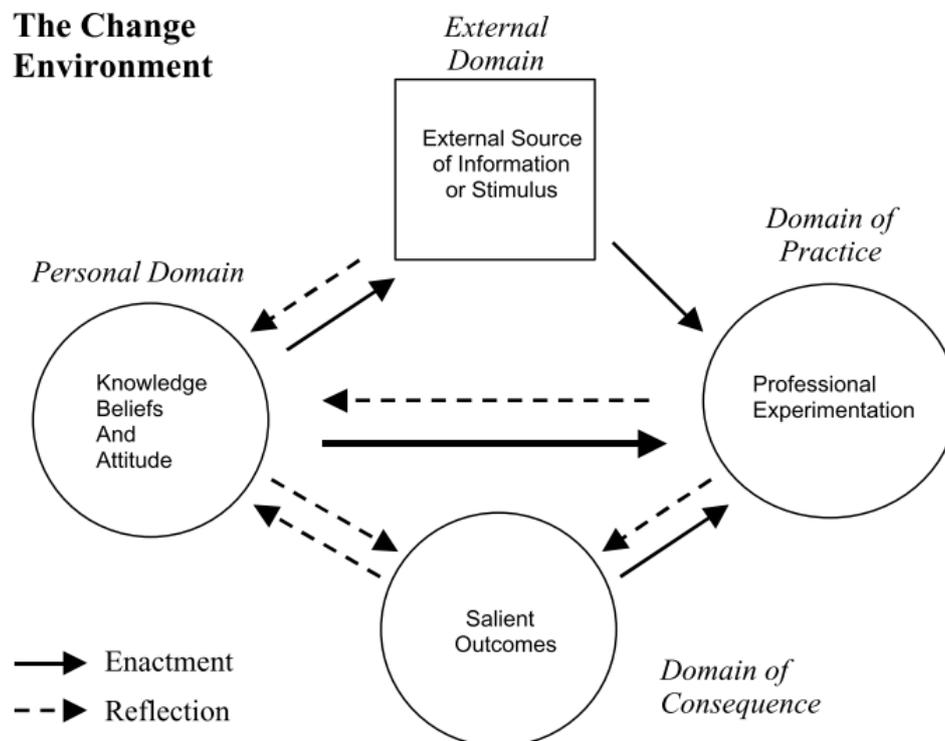
Several years ago, Chinese PE teachers proposed that they needed professional learning opportunities focusing on CL and relevant instructional procedures and strategies to have a better understanding of CL (Dang, 2017; Lu, 2014). More recently, Dyson, Shen, et al. (2021) advocated for further efforts to be made to incorporate CL into the Chinese PETE programme within universities. Moreover, it has been suggested that an organisation focusing on CL, including PE-specialty students in the universities, researchers, and in-service PE teachers, be established to encourage interaction between front-line PE teachers in schools and researchers working in the universities or institutes (Y.-L. Wang, 2009).

In summary, Chinese research on CL has identified that CL has achieved some positive learning outcomes in teaching students various sports and physical activities. These findings must be interpreted with caution, given that details about the quasi-experimental process and problems of intervention in these studies have not always been presented. While details of the instructional procedures of CL used have been demonstrated in some studies, further work needs to be done to ensure the fidelity of implementation of CL. The literature on CL highlights the need for professional learning of CL both for schoolteachers and student teachers. The remainder of this chapter focuses on the theoretical framework of this study and a model which illustrates teachers' professional growth.

The Interconnected Model of Professional Growth: Theoretical Framework

The interconnected model of professional growth (IMoPG) (Clarke & Hollingsworth, 2002) is a dynamic model that aims to represent the “process by which teachers grow professionally and the conditions that support and promote that growth” (p. 947) within teacher education or development programmes. Through the lens of situated learning theory, Clarke and Hollingsworth (2002) believed that teacher practice represents an individual teacher’s personalised enactment of the knowledge and beliefs “by which the community of teachers is constituted as a community of practice” (p. 955).

The IMoPG suggests that (student) teacher change occurs in recurring cycles “through the mediating processes of ‘reflection’ and ‘enaction’ in four distinct domains which encompass the teacher’s world” (p. 950). These domains include the personal domain, domain of practice, domain of consequence, and external domain (see Figure 4). The nonlinear nature of this model recognises the complexity of the teacher’s professional growth by identifying multiple growth pathways between the domains. This model does not present a cyclical process of teacher change as the domains are neither sequential nor casual. Instead, the arrows are used to represent “how change in one domain can be translated into [a] change in another through the mediation of reflection and enaction” (p. 951). This model recognises that teachers’ professional growth is “an inevitable and continuing process of learning” (p. 947) situated in the enveloping changing environment. In the following, I first describe and discuss the four distinct domains, mediations of enactment and reflection, and the change environment of the IMoPG in the context of this current study. I then present the specific patterns in teacher professional growth. Finally, I justify using the IMoPG as an analytical tool to interpret the findings of the present thesis.

Figure 4*The Interconnected Model of Professional Growth*

Note. Adapted from "Elaborating a Model of Teacher Professional Growth," by D. Clarke, and H. Hollingsworth, 2002, *Teaching and Teacher Education*, 18(8), p. 951. Copyright 2002 by Elsevier Science.

Distinct Domains in the Teacher's World

Similar to the four domains identified by Guskey (1986, 2002), Clarke and Hollingsworth (2002) suggested that four distinct domains encompass the teacher's world. First, the personal domain accounts for teachers' knowledge, beliefs, and attitudes (Clarke & Hollingsworth, 2002). In the present study, this domain refers to changes in PETE students' perspectives on CL. I use the term *perspective* to designate PETE students' knowledge of, experience with, and beliefs about CL. Of particular interest in this study are the changes in PETE students' content knowledge of CL, pedagogical content knowledge of CL, and beliefs about CL throughout the CLPL; that is, their perspectives on CL before and after the CL course and after their practice in the school-based practicum.

Second, the domain of practice is where teachers experiment and try out new ideas and resources in their classrooms (Clarke & Hollingsworth, 2002). In this study, the domain of practice is how the PETE students personally experienced CL in the course and how they implemented CL in their PE classes in the practicum school.

Third, the domain of consequence represents teachers' reflection on what happened and their judgements of whether something was successful or unsuccessful. These salient outcomes in relation to teachers' practice, such as teacher control and student engagement, are "firmly tied to the teacher's existing value system" (Clarke & Hollingsworth, 2002, p. 953) and exert a strong influence on teacher's thinking and decision making. In this study, salient outcomes in the domain of consequence include the PETE students' intention to use CL and their beliefs about the effectiveness of CL on pupils' learning.

Fourth, the external domain is distinguished from the other three domains by its location outside the teacher's personal and intrinsic world (Clarke & Hollingsworth, 2002). According to Clarke and Hollingsworth (2002), the external domain incorporates external sources of new information and stimulus, such as professional publications as well as conversations with colleagues and online resources that influence a teacher's professional learning. This domain, in my study, refers to the microteaching in the CL course and coaching facilitation during the school practicum. More specifically, the external domain in the present study includes readings of CL in general education and PE, demonstration of a school PE teacher through videos, the lecturer's modelling of CL teaching, and peer microteaching of CL in the course. This domain also includes other external sources of support on using CL in the practicum school, such as weekly meetings with the lecturer and peers as well as regular conversations with associate teachers.

Mediating Process in Teacher's Professional Growth

Teacher growth in the IMoPG is “constituted through the evolving practices of the teacher, which are iteratively refined through a process of enaction and reflection” (Clarke & Hollingsworth, 2002, p. 955). Enaction is distinguished from “simply acting” as more powerful because of its planned nature that represents a confirmation of “something a teacher knows, believes or has experienced” (Clarke & Hollingsworth, 2002, p. 951). Reflection in the IMoPG is closely accompanied by enaction, as defined by Dewey’s (1910) articulation of “active, persistent and careful consideration” (p. 6). In the interconnected model, reflection focuses on one domain’s occurrence while drawing on knowledge or beliefs in another domain. The different forms of enaction and reflection, serving to interconnect all four domains for this study, are elaborated in Table 4.

Table 4*Enaction and Reflection From One Domain to Another in the Interconnected Model of Professional Growth*

To From	Personal domain	External domain	Domain of practice	Domain of consequence
Personal domain	–	PETE students’ perspectives on CL influence what they did or said during the CLPL (enaction)	PETE students’ perspectives on CL crucially impact something that occurs in their teaching practices of CL (enaction)	Reflection on their perspectives makes PETE students aware of their actions and can be an indication of what happens in their classrooms
External domain	Reflection on what happened during the professional learning can give rise to a change in PETE students’ perspectives on CL	–	The microteaching and coaching facilitation strongly support PETE students’ practice of CL (enaction)	–
Domain of practice	Reflection on peer microteaching in the course and practice in the practicum classrooms can give rise to a change in PETE students’ perspective on CL	–	–	Reflection on peer microteaching in the course and practice in the practicum determines what happens in the classroom
Domain of consequence	Reflection on how PETE students perceive their practice of CL can give rise to a change in their perspectives on CL	–	What happened in classrooms determined the revision of PETE students’ practice of CL (enaction)	–

Note. Personal domain: PETE students’ perspectives on CL; External domain: cooperative learning professional learning; Domain of practice: PETE students’ experiment with CL; Domain of consequence: PETE students’ perceived learning outcomes of CL. “–” means that there is no direct reflection from one domain to another.

Change Environment

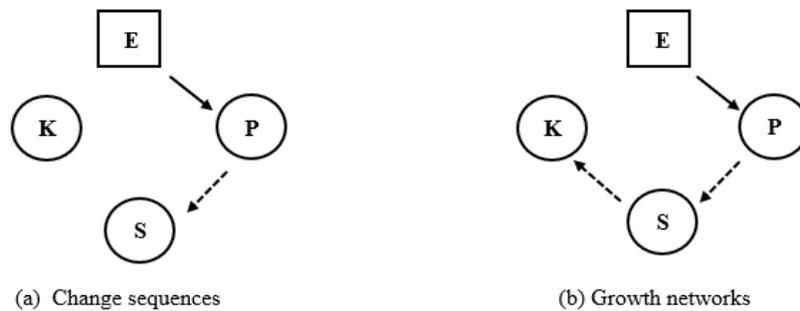
Lave and Wenger (1991) argued that teacher learning is “an integral part of generative social practice in the lived-in world” (p. 35). In the same vein, a teacher’s professional growth is made possible by particular elements in the larger context, namely the change environment. Clarke and Hollingsworth (2002) proposed that teacher growth is an “individual amalgam of practice, meanings, and context” (p. 965). For instance, all the facets of the change environment encourage collegial discussion and acceptance of a new practice in the school environment, and act to both afford and constrain teacher growth. Specifically, these factors might give rise to a change in any change domains in the IMoPG (Clarke & Hollingsworth, 2002). In the present study, the enveloping change environment, such as their engagement in the CLPL and as members of the practicum school community, appeared to shape PETE students’ CL growth.

Identifying Specific Patterns in Teacher Professional Growth

In regard to the order in which change has been observed to occur, Clarke and Hollingsworth (2002) distinguished different kinds of change sequences indicating momentary change and more lasting change. They described momentary change as a “change sequence” (p. 958). The change sequence that “consists of two or more domains together with the reflective or enactive links connecting these domains” might be fleeting and quickly relinquished (p. 958). Clarke and Hollingsworth described the more lasting change as growth. It is viewed in the IMoPG as a “growth network.” The growth network is seen as a cycle of enaction and reflection that leads to durable changes in more than one domain, in which sequences are more involved than a change sequence. Examples of change sequences and growth work are shown in Figure 5.

Figure 5

Examples of Change Sequences and Growth Networks



Note. (E = external domain; P = professional experimentation; S = salient outcomes; K = knowledge, beliefs, and attitudes).

For Clarke and Hollingsworth, teacher growth typically “involves multiple and cyclic movements between the analytical domains of teacher’s world” (p. 961). The goal of professional learning should focus on durable growth rather than simply evidence of change, which may or may not represent ongoing changes in beliefs, practices, or dispositions. In the current thesis, the evidence of PETE students’ knowledge, beliefs, and instructional behaviours throughout the CLPL became my measure of durable change.

Adoption of the Interconnected Model of Professional Growth

Several empirical studies have reported on the use of the IMoPG in teachers’ professional learning. While the IMoPG has been used primarily to examine in-service teachers’ change or professional growth (see example Ketelhut et al., 2020; Witterholt et al., 2012), it has also been used to investigate student teachers’ learning and developmental change (Ayalon, 2019; Ayalon & Wilkie, 2020; de Jong et al., 2005; Nielsen, 2015; Pearson, 2007). For example, Ayalon and Wilkie (2020) used the IMoPG as the theoretical framework to investigate the process of how mathematics student teachers develop their assessment literacy through experiencing an approximation of practice. The authors suggested that the professional-growth process presented in the IMoPG resonates with practice-focused ITE

programmes that emphasise repeated opportunities to experience teaching practices rather than the classroom-based lecture.

The IMoPG is mainly used to analyse the learning of individual teachers (see X. Wang et al., 2014). Several studies, however, have demonstrated it is also applicable when identifying change sequences or growth networks in a group of teachers (Ayalon, 2019; Ayalon & Wilkie, 2020; de Jong et al., 2005; Hung & Yeh, 2013; Widjaja et al., 2017). In Widjaja et al. (2017), the authors examined the professional learning experiences of ten Australian mathematics teachers and numeracy coaches who participated in a lesson-study project. This study reported that the IMoPG was used to analyse the growth of the teachers' professional knowledge about their students, collaborative planning skills, and enhancement of collaborative practices for teacher inquiry.

Although the IMoPG was intended to describe the process for professional growth over the long term (Clarke & Hollingsworth, 2002), it has informed research studies of short-term professional learning interventions with practising teachers (see example Justi & van Driel, 2006; Wilkie, 2019). Wilkie (2019), for instance, carried out a qualitative multiple-case study over 2 months to explore the process of six secondary school teachers' changed practice in algebra as a result of their engagement in school-based professional learning.

Based on the literature discussed above, the IMoPG is an appropriate analytical tool to interpret the professional growth and learning of CL of a cohort of PETE students within 4-month CLPL. More importantly, the IMoPG aligns closely with the three research questions of the current study. The personal domain of the IMoPG links closely to the first question about PETE students' perspectives on CL, while the domain of practice relates to PETE students' practice of CL. The external domain connects to the characteristics of CLPL. The IMoPG, therefore, provides a framework that can be used to explain the findings of this study comprehensively and systematically.

Moreover, there are several “gaps” embedded in the extant studies framed by the IMoPG. Firstly, until recently, far too little attention has been paid to the aspects within the change environment that appear to have influenced teachers’ growth (for exceptions, see Ketelhut et al., 2020; Schipper et al., 2017). Secondly, as the IMoPG has seldomly been used in the Chinese context (for an exception, see D.-D. Zhou, 2019), I believe that examining contextualised factors in China extends the IMoPG to a new context. Thirdly, the IMoPG is mainly used in science and mathematics, with little research done in the field of PE, specifically in PETE.

To conclude, the IMoPG is a flexible context-specific professional development approach that can help researchers to interpret how the four interconnected domains and the change environment influence teachers’ professional growth. As explained above, the IMoPG has been used to investigate a group of student teachers’ development in short-term professional learning. In this study, I use it as a heuristic to analyse 20 Chinese PETE students’ professional growth within CLPL in a PETE programme; that is, I use the IMoPG to interpret the process of a cohort of PETE students’ developmental understanding of, commitment to, and ability to implement CL over 4 months.

Chapter Summary

This chapter has presented the key literature related to the thesis. I first reviewed the concept of CL, which is defined as a pedagogical model that encompasses learning, teaching, curriculum, and context. I then outlined three theoretical foundations of CL. As discussed previously, my study is positioned within the social constructivist theory and social interdependence theory.

The second part of the chapter justified the necessity of CL in ITE programmes and presented an overview of the content and pedagogy needed to prepare teachers to competently and confidently use CL. The literature is consistent in arguing that learning CL

through experiencing CL is a productive approach to developing student teachers' knowledge of and beliefs about CL.

The third section of this chapter reviewed CL as a pedagogical model in the discipline of PE. It presented the potential of CL in PE classes for students' cognitive, physical, social, and emotional learning. Teachers' perspectives on and implementation of CL were then reviewed. While the implementation of CL is complex and challenging, it is likely to facilitate teachers' conceptual change in teaching and learning. The review of literature on CL in PETE programmes suggests the need to provide PETE students with professional learning experiences of CL.

The fourth part of the chapter provided a brief review of CL in Chinese PE classes. In this section, I examined the implementation of CL in China and referred to Chinese scholars' preference for a quantitative approach to validate the efficacy and accountability of CL in the local context.

Finally, the chapter has reviewed the theoretical concept I use to explain the findings of this study. I justified the use of IMoPG to investigate PETE students' learning of CL. The interconnection of PETE students' engagement in the CLPL, the changes in their perspectives on CL, and pupils' learning outcomes associated with PETE students' implementation of CL form the basis of the rationale for this thesis.

Chapter 3: Methodology

Introduction

This chapter describes and justifies my approach to investigating how the PETE students develop their perspectives on, and implementation of, CL within CLPL. It begins with a description of, and a rationale for, the research methodology used in the present study. First, the decision to apply an interpretive paradigm and to use qualitative methodology using a case study approach is justified. The second section details the research settings and is followed by a description of the research participants and the role of the researcher. In the third section of this chapter, I describe the data-collection procedures and data-analysis process. I conclude this chapter by discussing the trustworthiness and ethical considerations pertinent to this study.

Research Methodology

Methodology is the framework that guides or informs a particular research project based on assumptions about the nature of reality, what constitutes knowledge of the reality, and the appropriate methods of building knowledge of the reality (Punch, 2014). Ackroyd and Hughes (1992) argued that the choice of the research methodology should be based on the “best fit” for answering the research questions. In the following pages, I articulate explicitly the research methodology of the present study to explain and justify the approaches and methods I have used.

An Interpretive Research Paradigm

Given that researchers’ beliefs about the world shape what and how research should be studied and understood (Creswell, 2014; Denzin & Lincoln, 2000), I start by discussing ontological and epistemological beliefs before justifying the selection of a particular methodology (Schwandt, 2001). Ontology, the theory of being (Crotty, 1998), is concerned

with the nature of what exists. It involves questions such as “what is the form and nature of reality and, therefore, what is there that can be known about it?” (Guba & Lincoln, 1994, p. 108). Ontological assumptions include relativism (reality as a mental construct), nominalism (reality as independent of human thoughts), materialism (the external world consisting of matter which exists independent of our mind), and realism (a social world independent of our knowing) (Denzin & Lincoln, 2000, 2018).

Epistemology refers to the theory of knowledge, namely how we know what we know. It relates to a question of “what is the relationship between the knower and would-be knower and what can be known?” (Guba & Lincoln, 1994, p. 108). The answer is dictated by ontological belief. Researchers’ ontological and epistemological position determines their selection of methodology, that is, the theory of methods. The convergence of these three connected elements (i.e., ontology, epistemology, and methodology) are collectively referred to as a research paradigm, a basic belief system that guides decision making and action (Denzin & Lincoln, 2000). Examples of different paradigms include interpretive, pragmatism, positivist, and critical social science (Creswell, 2014; Denzin & Lincoln, 2000; Neuman, 2003).

Embracing a relativist ontology and subjective epistemology, I subscribe to an interpretive research paradigm in this thesis. For interpretivists, realities are multiple and differ from person to person as different people may construct meaning in different ways according to their different history, geographical origins, culture, and personal experiences (Crotty, 1998; Guba & Lincoln, 1994). I believe that the PETE students in the current study constructed their own understanding of CL and made sense of their personal experience in the CLPL. PETE students’ different interpretations will, collectively, create multiple realities that enhance my understanding of their learning process in the university course and school practicum experience. From an interpretivist’s perspective, the knower and the known are

interactively linked to co-create understandings (Denzin & Lincoln, 2000). In this study, I was an “insider” during the research process because I had interactions with the PETE students in naturalistic settings where they learned and implemented CL (see Schwandt, 1998). I then interpreted how these PETE students made sense of their sociocultural contexts and activities (see Borko et al., 2008). The subjective epistemology acknowledges that all research is value-laden and biased (Creswell, 2014). The issue of possible bias is made explicit and discussed in the section on trustworthiness at the end of this chapter.

The interpretive paradigm is considered suitable for the current research as it is strongly linked to the aims of this study. Interpretive research seeks to give a deeper, more extensive, and systematic representation of events from the perspectives of those involved (Candy, 1989; Pope, 2006). Interpretative research in teacher education offers insights into student teachers’ thinking and experiences to answer questions about “how teacher candidates make sense of learning to teach and manage the complexities of teaching and learning” (Borko et al., 2008, p. 5). It also investigates elements of the educational settings that impact learning and the recognition of context by attending to features of the setting (Borko et al., 2008). Central to this study is gaining an understanding of PETE students’ learning and practice experience of CL during professional learning. Therefore, the interpretative paradigm is used to frame the current research and investigate how PETE students interpret their learning and teaching of CL in the CLPL.

Qualitative Methodology

Qualitative methodology aims to provide a rich, thick description of the phenomenon under study, with multiple data sources, and is a key methodological approach used within an interpretative paradigm (Creswell, 2014; Denzin & Lincoln, 2000; Flick, 2007). The typical features of qualitative methodology are “the goal of eliciting understanding and meaning, the researcher as the primary instrument of data collection and analysis, the use of fieldwork, an

inductive orientation to analysis and findings that are richly descriptive” (Merriam, 1998, p. 11). Qualitative methodology allows the researcher to interpret the meanings presented by people in natural settings (Denzin & Lincoln, 2000). It is particularly appropriate when a detailed understanding of an issue can only be established by gaining the perspectives of the participants in the study (Borko et al., 2008; L. Cohen et al., 2018). The qualitative methodology, therefore, was most appropriate for the current study to explore the voices of different groups of participants with a stake in PETE students’ learning and teaching of CL.

A Case Study Design

A case study design was used to investigate how PETE students learned about and implemented CL. While case study is one of the most frequently used qualitative methodologies, there is no consensus on its definition (Yazan, 2015). Yin (2014) defined a case study as “an empirical inquiry that investigates a contemporary phenomenon (the ‘case’) in depth and within its real-world context, especially when boundaries between phenomenon and context may not be clearly evident” (p. 16). In comparison, Stake (1995) described case study as a “study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (p. xi). He classified case studies into three different types according to their purpose and methods used: intrinsic, instrumental, and collective cases. Merriam (1998) defined case study as “an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, a person, or a social unit” (p. xiii).

Despite the different definitions of case study, there are common features. First, case studies require researchers to define the boundaries of a case (Creswell & Poth, 2017; Merriam, 1998; Yin, 2014). In the present research, 20 PETE students were part of the same PETE programme, were taught by the same lecturer in the CLPL, and were entering the same school for the practicum experience. The case, therefore, was bounded by the cohort of PETE

students within the CLPL. Second, case studies allow researchers to have an in-depth understanding and interpretation of educational phenomena by collecting multiple sources of evidence in a naturalistic context, such as observations, interviews, and document analysis (L. Cohen et al., 2018; Creswell & Creswell, 2018; Marshall & Rossman, 2011; Merriam, 1998; Simons, 2009; Stake, 1995; Yin, 2014). Case studies provide rich, vivid, subtle, and complex descriptions of the phenomenon under investigation (L. Cohen et al., 2018). Furthermore, case study research design enables researchers to identify the interactive processes in a specific instance or situation (Burns, 2000; Mutch, 2005). As Merriam (1998) noted, case study focuses research on “the process rather than outcomes, in context rather than a specific variable, in discovery rather than confirmation” (p. 19).

As case study design enables researchers to comprehend group perceptions of events, it was considered suitable for the current research to understand the cohort of PETE students' perspectives on CL. The use of case study research design in this study also allowed participants to be observed and empowered the researcher to “put forward interpretations for what [was] observed” (Bassegy, 1999, p. 47). An aim of this study was to investigate, through classroom observations, how PETE students implemented CL in their school practicum experience. Moreover, Yin (2014) and Stake (1995) suggested that a case study is particularly appropriate in the evaluation of programmes. Their propositions are consistent with one of the intentions of this study, that is to understand the characteristics of the CLPL that impacted PETE students' perspectives on and practice of CL.

Case study has been criticised for its lack of generalisability from one case to another because of the different contexts and limited number of participants (Creswell, 2007; Punch, 2014). However, case study research does not aim for universal generalisability in the positivist sense (Guba & Lincoln, 1981; Schofield, 1990). Instead, it aspires to expand the scope of the theory that guides or emerges from the original case (VanWynsberghe & Khan,

2007; Yin, 2014), by offering significant insights into situations that are not always apparent through numerical analysis (L. Cohen et al., 2018). Another concern associated with case study design is the personal involvement and subjectivity of the researcher that may influence the interpretation of the case (L. Cohen et al., 2018; Simons, 2009). Thus, the researcher should be aware of the possibility of bias in reporting findings.

Research Settings

Denzin and Lincoln (2000) proposed that the nature of the interpretive qualitative study is to investigate participants' meaning-making within their natural settings. To answer the research questions most effectively, the researcher needs to carefully select a research site where specific events are most likely to occur (Creswell & Creswell, 2018; McMillan & Schumacher, 2014). Site selection is a "negotiation process to obtain the freedom of access to a site that is suitable for the research problems and feasible for the researcher's resources of time, mobility, and skills" (McMillan & Schumacher, 2014, p. 377). In contrast to random sampling in quantitative research, the selection of settings and people in qualitative research is more likely to be strategic, purposive, and representative to best understand the phenomenon being studied (L. Cohen et al., 2018; Marshall & Rossman, 2016; Miles et al., 2020). Purposive sampling, therefore, has been suggested for a qualitative case study (Merriam, 1998; Patton, 2015), where researchers assemble the sample "on the basis of their judgement of their typicality or possession of the particular characteristic(s) being sought" (L. Cohen et al., 2018, p. 218).

Given that the current study aimed to explore how PETE students developed their perspectives on and practice of CL, I purposefully selected the research site in the Nanshan Normal University (pseudonym) in Fujian province, China. A typical CLPL has been organised by the School of Physical Education and Sports Science of this university in recent years. Some video-recorded lessons of the CLPL are open to the public on the website of

Xinhua Net. These videos demonstrate how PETE students learn about CL through experiencing CL in the university coursework. It was believed that the CLPL in this university would provide a range of data for this study.

According to the manual distributed to each PETE student, this CLPL is accessible to all fourth-year PETE undergraduates who are interested in CL. Typically it admits the first 25 registered PETE students. The CLPL aims to expand PETE students' pedagogical knowledge concerning theoretical ideas that inform CL, associated implementation strategies, and sound assessment practice, through their active engagement in and reflection on CL activities from both a student teacher's and pupil's perspective. It also targets PETE students' actual use of CL in practicum school classrooms. The CLPL has two phases, including a CL course in the university that spans 4 to 5 weeks and coaching facilitation during PETE students' practicum occurring over 10 weeks in a local primary or secondary school.

In the current study, the CL course took place at Nanshan Normal University. It consisted of nine workshops, with each workshop lasting from 120 to 150 minutes. The PETE students accessed CL through an "immersion approach" (Nattiv et al., 1991). That is, the course was taught through a CL structure of Learning Teams. The PETE students in the course were asked to work in heterogeneous groups, planning and practising CL in microteaching sessions. Samples of instructional materials needed for practising CL were distributed to PETE students. Demonstrations of CL in PE classes were also provided by a lecturer before PETE students' experimentation with CL. In each workshop, time was set aside to discuss PETE students' experiences with CL. An overview of the course is presented in Table 5. The teaching and learning activities of the course are explained more fully in Chapter 6.

Four workshops of the CL course (i.e., the first, second, seventh, and ninth) occurred in a smart classroom at the university, which integrated digital displays, tabs, whiteboards,

assistive listening devices, and other audio/visual components on three walls of the classroom. The desks were movable, and the seating arrangement could be easily changed to support student interaction. The remaining five workshops were conducted in a large, well-resourced indoor stadium.

After the nine workshops, the PETE students were placed into the same practicum school. They were supervised by the lecturer of the CL course and associate teachers in the practicum school using a clinical supervisory approach (Glickman & Bey, 1990). The practicum setting was a high school in Fuzhou, the Fanggu school (pseudonym). Fanggu school is geographically close to the university and has a long-term partnership with the university as a practicum site. It is a suburban public high school, comprising over 2,400 students. Fanggu school has 12 full-time and two part-time PE teachers, two females and 10 males, covering the PE teaching of over 48 classes from Year 10 to Year 12. This school is well resourced in terms of overall space, equipment, and facilities to run an effective PE programme. There is a multipurpose stadium, a 400 m track with large fields in the middle, two tennis courts, four volleyball courts, and six ping-pong tables. Several basketball courts were being rebuilt at the time of data collection.

The Fanggu school has a proud sporting history and culture, achieving distinctions in several national or province-level sports competitions in aerobics, basketball, and volleyball. Its PE courses are devised according to the Physical and Health Education Curriculum Standards of High Schools (2017 version) and are conducted in small classes (maximum of 30 students) with students able to choose the context for learning. There are seven sports available for pupils to select, based on their interests, including basketball, volleyball, badminton, ping-pong, martial arts, gymnastics, aerobics. Pupils in each grade have two PE classes per week. Each PE class lasts 40 minutes.

Table 5*Overviews of the Aims and Learning Activities Covered in Cooperative Learning Course*

Workshop	Main aim	Learning activities
1	Expanding PETE students' content knowledge of theoretical underpinnings, key elements, and structures of CL.	Teambuilding and role play. Presentation of theory, elements, structures, and outcomes of CL.
2	Developing PETE students' pedagogical content knowledge of CL (e.g., the instructional materials used in a CL class).	Distribution of grouping sheet and task-sheet samples. Demonstration of a CL class in PE via video.
3	Developing PETE students' pedagogical content knowledge of CL, particular to the instructional procedures of CL.	Lecturer modelling of a CL lesson using Learning Teams. Discussion of PETE students' experiences with CL.
4	Developing PETE students' pedagogical content knowledge of CL (e.g., the teacher's role in a CL class).	Demonstrating a CL lesson in teaching volleyball by Group 1. Discussion of PETE students' experiences with CL.
5	Developing PETE students' pedagogical content knowledge of CL (e.g., the practice of the five key elements of CL).	Demonstrating a CL lesson in teaching basketball by Group 2. Discussion of PETE students' experiences with CL.
6	Developing PETE students' pedagogical content knowledge of CL, particular to the classroom management issues.	Demonstrating a CL lesson in teaching martial arts by Group 3. Discussion of PETE students' experience with CL.
7	Developing PETE students' pedagogical content knowledge of CL (e.g., the design and utilisation of task sheets).	Evaluating the task sheets designed by each group via peer assessment and teacher assessment. Discussion of PETE students' experiences with CL.
8	Developing PETE students' pedagogical content knowledge through their engagement in and reflection on CL from both a teacher's and learners' perspectives.	Demonstrating a CL lesson in teaching basketball by Group 4. Discussion of PETE students' experiences with CL.
9	Facilitating an examination of PETE students' perspectives on CL and the course about CL.	Reflection of PETE students' perspectives on CL. The final discussion of PETE students' experiences with CL. Evaluating the professional learning course about CL.

Research Participants

Purposive sampling (Merriam, 1998) was used to select the participants in this study. Since the main aim of the present study was to investigate how PETE students learned about and practised CL throughout the CLPL, I purposefully selected a group of PETE students who enrolled in the CLPL as the primary participants. Furthermore, because prior research (Chapter 2) has suggested that CL teacher educators and associate teachers in practicum are likely to have an impact on the PETE students' understandings and practices of CL, I invited the lecturer of the CL course and associate teachers in the practicum school to join the study as participants. This resulted in three groups of participants: PETE students, lecturer of CL course, and associate teachers at Fanggu school.

PETE Students

Before commencement of the CL course in the university, 25 PETE students who had enrolled in the CLPL was purposefully selected and invited to be the primary participants and experience CL. Of the 25 students selected, 22 students replied and consented to participate in the study. Subsequently, two were unable to commit to the time because of the postgraduate entrance examination. The 20 PETE students who participated ranged in age from 21 to 23, with 14 male and six female students. Thirteen of the PETE students majored in ball games such as basketball, volleyball, football, badminton, and tennis, while the remaining seven participants majored in sports such as martial arts, aerobics, and dance sport.

After the CL course and before the school practicum, I purposefully selected nine of the 20 PETE student participants to gain an in-depth understanding of how PETE students implement CL in school classrooms. These nine PETE students were selected based on their demonstrated confidence, willingness, and enthusiasm to implement CL in their practicum experience. Applying these selection criteria allowed for the best possible situation in which to investigate PETE students' use of CL as a teaching model (see Merriam, 2016). One

student withdrew his participation due to his associate teacher's refusal to allow CL to be used in his class. Eight PETE students were, therefore, followed and observed in their school practicum. Details of the PETE student participants are summarised in Table 6.

Table 6

Demographic Information of PETE Student Participants

Pseudonym	Gender	Age	Specialisation	Focus group	Practicum experience
Bao	Male	22	Football	Group 1	Followed
Biao	Male	23	Martial arts	Group 1	Followed
Hang	Male	22	Basketball	Group 3	Followed
Jie	Female	22	Dance sport	Group 2	Followed
Juan	Female	21	Badminton	Group 4	Followed
Qian	Female	22	Aerobics	Group 3	Followed
Wei	Male	21	Badminton	Group 2	Followed
Yi	Male	22	Volleyball	Group 3	Followed
De	Male	23	Badminton	Group 4	Not followed
Han	Female	22	Football	Group 3	Not followed
Hua	Male	23	Dancesport	Group 4	Not followed
Ling	Male	23	Volleyball	Group 2	Not followed
Mou	Male	23	Badminton	Group 1	Not followed
Quan	Male	22	Aerobics	Group 2	Not followed
Rong	Female	22	Martial arts	Group 3	Not followed
Sen	Male	22	Dancesport	Group 2	Not followed
Xiao	Female	23	Football	Group 1	Not followed
Yuan	Male	23	Aerobics	Group 1	Not followed
Zheng	Male	21	Tennis	Group 4	Not followed
Zi	Male	22	Badminton	Group 4	Not followed

Lecturer

The lecturer, Ms. Zhou (pseudonym), is an experienced PETE teacher educator who had taught for 12 years at the time of the data collection. She is responsible for several

courses in the PETE programme of the School of Physical Education and Sports Science, such as “School Physical Education,” “Teaching Materials and Pedagogy,” and “Pedagogical Skills I.” Ms. Zhou had a great interest in CL as a doctoral student. During her doctoral programme, she applied to be a visiting scholar overseas and worked alongside an expert in CL in PE for a year in New Zealand. After that, she started to conduct quasi-experimental research in Chinese secondary and primary schools and presented a study of CL in her doctoral thesis. Meanwhile, she is brave and innovative to use CL as her predominant pedagogy in her PETE classes. Ms. Zhou has extensive experience in mentoring PETE students and is familiar with the practicum school and the syllabus of its PE classes.

Associate Teachers

Eight associate teachers working with the eight followed PETE students during the practicum were invited to participate in this study. Seven teachers (one female, five males) with varying years of teaching experience replied and consented to their participation. None of the teachers reported learning CL in their teacher education programmes or through subsequent professional development. However, six stated that they implemented CL occasionally in their teaching in the form of group work. Participant information about the associate teachers is summarised in Table 7.

Table 7*Demographic Information of Associate Teacher Participants*

Pseudonym	Gender	Years of teaching experience	Mentored PETE student
Cao	Male	8	Biao
Huan	Male	6	Wei
Min	Male	12	Bao
Shen	Female	10	Qian
Sun	Male	18	Yi
Yu	Male	5	Hang
Zang	Male	6	Juan

Role of Researcher

In this study, I was an insider researcher. I speak the same language as the participants (i.e., Chinese Mandarin), understand the values, knowledge, and taboos in China, and know the formal and informal power structure in the Chinese educational context. Being an insider engendered a level of trust and openness in my participants (see Dwyer & Buckle, 2009). In addition, being an insider researcher enhanced the depth and breadth of understanding of PETE students' learning and teaching process of CL (see Kanuha, 2000). Specifically, I assumed the role of a teaching assistant, interviewer, nonparticipant observer, and human instrument in the current research.

Firstly, I assisted the lecturer by copying handouts and other instructional materials used in the course. Being an assistant helped me better understand the lecturer's expectations and perspectives about classroom preparation as well as the aims of the CL course. I did not assist the lecturer within the classroom as I was aware of the possibility of creating a power relationship between me and the students as I may have been perceived by the PETE students as a colleague of the lecturer, or an additional instructor (see Glesne, 2016).

Secondly, I was an interviewer and tried to be an effective communicator, by asking appropriate questions, listening intently, and empowering participants to freely voice their

opinions and ideas without adding my judgement to them, as recommended by Merriam (1998). Meanwhile, I established rapport (Ackroyd & Hughes, 1992) with the PETE students through answering students' questions and addressing their confusions about CL when requested. Building trust and reassurance with the participants enabled me to communicate better with them and obtain an insider's view (Fontana & Frey, 2000).

Thirdly, as I was a nonparticipant observer during PETE students' practice of CL in their school practicum, I did not participate in any class activities. I tried to make myself as unobtrusive as possible during classroom observations by remaining quiet and avoiding interruptions from PETE students.

Ultimately, I was a human instrument who collected and analysed data, and interpreted findings (Marshall & Rossman, 2016; Miles et al., 2020). As I was aware that being an insider could hinder the researcher from seeing all dimensions of the bigger picture while collecting data (see Unluer, 2012), I endeavoured to collect the research data without prejudice and invited my supervisors to continually challenge my interpretations. To ensure my interpretations were credible and reliable, I adopted several strategies to maximise the research rigour, such as sharing and checking the transcripts and interpretations with the participants. More details are presented in the Data Analysis and Trustworthiness sections.

Data Collection

To enhance the rigour and quality of research, the selection of research methods should be compatible with the nature of the study under investigation and the specific research question to be answered (Ackroyd & Hughes, 1992; Carter & Little, 2007). The present case study, situated within an interpretive qualitative methodology, attempts to provide a rich description of how a group of PETE students learned about CL in CLPL. Thus, I adopted a range of qualitative methods that were open ended and prolonged in nature to capture participants' interpretation of their experience. These methods, often associated with

case study (see Merriam, 1998; Simons, 2009; Stake, 1995), included interviews, observations, collections of artefacts and documents, and field notes. Table 8 provides an overview of data-collection procedures, including the collection times, specific methods used, and the participants involved in each time point. The description and rationale(s) for each data source are described in Table 9.

Table 8*The Data-Collection Timetable*

2018		Cooperative learning professional learning (setting)	Data collection		
Month	Week		From PETE students	From the lecturer	From associate teachers
September	1		First focus groups First concept map	First semistructured interview	
	2	CL course (University)		Postlesson interviews Instructional materials	
	3				
	4				
	5				
October	6		Second focus groups Second concept map		
	7	Practicum experience (Practicum school)	Classroom observations Reflective journals Instructional materials		Semistructured interview
	8/9				
9					
10					
11					
12					
November	13				
	14				
	15				
	16				
December	17		Semistructured interview Third concept map	Second semistructured interview	

Table 9*The Data Gathering Sources*

Data source	Participants	Description of data source	Rationales for choosing such data
1. Focus groups	20 PETE students	I interviewed the PETE students in four groups of five before and after the CL course.	Providing a supportive and relaxing environment for students to discuss their experience with and express opinions about CL.
2. Concept maps	20/8 PETE students	20 PETE students were asked to draw concept maps about CL before and after the course. Eight PETE students drew the third concept map after their school practicum.	Gauging students' perspectives on CL at different time points to explore their development in understanding CL.
3. Postlesson interviews	The lecturer	I interviewed the lecturer after every workshop of the CL course.	To understand the lecturer's reasoning behind her instructional strategies in the course.
4. Classroom observations	8 PETE students	I observed and video-recorded eight PETE students' implementations of CL in the practicum.	To collect first-hand information about students' actual practice of CL in the school.
5. Reflective journals	8 PETE students	The eight students wrote a semistructured reflective journal after every time they implemented CL during their school practicum.	To motivate students to reflect upon the practice of CL.
6. Semistructured interviews	8 PETE students 7 associate teachers The lecturer	A face-to-face semistructured interview was undertaken with each of the eight PETE students, the lecturer, and seven associate teachers during or at the end of the practicum experience.	For an in-depth understanding of participants' perspectives on and experience with CL.
7. Instructional materials	8 PETE students The lecturer	Teaching plans and task sheets were collected from the eight PETE students and the lecturer.	Collect supplementary data to triangulate the students' and lecturer's use of CL.
8. Field notes	Researcher	I kept making notes about key incidents that took place during the data collection.	To record my insights about significant events that happened in natural settings.

Interviews

The interview is regarded as “one of the most important sources of case study evidence” (Yin, 2014, p. 110). It provides access to “people’s perceptions, meanings, definitions of situations and constructions of reality” (Punch, 2014, p. 144). L. Cohen et al. (2018) suggested that interviews allow participants to articulate how they understand or interpret the world they are in, their thoughts, and the meaning of their experiences. The use of interviews in this study assumes that “the respondent is at least an adequate reporter of his or her attitudes, beliefs and other subjective states, his or her relationship with others, past, present and intended behaviour, and about objective features of the respondent’s life” (Ackroyd & Hughes, 1992, p. 103). In the present study, I used interviews to understand PETE students’, the lecturer’s, and associate teachers’ perspectives on CL.

Patton (2015) distinguished three main types of interviews: informal conversational interviews, a general interview-guide approach, and a standardised open-ended interview. Similarly, Fontana and Frey (2000) classified interviews as structured, semistructured, and unstructured, which could be applied to individual and group interviews. All interviews conducted in the current study were semistructured because of the flexibility for me to ask open and probing questions that led to a greater depth of data. At the same time, the interviews had a structure that focused the interviews on participants’ embedded perspectives on and practice of CL (see Ackroyd and Hughes, 1992).

I used focus groups, individual semistructured interviews, and postlesson interviews to collect data in this study. More details about each of the collected interview data are presented in the following.

Focus Groups. The purpose of focus groups is to explore “a particular topic of interest or relevance to the group and the researcher” (Berg, 2004, p. 123). It is not to reach a consensus about the issues but to bring forth different viewpoints on a topic (Brinkmann &

Kvale, 2015). The main strength of focus groups is that the interactions among and between group members may facilitate one participant to react to comments made by another or to brainstorm collectively with other members of the group in a supportive atmosphere (Berg, 2004; Lichtman, 2014; Marshall & Rossman, 2016). By creating such a social environment for a small group of participants which is homogeneous in characteristics (McMillan & Schumacher, 2014), the researcher is more likely to increase the quality and richness of data than through one-on-one interviewing (Rubin & Rubin, 2012).

Focus groups were conducted with the PETE students at two different times. The initial focus group took place 1 week before the start of the CL course. Its purpose was to gain insights into students' experience with schooling PE and PETE programmes and their initial perspectives on CL. The second focus groups occurred soon after the course and focused on exploring any changes in PETE students' perspectives on CL. They also attempted to gain PETE students' points of view about the impact of the course related to their perspectives on CL. Mindful that it is imperative to have a guided but not inflexible interview agenda (Berg, 2004; Lichtman, 2014), the focus group schedule included a series of open-ended questions (see Appendix 2). Some of the questions were refined after the pilot focus group with five junior PETE students who were not involved in this study. Probing questions that were not on the interview schedule were added to encourage the students to say more when appropriate (see Thomas, 2011).

The 20 PETE student participants were divided into four groups of five, in response to Krueger's (2000) suggestion that focus groups should be no more than seven individuals. All focus groups took place in a meeting room in the School of Physical Education and Sport Science, a place that is quiet, private, and was mutually agreed upon by the students and me. Focus groups were recorded by video camera to distinguish one from another and to ensure

the quality of data analysis (see Marshall & Rossman, 2016). Each of the focus groups lasted approximately 90 minutes.

Cognisant of the literature that emphasises the role of the researcher as a moderator during focus groups (Berg, 2004; Thomas, 2011; Wilkinson, 2004), I was careful to practise appropriate questioning skills and to manage group dynamics. For example, I strove to bring the conversation back to the core topic when it drifted too far (see Rubin & Rubin, 2012). I repeated and explained my interview question, “what benefit was this course to you?” to the third group of students when they were enthusiastically talking about the effectiveness of CL instead. I tried to enhance the quality of the focus group data by encouraging quieter students to participate and express their opinions (see Thomas, 2011). Furthermore, I did not ask questions of each focus group member in turn, but instead, I facilitated a flowing group discussion (see Silverman, 2013).

Individual Semistructured Interviews. In addition to focus groups, one-on-one, face-to-face semistructured interviews were used to understand the experience of individuals. It was assumed that each of the interviewees would interpret his or her experience on his or her own terms (see Charmaz, 2006; Patton, 2015; Seidman, 2006). Individual semistructured interviews were conducted with three different groups of participants: PETE students, the lecturer of the CL course, and associate teachers at the practicum school.

Interviews with the eight PETE students who implemented CL in their school practicum took place soon after they implemented CL to elicit their teaching experiences with CL, and their pedagogical decisions for, and perspectives on CL. It was also hoped that insights could be gained into how PETE students had been supported during their practicum. The interview schedule was first piloted with two PETE students who had implemented CL in their practicum classrooms but were not included as they had not sent back their consent forms before the practicum. The interview schedule was divided into three sections: PETE

students' practice of CL, PETE students' description of support, and PETE students' perspectives on CL (see Appendix 3). Each semistructured interview with the PETE students took about 50 minutes.

Two individual semistructured interviews were conducted with the lecturer responsible for the CLPL. The initial interview that took place before the CL course was used to elicit the lecturer's beliefs about, understandings of, and teaching experience with CL. Questions included how CL was understood and used in the lecturer's teaching (see Appendix 4). The second interview with the lecturer, at the end of the practicum experience, was used to gain her perspectives on PETE students' learning of CL and a description of how the lecturer supported PETE students' practices of CL during practicum. Each of the interviews with the lecturer lasted approximately 60 minutes.

Individual semistructured interviews were also carried out with the seven participating associate teachers during PETE students' practicum experience. The questions focused on their understandings of, beliefs about, experiences with CL, and their perceived role in mentoring the PETE students how to practise CL in school classrooms (see Appendix 5). The interviews were conducted in a private office in the practicum school, either during the break times or after school, whichever suited them best. Each semistructured interview with associate teachers took about 30 minutes.

Postlesson Interviews. The postlesson interview was used to gather data from the lecturer soon after each of the workshops in the CL course. The nine interviews provided insights into the meaning the lecturer gave to her practice (see Marshall & Rossman, 2016) and enabled me to understand, in depth, the operation of the CLPL. The postlesson interviews were much shorter, with each interview lasting around 15 minutes. The interview questions were adapted from Dyson (1994) and modified to suit the current study's context (see

Appendix 6). Interviews were conducted either in the smart classroom or the indoor stadium of the university where the workshops took place.

All interviews were conducted in Chinese Mandarin, the first language of the participants. It was easier for the participants to express their thoughts freely, which allowed me to obtain a comprehensive understanding and interpretation of PETE students' learning of CL (see Denzin & Lincoln, 2005). All interviews were audio or video-recorded, transcribed verbatim, and selectively translated into English with permission. The transcribed documents were sent to participants for verification and/or amendment.

Classroom Observations

Observation is used frequently as a critical method for data collection in case study research (Merriam, 1998), when the aim is to get close to what is occurring naturally in the research site (Patton, 2015). Lichtman (2014) suggested that classroom observation in natural settings facilitates our understanding of the “complexity of human behaviour and interrelationships among groups” (p. 282). McMillan and Schumacher (2014) concurred, stating classroom observation enables the researcher to obtain a rich and deep understanding of “the context and the participants’ behaviours, which allows collection of a complete set of data to reflect the importance of the effect of the context” (p. 376). Therefore, it was considered particularly appropriate for the present study to observe PETE students’ actual use of CL in their practicum experience and understand how the CLPL may have influenced their implementation of CL.

Lacey (1976) identified two sorts of observation: participant observation and nonparticipant observation. In the current study, nonparticipant observation was adopted. I did not participate in class activities, offer PETE students suggestions about using CL, or interact with pupils. The nonparticipant observation allowed me to closely document each PETE student’s instructional performance (see Wisker, 2008). Cognisant that observations

must be completed in a “thoughtful way” (Delamont, 2016, p. 105), I utilised the Cooperative Learning Verification Tool (CLVT) (Casey et al., 2015) to observe and pay close attention to PETE students’ implementation of CL. The CLVT included the several key categories of CL: heterogeneous teams, group goals, teacher-as-facilitator, assessment of pupils’ learning outcomes, and the overall learning atmosphere (see Appendix 7). PETE students’ pedagogical strategies to achieve these categories were the focus of the observations.

Classroom observations were conducted with eight PETE students who implemented CL in their practicum and had consented to be observed. Each PETE student was observed five times over 10 weeks of practicum, with one exception (Jie). An additional sixth observation in Jie’s classroom was completed according to her own request. Thus, there were 41 video-recordings of PETE students’ practice of CL. Each of the observations lasted for the duration of the lesson, 40 to 45 minutes. To meet the demands of prolonged engagement and persistent observation (Lincoln & Guba, 1985), all the observed lessons were selected by the PETE students themselves. All classroom observations were video-recorded by a portable video camera mounted on a tripod placed unobtrusively in the corner of the playground or stadium. The PETE students wore wireless microphones during observations, which allowed the visible and audible actions to PETE students’ implementation of CL to be captured (see Pink, 2007).

Collection of Artefacts and Document Analysis

In addition to interviews and classroom observations, documents and artefacts can be used in a case study to “portray and enrich the context and contribute to the analysis of issue” (Simons, 2009, p. 62). Collection of artefacts and document analysis are regarded as a part of the triangulation process, supporting other methods to establish the trustworthiness of qualitative research (Patton, 2015; Stake, 1995). McMillan and Schumacher (2014) suggested as well as personal documents identified by the researcher, the researcher can ask participants

to make anecdotal records of their actions and experiences of the subjects being studied. In the present study, the PETE students were requested to draw concept maps and write reflective journals. In addition, I collected instructional materials from the lecturer and PETE students to support my interpretation of the interview and classroom observation data. While documents can be informative for understanding social realities in institutional contexts, they rather than as a form of bias-free data (Atkinson & Coffey, 2004; Flick, 2014; Punch, 2014). The document data were seen as a way of contextualising information.

Concept Maps. A concept map is a schematic device that contains nodes, links, propositions, and structural parameters (Reitano & Green, 2012). Concept maps were used in this study to elicit and reflect on how PETE students explicitly represented and organised their existing knowledge (see Jonassen et al., 1997) in a form that mirrors their beliefs, biases, and understandings of CL (see Kinchin et al., 2000). Martin and Kompf (1996) suggested that as well as documenting an individual's current level of understanding, a concept map can be an evaluative tool representing growth or changes in people's thinking. In the present study, PETE students were asked to draw concept maps at three different time points (i.e., before the CL course, at the end of the course, and at the end of their practicum experience) to evaluate their progressive levels of understanding associated with CL. Concept mapping can be used in a structured, nonstructured, or semistructured manner (Zanting et al., 2003). In the present study, the PETE students drew semistructured diagrams for their thoughts about the concept of CL. Guiding questions, such as what is CL? how CL is structured? what is the effectiveness of CL? were provided for PETE students to start drawing, but they were free to add any other links. The rationale for using semistructured concept maps was that they have the advantage of nonstructured mapping in allowing for individual concepts to be expressed (Martin & Kompf, 1996) while remaining a structure that focused on the relevant research questions.

The initial concept maps were collected from 20 PETE students at the start of the first workshop of the CL course, while the second ones were gathered at the final workshop from 19 PETE students. One PETE student was absent from the last workshop because of a family issue. The eight PETE students who used CL in their school classrooms contributed to the third concept maps soon after their practicum. All the concept maps were written in Chinese Mandarin and analysed using a qualitative approach (see Kinchin et al., 2000).

Reflective Journals. As discussed in Chapter 2, reflections play an essential role in teachers' development (Clarke & Hollingsworth, 2002; Schön, 1983). Valli (1997) suggested that neophyte teachers require guidelines about what to look for when they reflect on their teaching. A template for a semistructured reflective journal was provided to each of the eight PETE students to think about each of their practices of CL in their practicum classrooms (see Appendix 8). The template was developed based on the work of Dyson (1994) and modified according to the demands of the current study. It was based around questions or writing cues: (1) What were my instructional objectives for the lesson? (2) How did I implement CL in the lesson? (3) What were the most positive aspects of the class, and why did it work well? (4) What were the most negative aspects of the class, and why did it not go well? (5) What are the questions or difficulties I need help and support with? A total of 41 copies of reflective journals were collected; each was numbered and dated to ensure it could be matched with the relevant lesson transcripts and instructional materials.

Instructional Materials. Instructional materials were collected from the lecturer and the eight PETE students who practised CL in their practicum. The course syllabus, handouts, teaching plans for the CL course were gathered from the lecturer. The course syllabus provided me with an overview of the aims and particular learning activities in the CL course. Handouts and teaching plans enabled insights into PETE students' learning experience of CL in the course. I also collected the eight PETE students' teaching plans and task sheets that

were prepared for each of the observed lessons because they provided evidence of PETE students' pedagogical strategies and understandings of CL. All the instructional materials were used to triangulate findings.

Field Notes

The last strategy to elicit and record data was to write field notes. Silverman (2013) suggested that field notes provide insights into the researcher's thinking and reactions to what he or she is studying and its effect on the researcher and others. In this study, the field notes were used as a record of my experience as an observer and interviewer and my perceptions about the noteworthy events during my fieldwork. Some of the notes were recorded at the time of observation or interview. Other notes were recorded as soon as possible after the interview. To help interpret the meaning of field notes, I described situations and events of interest in detail (see Emerson et al., 2011; Flick, 2014). For example, during the classroom observations of PETE students' practicum teaching, structural details such as students' group composition strategies and my personal feelings about their actions were recorded. In conjunction with other sources, the field notes were subjective information which enabled me to analyse the data and interpret my findings.

Data Analysis

L. Cohen et al. (2018) explained that analysing qualitative data involves "organising, describing, understanding, accounting for, and explaining data, making sense of data in terms of the participants' definitions of the situation (of which the researcher is one), noting patterns, themes, categories and regularities" (p. 643). This definition emphasises that analysing qualitative data requires the researcher to organise, explore, interpret, and explain the data from the participants' perspectives and present the data systematically and understandably to readers. There are diverse approaches and methods of analysing qualitative data because qualitative research may be conducted in diverse ways. The present study

employed an analytic process within an interactive model of qualitative data analysis as suggested by Miles and Huberman (1994). According to Miles and Huberman, qualitative data analysis includes three interwoven and iterative streams of analysis: data condensation, data display, and drawing and verifying conclusions. The following pages will describe the data-analysis procedures I followed (see Table 10). Although it is described as a linear process, in reality, the analysis was iterative (see Miles et al., 2020). I went backwards and forwards between condensing the data through coding and displaying it in various forms, then going back to the data to confirm or disconfirm the conclusions being drawn.

Preparing and Organising Data

Creswell and Guetterman (2019) pointed out that it is critical to systematically organise qualitative data because of the sizable amount of information gathered during the data-collection process. Adhering to this advice, as soon as data collection commenced in this study, I created a computer file to organise the materials by data source type, such as “focus groups,” “class observations,” “concept maps,” and so forth. Within each of the categories, there are several subfiles for each participant named by pseudonym. To prevent any data loss, I backed up all forms of data in both a mobile HDD and a computer (see Creswell & Guetterman, 2019). Table 11 records the sources of data collected for the current study.

Table 11

Data Sources of the Current Study

No.	Data Source	Quantity
1	Focus groups	8 video-recordings
2	Semistructured interviews	17 audio-recordings
3	Postlesson interviews	9 audio-recordings
4	Classroom observations	41 video-recordings
5	Concept maps	47 copies
6	Reflective journals	41 copies
7	Instructional materials	53 copies
8	Field notes	50 copies

Transcribing and Describing Data

I transcribed all interview recordings to a Word file as soon as possible, following the verbatim audio transcription style (see Braun & Clarke, 2006). The decision to transcribe all interviews myself avoided potential challenges to the quality of transcriptions from other transcribers who may be unfamiliar with the content, misinterpret words and phrases, or “tidy up” participants’ original voice (see L. Cohen et al., 2018; Poland, 2002). Recordings of

interviews were listened to carefully more than once so that the interviewees' voices would be presented accurately in the written transcripts (see Rubin & Rubin, 2012). The transcripts were checked back against the recordings to ensure they were thorough and of high quality (see Braun & Clarke, 2006). All interviews were conducted in Chinese Mandarin; hence the transcripts were written initially in Chinese.

Compared to transcribing interview recordings to Word files, classroom observation recordings were concurrently transcribed and described in NVivo. This was because, with the observation data, I intended not only to examine the eight PETE students' instructions but also to analyse their behaviours when orchestrating CL in the classrooms. The time calculation in NVivo enabled me to record the timeline and develop a sound understanding of the focus of PETE students' teaching. I transcribed and described all classroom observation recordings in Chinese. After transcribing and describing each of the PETE students' recordings, a few rounds of checking were undertaken. Corrections were made accordingly.

Subsequently, finalised transcripts and descriptions of interviews and classroom observations, together with scanned copies of concept maps, reflective journals, instructional materials, and field notes, were analysed in NVivo 12.

Condensing Data

Data condensation refers to the process of "selecting, focusing, simplifying, abstracting, and transforming the data that appear in the full corpus (body) of written-up filed notes, interview transcripts, documents, and other empirical materials" (Miles et al., 2020, p. 8). It is a form of analysis that sharpens, sorts, discards, and organises data so that conclusions can be drawn and reported. The data condensation process in this study was completed using both inductive and deductive approaches. The inductive (data-driven) approach was used, specifically, to acknowledge, recognise, and encode content as the initial procedure before synthesising and interpreting data (see Braun & Clarke, 2013). A set of

codes and themes emerged during the coding process. The deductive approach (top-down) is driven by the researcher's theoretical lens, analytic interest, or understanding of prior research (Bryman, 2012). In the present study, an informal set of codes and themes was created based on the research questions, literature on CL, and my own knowledge, understanding, and teaching experience. Miles et al. (2020) proposed a two-stage process of first and second cycle coding for data condensation. First cycle coding is used to process chunks of raw data to filter out relevant information in the form of codes, while second cycle coding groups codes merged in the first process into a smaller number of categories and themes.

First Cycle Coding. First cycle coding is a way to summarise data segments initially and enable the researcher to identify, evaluate, and reevaluate codes emerging from the data (Miles et al., 2020). In the current study, I employed five coding methods in the first cycle coding process: provisional coding, in vivo coding, descriptive coding, subcoding, and process coding (Saldaña, 2021).

Provisional coding means the researcher generates a “start list” of codes before data collection and analysis, which is consistent with the deductive approach (Saldaña, 2021). In this study, I employed 27 predetermined codes, grounded in the literature on CL, to guide the deductive provisional coding (see Table 12). As described above, this preexisting code scheme was reexamined and developed alongside the new codes that emerged from inductive coding. For example, “orientation lesson” was added as a new inductive code in relation to PETE students' implementation of CL in the practicum. *Orientation lesson* demonstrates that PETE students acknowledged the importance of informing and familiarising pupils about the rules, norms, and structures of CL lessons before teaching with CL.

Table 12*Provisional Codes Grounded in Literature on Cooperative Learning*

Domain	Provisional codes	Source
Key elements of CL	Positive interdependence, individual accountability, promotive interaction, social skills, group processing, the delegation of teacher's authority, ill-structured task	E. G. Cohen (1994b); Johnson & Johnson (2009)
Application of CL	Locus of control, decision making in teaching, teacher's role	Brody & Davidson (1998)
	Concerns of practice	Dyson (2001)
	Group roles	Dyson (2002)
	Class organisation and management	Dyson et al. (2010)
	Group goals, teacher-facilitator, mixed-ability groupings, CL structure, positive interdependence, face-to-face interaction, group processing, small group skills, individual accountability	Dyson & Casey (2016)
Strength of CL	Physical learning, cognitive learning, social learning, affective learning	Casey & Goodyear (2015)

In the first cycle coding, in vivo coding, descriptive coding, and subcoding methods, using an inductive approach, were applied to analyse interview transcripts, field notes, artefacts, and documents. In vivo coding refers to a method that creates codes using participants' actual language based on the frequency of keywords and phrases used in the data (Saldaña, 2021). Descriptive coding means coding a passage of qualitative data using a word or short phrase to represent the basic topic of the data segments (Saldaña, 2021). In vivo coding and descriptive coding helped me as a novice qualitative researcher to begin the coding because they are safe and secure techniques (see Saldaña, 2021). After the first round of coding with in vivo coding and descriptive coding, I turned back to the data codes and utilised subcoding to detail and categorise the data for further analysis (see Miles et al., 2020;

Saldaña, 2021). Subcoding represents coding from a primary code to detail or enrich the entry, resulting in a more general “parent code” and some “children codes” that share the same parent in a hierarchy (Gibbs, 2007, p. 74). Table 13 presents examples of in vivo coding, descriptive coding, and subcoding when analysing focus group interview data.

Table 13

Sample of Coding Process Within In Vivo Coding, Descriptive Coding, and Subcoding

Focus group interview data	Codes	Coding method(s)
Researcher: [0] Do you have any concerns about implementing cooperative learning during practicum experience?	[0] concern	Descriptive coding
Qian: [1] I think it may be not applicable for some sports, such as aerobics. [2] Although it seems easier to provide them with task sheets or visual videos, I feel that it would be very difficult to perform if pupils are unfamiliar with this sport.	[1] “not applicable for some sports” <i>concern: teaching content</i>	In vivo coding <i>Subcoding</i>
Yi: [3] Some associate teachers are old (pause); they may be too traditional to accept new things, such as cooperative learning.	[2] “unfamiliar” <i>concern: pupils’ fundamental skill</i>	In vivo coding <i>Subcoding</i>
Hang: Yes. That is true. [4] Besides, we will need to teach senior pupils more than one sport in every lesson. That will be many challenges.	[3] “too traditional to accept” <i>concern: associate teachers’ attitudes</i>	In vivo coding <i>Subcoding</i>
Rong: Right. They will learn Taiji in the first 10 minutes before learning volleyball. [5] Do we need to form different groups accordingly?	[4] “multiple contents” <i>concern: contextual factor (content)</i>	In vivo coding <i>Subcoding</i>
Hang: Well, [6] I am considering the single-gender class in Fanggu school. [7] In a male class (pause), pupils maybe not cooperative.	[5] “form different groups?” <i>concern: group composition</i>	In vivo coding <i>Subcoding</i>
Yi: [8] If they are all male pupils who are very self-disciplined, it will be tough for class management.	[6] “single-gender class” <i>concern: contextual factor (class composition)</i>	In vivo coding <i>Subcoding</i>
	[7] “not cooperative” <i>concern: pupil characteristics</i>	In vivo coding <i>Subcoding</i>
	[8] “class management” <i>concern: class management</i>	In vivo coding <i>Subcoding</i>

Process coding was used to analyse classroom observation data. Process coding is a technique that uses gerunds or *-ing* words exclusively to connote observable and conceptual action in the data (Charmaz, 2014; Saldaña, 2021). I employed process coding due to its ability to help researchers learn the process of a particular issue or area and how to handle the process in a logical sense (see Miles et al., 2020). In this study, process coding enabled me to code PETE students' ongoing actions associated with CL. Mindful of Saldaña's (2021) suggestion that process coding happens simultaneously with other coding methods, I inserted my field notes in the classroom observation transcription texts and then coded them together using the descriptive coding method. Table 14 describes the process coding of the classroom observation episode and descriptive coding of field notes (in italics).

Table 14

Sample of Coding Process With Processing Coding

Classroom observation transcripts and field notes	Codes
6:20–8:10. [1] Hang introduced the learning task to pupils and asked pupil-instructors to collect the task sheets from him. [2] Hang encouraged pupils to read task sheets together.	[1] designing task to group role [2] encouraging learning together
8:19–13:10. [3] Hang went close to Group 1 and questioned if they understood their individual responsibilities of each role. He emphasised the roles of instructor and manager and asked them to caution the number of practice and performance requirements. [4] <i>Hang kept an eye on the responsibility of each group role today. It seems that pupils were still not familiar with their roles and relevant responsibility.</i>	[3] questioning fulfilment of role responsibility [4] <i>emphasise role responsibility</i>
13:15–15:00. [5] Hang said to all pupils, “how about spending one minute to discuss how you performed just now? Please feel free to talk about the problems that exist in your group.” Some pupils answered. [6] Hang interpreted their views before asking pupils to discuss the second learning task, “please talk to your groupmates about how to perform the protective defence dribbling with the guidelines in your task sheet.”	[5] questioning group performance [6] encouraging group discussion
16:10–17: 43. [7] Hang went to a group and observed their group discussion. A pupil of this group asked Hang a question. Hang responded indirectly and asked a series of questions, “what do you think the purpose of defence?” “When will we use the protective position of dribbling?”	[7] asking open questions

Second Cycle Coding. Second cycle coding is an activity that reorganises, and reanalyses data coded in first cycle coding stage (Saldaña, 2013). The central goal of the second cycle coding is to condense data from first cycle coding into a small group of categories and themes (Miles et al., 2020; Saldaña, 2013). Pattern coding that identifies similarly coded data was used to find categories in this study (see Saldaña, 2013). Miles et al. (2020) suggested that pattern codes provide the researcher with a cognitive map for understanding incidents and interactions. In second cycle coding, codes from interviews, classroom observations, concept maps, reflective journals, instructional materials, and field notes were analysed to establish categories for each research question. A sample of pattern codes in relation to PETE students' implementation of CL is shown in Table 15.

Table 15

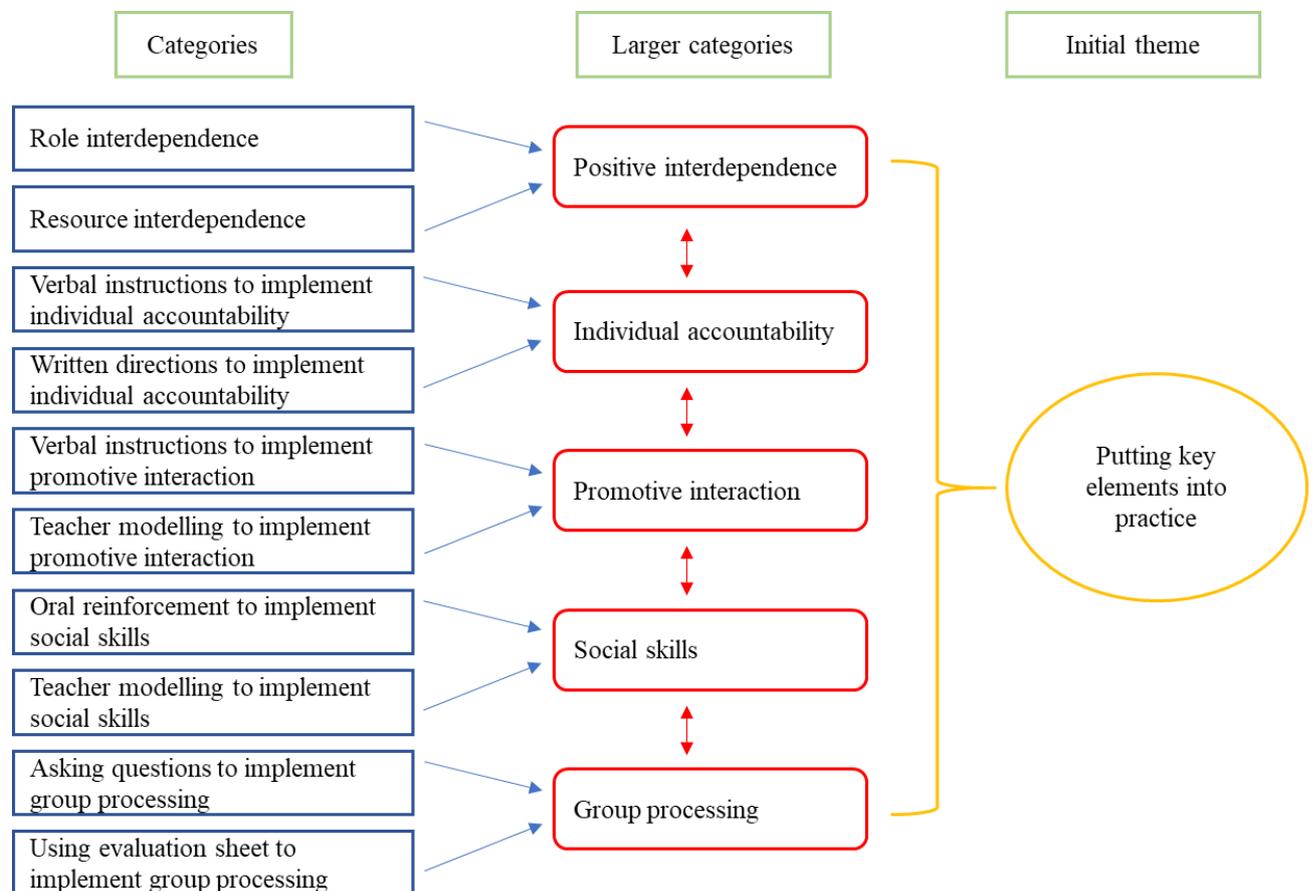
Sample of Coding Process With Pattern Coding

Codes	Categories
Assigning role of manager	Role interdependence
Assigning role of coach	
Assigning role of encourager	
Assigning role of organiser	
Preparing one task sheet for each group	Resource interdependence
Allocating two basketballs for each group of five	
Iterating role responsibility	Verbal instructions to achieve individual accountability
Questioning fulfilment of role responsibility	
Reinforcing role responsibility in task sheets	Written directions to achieve individual accountability
Explaining role responsibility in group sheet	
Reminding pupils to give feedback mutually	Verbal instructions to achieve promotive interaction
Suggesting pupils assist and tutor their groupmates	
Encouraging pupils to read and discuss task sheets together	
Modelling how to give feedback to peers	Teacher modelling to achieve promotive interaction
Modelling how to cooperate with groupmates	
Asking pupils to listen carefully to their peers	Oral reinforcement to achieve social skills
Iterating the importance of sharing	
Encouraging pupils to give praise to their groupmates	
Modelling how to encourage groupmates	Teacher modelling to achieve social skills
Modelling how to give praise to successful performance	

The similar categories were then clustered to construct larger categories before grouping them into initial themes. Figure 6 illustrates the coding cycle from categories to create an initial theme regarding PETE students' implementation of CL. Overviews of the theme-development process in relation to PETE students' perspectives on CL, the practice of CL, and the characteristics of the CLPL are presented in Appendices 9, 10, and 11, respectively.

Figure 6

Sample of Coding Cycle From Categories to an Initial Theme



Displaying Data

Creating visual formats that organise and assemble the condensed data systematically and coherently is a significant analysis activity. Miles et al. (2020) suggested that data displays, such as matrices, graphs, and networks, can help researchers understand “what is happening and to do something” (p. 9). In the present study, I employed three methods of data display, including NVivo coding under nodes, drawing matrices, and writing analytic memos. These approaches helped me immerse myself in the data, thinking, reflecting, and understanding the meaning of each chunk of data and interpreting the findings of this study.

One of the advantages of computer-assisted data analysis, such as NVivo, is the ability to organise large volumes of data and enable the researcher to access the data in flexible ways (Silverman, 2013). As mentioned earlier, all the data sources, such as interview transcripts and classroom observation recordings and transcriptions, were imported into NVivo. There were three sets of nodes associated with the three research questions. Each node contained all the chunks of data codes, relevant references, and data resources.

As with data condensation, I used Word to draw the bulk of matrices, which incorporated codes, significant data segments, and analytic memos for further analysis or for drawing conclusions. Cognisant that memo writing is an essential intermediate step between coding the data and writing the analysis reports (Charmaz, 2014), I added a column at the right of the matrix to capture my thoughts and ideas occurring during the coding process. These memos are generally substantive and theoretical and associated with my theoretical framework and research questions. They demonstrated the higher level of coding that linked coding with the developing positions (see Punch, 2014).

Translating

All the data collected in this study were in Chinese including the transcripts and descriptions of interview and classroom observation data. Thus, I needed to address the issue

of translation in the current cross-language research before drawing and verifying conclusions (see Pennycook, 2001), as required for the methodology rigour (Tobin & Begley, 2004) or trustworthiness (Denzin & Lincoln, 2005) of qualitative studies.

After displaying data in matrices, I translated the significant data segments that would be used in reporting findings. Because “no language directly matches any other” (Dalby, 2003, p. 271), I utilised the “conceptual equivalence” approach to translate Chinese Mandarin to English (see Cormier, 2018, p. 336). Conceptual equivalence focuses on translating participants’ ideas rather than their words, and translation occurs more at the sentence level (Shklarov, 2007; Sutrisno et al., 2014). For example, many of the PETE students described the PE classes of their schooling as *fang yang*, as they had limited experience with playing games or learning sports in their primary schools. The lexical equivalence of *fang yang* is herding sheep, which is very different from PETE students’ meaning. Based on PETE students’ descriptions, I translated *fang yang* into free-time activities.

Following my translation of the excerpts, I asked two of my doctoral peers to translate these significant excerpts again. They are bilingual researchers of Chinese Mandarin and English with applied linguistics backgrounds. In addition to their proficiency in both languages, they were educated in China and were very familiar with the Chinese educational system. Their deep understandings of both languages and cultures ensured the quality of their translations (see Cormier, 2018; Santos et al., 2015). I employed a parallel translation approach, in which each of my peer translators created a single translation independently, and we then met to discuss the differences between our three translated versions (see Sutrisno et al., 2014). To keep a clear audit trail, I drew a data display table of parallel translation showing the description of some differences and actions taken as a result (see Appendix 9).

As well as parallel translation with doctoral peers, I consulted with my supervisors, who are native English speakers, regarding the significant data segments in order to report the

findings in English. We discussed the context, the utterance, and the meaning of the data segments to avoid confusion.

Drawing and Verifying Conclusions

From the start of data collection, a qualitative researcher interprets what the data mean and forms tentative conclusions (Ezzy, 2002; Miles et al., 2020). As the data analysis continues, the initial vague conclusions become increasingly explicit and grounded during the iterative and cyclical process. By applying Miles et al.'s (2020) tactics for generating meaning, conclusions in the present study were drawn by noting patterns and themes, counting, and achieving theoretical coherence.

When working with text and initial displays, I noted the recurring patterns that helped me pull together many separate pieces of data. For example, in relation to the influential factors of the CLPL, microteaching, reflection, and coaching facilitation were frequently mentioned by participants. These patterns were then developed into three themes that form the basis of the findings in Chapter 6.

While qualitative research goes beyond “how much” to further explore the essential qualities of the data, researchers both count and interpret when they say that something is significant and recurrent (Miles et al., 2020). In this study, I counted the number of comments in each data set to create themes for each research question (see Appendices 10 to 12) and then drew conclusions based on their frequency. Displaying the node coding frequency enabled me to see rapidly what in a large batch of data and to keep myself analytically honest, protecting against any bias (see Miles et al., 2020).

In addition, through the process of establishing the discrete findings for each research question and then relating the findings to each other, links to the theoretical framework of teacher professional growth were apparent. That is, changes in teachers' knowledge and beliefs are interconnected with changes in an external source of information, professional

experimentation, and salient outcomes. Miles et al. (2020) cautioned that conclusion drawing is only half of the picture, and conclusions need to be verified as the analyst proceeds. The issue of the quality of conclusions in this study is discussed in the following section on trustworthiness.

Trustworthiness

While there has been considerable debate regarding what constitutes good qualitative research, the notion of trustworthiness, proposed by Lincoln and Guba (1985) is integral to the current interpretive qualitative case study. Trustworthiness can be determined by applying four evaluative criteria to research: credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985).

Credibility is associated with establishing truth value through demonstrating the findings and interpretations that are credible to research participants and readers of the study (Lincoln & Guba, 1985; Miles et al., 2020). Three activities used in this study to increase the credibility of the findings were triangulation, peer debriefing, and member checking.

Triangulation may involve using multiple data resources to investigate a phenomenon, because different methods, together, compensate for their individual limitations and exploit their respective advantages (Lincoln & Guba, 1985). In this study, triangulation occurred through consideration of different types of data in interviews, classroom observations, artefacts, and document analysis, and field notes. Triangulation was also strengthened with the use of three different sets of participants, that is through exploring the influential factors of the CLPL based on the contributions of a range of people (see Shenton, 2004). Peer debriefing, with frequent and thorough conversations with my supervisors throughout the research process, widened my vision and facilitated my construction of ideas and interpretations. Their critiques and challenges enabled me to recognise my preferences and promoted consideration of alternative interpretations (see Schwandt, 2001). Member

checking, that is providing the transcripts or descriptions of raw data for participants' consideration, amendment, comment, and/or verification, occurred to ensure the documented words matched what they intended (see Shenton, 2004). Only two of the 20 PETE student participants asked for their focus group data transcripts, and none requested any changes.

Transferability is concerned with the extent to which the findings of one study can be applied to other contexts (Lincoln & Guba, 1985). This qualitative interpretive study aims not to generalise the findings and conclusions but to develop an understanding of PETE students' learning of CL. I attempted to establish transferability through a rich, thick description of China's cultural and educational context. In these research settings, PETE students learned about and experimented with CL. Thus, readers can gain an understanding of the studied phenomenon and make their own judgement about the potential transferability to other settings (see Merriam, 1998; Miles et al., 2020)

Dependability refers to the consistency of the results obtained from the data (Lincoln & Guba, 1985). To address the issue of dependability, I have reported the research process in detail. Specifically, the qualitative case study design has been described and justified. Research methods and data-analysis procedures were executed in a systematic way and have been thoroughly described (see Shenton, 2004).

Confirmability refers to the data, findings, conclusions, and recommendations that can be confirmed by someone other than the researcher (Lincoln & Guba, 1985). In the present study, confirmability was demonstrated through triangulation, peer debriefing, and supervisors' checking that reduced the effect of any bias on my part (see Shenton, 2004). A process of reflexivity and self-critique contributed to the triangulation of the different data sources and the findings and interpretations (Schwandt, 2001). As an insider of this interpretive study, I have examined my personal and theoretical commitments to see how they served as resources for generating particular data and developing particular

interpretations (Schwandt, 2001). In addition, I have explained the reasons for favouring some research methods, such as the use of concept maps, in this study.

Ethical Considerations

Ethics should be a primary consideration, placed at the forefront of the research process (Creswell & Guetterman, 2019). It is the responsibility of the researcher to ensure involvement is not harmful to participants in any way (L. Cohen et al., 2018). The present study was conducted after receiving ethical approval on 8th August 2018 from the University of Auckland Human Participants Ethics Committee (Ref. 021744). The approval covered the ethical issues of informed consent, privacy, and confidentiality, as well as participants' right to withdraw.

The process of gaining research permission in China involved two institutions. First, permission was sought from the dean of the School of Physical Education and Sport Science. The dean agreed that the participation of the PETE students and the lecturer would not affect their relationship with the university and gave permission for me to visit the university to collect data. Second, permission was sought from the practicum school principal to invite and approach associate teachers as participants of the study.

Formal consent was sought from the dean and the principal after I presented the study aims, research procedures, methods, and ethical issues. Participant information sheets (PIS) were supplied to the 20 PETE students, the lecturer, and the seven associate teachers in this study (example see Appendix 13). Consent forms (CFs) were signed and gained from all participants (example see Appendix 14). All the PISs and CFs were translated from English to Chinese to avoid misunderstandings.

The privacy and confidentiality of all participants were respected through the self-selected pseudonyms. Given the possibility that some of the participants could identify each other from the data provided, such as the focus group data, they were requested, and

consented, to protect the anonymity of other participants in this study (see Miles et al., 2020). Both peer translators signed a confidentiality agreement. In addition, all transcription and descriptions of electronic recordings were done by me to help preserve confidentiality.

Chapter Summary

In this chapter, I have firstly outlined the methodological framework of the present study. The interpretive research paradigm framed the study focusing on the meaning the participants brought to their experience with CL. A qualitative methodology was an appropriate way to enhance understandings of the complexities of learning and practising CL through attending to the perspectives of the participants and employing multiple sources of data. The use of case study further enhanced an in-depth exploration of the case from multiple perspectives.

This chapter has also provided a detailed account of research settings, participants, the role of the researcher, and qualitative research methods. A description of the interactive and cyclical model for data analysis describes how I completed the analysis of interviews, classroom observations, documents, artefacts, as well as field notes data. The following three chapters report findings with reference to each research question respectively.

Chapter 4: PETE Students' Perspectives on Cooperative Learning

Introduction

The purpose of this chapter is to present the data in response to the first research question, “What are PETE students’ perspectives on cooperative learning throughout cooperative learning professional learning?” That is, what are PETE students’ perspectives on CL before and after the CL course and following the practicum experience? The data come from focus groups, concept maps, individual semistructured interviews, and reflective journals of PETE students. The analysis of the multiple sources of data resulted in three themes: (1) “Isn’t cooperative learning just group work?”; (2) Know what, know how, but don’t believe in it; (3) “I’m developing, but still need to improve a lot.” Each theme is discussed in detail below.

“Isn’t Cooperative Learning Just Group Work?”

All but three of the 20 PETE students in this study had rarely experienced group work or CL in their school PE. The response of most PETE students to their PE experience at primary and secondary school was “free-time activities” (FG 3-1¹⁰). As Wei explained, “Our PE teacher often opened the equipment room and just said ‘go ahead’ then we chose a ball and played on our own” (FG 2-1). If there were any instructions in PE classes, they were normally conducted as a typical skills-based and exam-oriented approach using the strategy of direct teaching. Yi recalled his experience of PE classes in middle school and said, “He [the PE teacher] taught us rope skipping, long jump, and throwing because we had these physical tests in the high school entrance examination” (FG 3-1). Responding to the kind of teaching strategies used by the PE teacher, Yi acknowledged that:

¹⁰ FG 3-1 refers to the first focus group with the PETE students in Group 3. Similar notations are used for Concept Map 1 (CM 1), Semistructured Interview 1 (SSI 1), and Reflective Journal 1 (RJ 1).

I do not think he used any special methods but just asked us to practise again and again. If he had any, it was a direct explanation and demonstration that he stood in the front and asked us to follow him. (FG 3-1)

While most of the PETE students reported that they had rarely been taught in groups in school PE classes, the PETE programme in the university engaged them in multiple experiences of group work. When asked if there was any difference between their PE experience in school and university, Biao responded enthusiastically in the affirmative:

I think in the university it is impressive we have a lot of group-work activities. We study in groups not only in motor skills classes in the gym but also in theory learning courses in the lecture rooms ... but very little that of experience in school, if any, in other subjects, in the form of group discussion with classmates seated around me. (FG 1-1)

When questioned about the occurrence of group work in the university, Qian provided an example and described it as “in our aerobics class, after [the lecturer had] directly performed, we then grouped on our own and reviewed the movement under the guidance of a group leader” (FG 3-1).

At the start of the course, almost all the PETE students equated CL with their experience of group work. Many of them were confused when I asked, “rather than group work, have you ever heard CL?” in the first group interview, as in these comments:

What do you mean? Isn't cooperative learning just group work? (FG 1-1)

I feel cooperative learning is equivalent to group work. (FG 4-1)

Cooperative learning is group work. (FG 3-1)

Prior to learning CL in the course, few of the PETE students had any knowledge of the elements of CL that distinguished it from general group work. Their understanding, as

evident in the following comments, was restricted to the need for individual responsibility and mutual interactions in CL:

I think cooperative learning needs a clear division of labour. Everyone has a division of tasks and contributes to the group. (FG 3-1)

I feel that cooperative learning is like playing games. It requires cooperation among teammates. It is, umm ... you can do but I cannot, or I can do but you cannot. Then we get together and afford each other help and assistance. (FG 1-1)

Cooperative learning requires group members to divide labour. And each group member has individual responsibility. (FG 4-1)

As well as thinking of CL as group work, many of the 20 PETE students had negative connotations of CL. They tended to understand CL superficially as a mutual-learning activity in which group members draw on each other's strengths for better learning performance.

When asked what CL was, some of PETE students appeared to lack confidence to explain it thoroughly:

[I] know it a bit. But I don't understand what it means. (FG 4-1)

I understand it literally. Cooperative learning doesn't like the traditional approach.¹¹

Students must cooperate in cooperative learning classes rather than learn individually. (FG 1-1)

It's what it means literally, cooperation and learning. (FG 2-1)

To summarise, it was apparent from their descriptions that the PETE students had a superficial understanding of CL at the start of the course. Their initial understandings of CL were simplistic, that is, they perceived CL as equivalent to general group work and had limited knowledge of its crucial elements.

¹¹ The traditional approach in PE classes refers to the teacher using the "traditional methodology" that consists of teacher explanation and direct demonstration of what is to be learned, following by organised class practice (Hoffman, 1971).

Know What, Know How, but Don't Believe in It

Data from the second concept maps and focus groups demonstrated that at the end of the CL course, the cohort of PETE students had reconstructed what CL meant to them. They had acquired content knowledge and pedagogical content knowledge of CL, for example the key elements, preparation of task sheets, role play in CL groups, and importance of an orientation lesson. The PETE students had a number of concerns and expressed varying degrees of willingness to employ CL in their practicum. While they valued the notion of student-centred teaching, they favoured combining CL methods with direct-teaching strategies in their CL classes. Meanwhile, the PETE students believed that CL had great potential for pupils' social and emotional learning rather than physical learning outcomes.

Developing Knowledge of Key Elements of Cooperative Learning

There were apparent changes in PETE students' knowledge of the key elements of CL on the completion of the course and they expressed a broader and more complex view of CL. It was no longer associated solely with groupwork but conceptualised as a complex collection of several elements that support and further learning. A comparison of the PETE students' first and second concept maps demonstrates that most students were able to list three to five elements of CL suggested by Johnson and Johnson (2009). As depicted in Table 16, most PETE students could identify the elements of positive interdependence, group processing, and social skills after the CL course. Furthermore, individual accountability, personal responsibility, and promotive interaction were confirmed or newly acquired elements not mentioned by many PETE students in their first concept maps.

Table 16*PETE Students' Development of the Five Key Elements of Cooperative Learning*

No.	Name	Positive interdependence	Individual accountability and personal responsibility	Promotive interaction	Social skills	Group processing
1	Qian	②	① ②	②	②	②
2	Juan	②	① ②	① ②		②
3	Jie	②	① ②	①		②
4	Hang	②	① ②	②	②	②
5	Yi	②	②	②	②	②
6	Wei	②	②	① ②		②
7	Bao	②	① ②	②	②	②
8	Biao	②	① ②	②	②	②
9	Yuan	②	①	①	②	
10	Zheng	②	① ②	②	②	②
11	Han	②	① ②	① ②	②	②
12	Rong	②	① ②	②	②	②
13	Hua	②	②		②	②
14	Xiao	②	① ②	②	②	②
15	Zi	②		②	②	②
16	Ling	②	②	②	②	②
17	Quan		②	① ②		②
18	Mou	②	① ②	① ②		②
19	De	②	① ②	②	②	②
20	Sen		① ②	① ②		

Note. “①” refers to the element that PETE students mentioned in their first concept map completed before the CL course. “②” refers to the component that PETE students mentioned in their second concept map after the CL course.

Table 17

PETE Students' Definitions of Cooperative Learning

Before the CL course	After the CL course
Cooperative learning refers to mutual learning among persons who learn from each other and think together to work on a task. It often occurs in the form of a group. (Qian, CM 1)	Cooperative learning refers to a learning style in which two or more than two students study independently in a group. It requires the group members to provide each other with mutual help and assistance. The whole group has a common goal. Each group member undertakes different responsibilities and communicates with others frequently. Group members would assess everyone in the group. (Qian, CM 2)
Cooperative learning is that students cooperate and learn from each other based on the division of labour. (Juan, CM 1)	Cooperative learning is that two or more than two students collaborate and interact as a team. They have a clear division of labour, common group goals, and individual responsibility to achieve better learning outcomes. (Juan, CM 2)
Cooperative learning is that students cooperate with others in the form of small groups. They tend to draw on each other's strengths. (Hang, CM 1)	Cooperative learning refers to several students with different characteristics that work in a small group. Group members carry out their individual accountability and learn together, swim or sink together. They are an honoured community. It is an extraordinary approach to enhance students' learning initiatives and performances. (Hang, CM 2)
Cooperative learning refers to two or more than two students completing the learning task with mutual help. (Yi, CM 1)	Cooperative learning is when two or more than students in the form of small groups complete the learning task through cooperation and discussion. It requires a clear division of labour and individual accountability. It also requires a person's unique contribution to help other groupmates complete learning tasks or acquire learning skills. (Yi, CM 2)

Before the CL course	After the CL course
<p>Cooperative learning is that students in small groups learn and communicate with each other under the teacher's guidance. (Wei, CM 1)</p>	<p>Cooperative learning is that students study and improve together. They have a common learning task or goal. During the learning process, each member undertakes a responsibility. They communicate, negotiate, and take others' perspectives to achieve a conventional sense. They also discuss and evaluate each member's performance during group processing. It is a process to develop students' social skills. (Wei, CM 2)</p>
<p>Cooperative learning refers to a process in which students have a clear division of labour and play individual roles to complete the assigned learning task sufficiently. (Bao, CM 1)</p>	<p>Cooperative learning refers to a process of teamwork in which group members are interdependent and undertake personal accountability. It aims to cultivate students' social skills through cooperation and group processing. (Bao, CM 2)</p>
<p>Cooperative learning is that two or more learners cooperate in order to achieve the expected learning outcomes. These learners have a clear division of labour and unity of thinking. (Zheng, CM 1)</p>	<p>Cooperative learning refers to a process of learning between students for cooperation. In each small group, each student plays a different role. It requires group members to understand their personal responsibilities and have a sense of group honour. Cooperative learning benefits to promote an active learning climate. (Zheng, CM 2)</p>
<p>Cooperative learning refers to a learning style that emphasises cooperation. (Han, CM 1)</p>	<p>Cooperative learning refers to a learning style in which several students form a small group to learn together. It requires a clear division of labour, active discussion, evaluation, and reflection. (Han, CM 2)</p>

The PETE students not only listed the five elements in their second concept maps but also incorporated these elements into their developing definitions. A comparison of the first and second concept maps demonstrates that many of the PETE students' new definitions of CL included the key elements of CL (see Table 17). For example, Hang's expressions "an honoured community" and "swim or sink together" referred to positive interdependence. Qian and Yi figured out "mutual help and assistance" and "cooperation and discussion" that corresponded with promotive interaction. Wei emphasised that "each member undertakes a particular responsibility" and "they communicate, negotiate, and take others' perspectives to achieve a conventional sense," which referred to personal responsibility and social skills, respectively. "Evaluation and reflection" expressed by Han corresponded with group processing.

Furthermore, the PETE students actively discussed two of the five elements during the second focus groups. Many of them identified that group members should be interdependent with each other through group goals as follows:

Now I feel that cooperative learning is a group of students working together to achieve a common goal. (FG 1-2)

It's like the table game that we four members take our roles to win the game or achieve the group goal. (FG 1-2)

Cooperative learning requires students to cooperate to achieve a common goal, rather than only working on personal purposes. (FG 2-2)

Cooperative learning is a group of students who learn a common goal ... interdependent and cooperate mutually. (FG 3-2).

All the PETE students acknowledged that CL requires opportunities for students to reflect on the work they completed in groups:

Cooperative learning has one more activity that differentiated it from traditional group work ... the reflection and evaluation of group performance in the end. (FG 3-2)

In cooperative learning classes ... the immediate assessment ... students reflect and evaluate how the group function at the end of every CL class. (FG 4-2)

Importance of Careful Planning and Preparation

The PETE students reported that careful planning and preparation of cooperative strategies were crucial to achieving a positive learning experience in PE class teaching. From their perspectives, sufficient preparation for CL classes was particularly important for student teachers to be secure and to reduce anxiety when teaching. For example, Xiao said:

As student teachers, we are likely to feel tense to communicate with and explain something to pupils ... afraid of saying something wrong ... but if we have prepared the instructional materials thoroughly, that would be easier. (FG 1-2)

Three aspects of the planning and preparation phase, making task sheets, group composition, and the orientation lesson, were emphasised by the PETE students as being critical for a successful CL experience. The data suggest that the PETE students gained an increasingly comprehensive understanding of the preparation of task sheets as the CL course progressed. Many PETE students were actively involved in the discussion about the burden, but value, of making task sheets. On the one hand, they perceived that the preparation of task sheets made the teaching plan for CL practice more complex because of the time and energy required to “find some attractive pictures of running jump shot for example” (FG 3-2) and “make and print the task sheets in addition to the traditional teaching plan” (FG 4-2). On the other hand, almost all the PETE students agreed that using task sheets in CL classes was worthwhile for teachers as their class workload would decrease because less time would be spent “emphasising and correcting for pupils as he/she usually does in traditional PE class” (FG 1-2). Furthermore, the task sheets could be “a catalyst for pupils’ collaboration” (FG 3-2)

and “an effective tool for decreasing pupils’ off-task behaviours and improving their performance” (FG 3-2), as evident in Juan’s response:

Task sheets are handy pupils can be familiar with learning goals and content showing in the sheet ... even though they forget the key point of a movement or easily made mistakes, they can turn back to the sheets ... monitor and correct mutually within the cues presented in the task sheets. (FG 4-2)

From the PETE students’ perspectives, the most essential aspect of a task sheet was to ensure it was clear and easily understood; that the structure was “not complicated and disordered” (Wei, CM 2), while the content was “clear” (Jie, CM 2) and “understandable” (Bao, CM 2). Taking pupils’ PE literacy into consideration, Yi suggested that “the less jargon, the better” in task sheets, or to “explain the jargon in a very easy to understand” way (FG 3-2).

As well as preparing task sheets, the PETE students were also cognisant of the need for grouping. All agreed that CL in PE classes worked best with small groups of two to six people. They were also unanimous on the importance of forming heterogeneous groups. Hang said, “group composition should be based on pupils’ individual characteristics to ensure the heterogeneity.” Qian added, “I agree, should with a particular focus on pupils’ different personalities and personal skills” (FG 3-2). Similarly, Yi also emphasised the importance of individual pupils’ personalities as a criterion for role play in heterogeneous groups. He stated that “roles should be consistent with their individual personalities to make the most of individual strengths” (Yi, CM 2).

While the PETE students appeared to have an understanding of the different roles that can be assigned in CL classes, they had different perspectives on the roles of the group leader and encourager. Firstly, some PETE students stated the importance of the role of the group leader for CL activities.

Rong: I affirm there should be a group leader.

Han: Yes a group leader divides group tasks into several small parts and assigns them to group members ... that is useful for ensuring equal distribution. Nobody would take more, and nobody would take less.

Hang: I feel leadership is quite essential. The group leader needs the right to speak in order to manage the whole group and avoid group conflicts and chaos. (FG 3-2)

In contrast, the significance of the role of “encourager” was not accepted by certain PETE students. Yi thought mutual encouragement in PE class was regular, so there was no need to assign a particular person to this role. He reflected his experience as a role of encourager during the course, commenting that:

I feel this role [of encourager] is a little bit awkward. We often encourage each other in PE classes. I think encouraging peers is not the business of a certain one, but all group members. (FG 3-2)

Likewise, Xiao expressed her view on the pointlessness of the role of encourager for CL activities by comparing the responsibilities of the encourager and other group roles.

The manager is responsible for managing learning resources; the recorder is accountable for recording practice performance; the coach or the instructor guides group members to practise. But how about the encourager ... It sounds like an idle one it is unnecessary to design this role. (FG 1-2)

As well as commenting on making task sheets, group composition, and group roles, some PETE students suggested that teachers conduct an orientation session before their CL teaching. They proposed that pupils needed to understand “some key concepts of CL” (Zi, CM 2) and “the required cooperative norms and responsibilities of roles” (Bao, CM 2) prior to a class because they “may not know how to learn independently in a CL class because of their little experience of CL activities previously” (FG 2-2).

Wei strongly recommended a CL orientation lesson for school students before actual learning in CL classes. He elaborated on the importance of an orientation lesson several times.

If I can explain cooperative learning to them ahead, it will be more convenient and effective later. Pupils would know what they are expected to do in cooperative learning classes ... not passively receive and simulate teacher's instruction and demonstration anymore but are required to communicate with their peers and practise together in groups. (FG 2-2)

Jie also emphasised the need for an orientation session to understand CL and be able to read the task sheets. In response to a question on how she would use CL in her future class, Jie said, "I am wondering if, in the very first, I should teach pupils how to read and use the task sheets in an introduction lesson of cooperative learning. Only in this way, the cooperative learning class can go smoothly" (FG 2-2).

Concerns About the Implementation of Cooperative Learning

Although the PETE students had acquired a body of content knowledge and pedagogical content knowledge of CL by the end of the course, they articulated various concerns about employing CL in their practicum school. One of their fears was associated with the ability to create meaningful task sheets, as evident in Biao's statement in the second focus group interview, "I don't know how to prepare reasonable and attractive task sheets for some special sports, such as the martial arts" (FG 1-2). Others questioned their classroom management ability during CL classes. Since there would be "several small groups scattered around the playground," it would be a challenge for a student teacher with limited school-based teaching experiences to "account the organisational time" (FG 2-2). Because pupils would "have more power and take more responsibility in cooperative learning classes" (FG

4-2), there would be greater demands on a teacher's classroom organisation and management ability.

The third concern identified by PETE students related to pupils' cognitive thinking levels, characteristics, and attitudes toward CL. For Juan, pupils' understandings of task sheets and their ability to master new movements were of concern.

I am wondering whether they [pupils] can comprehend the idea of "big step, small step, and then high jump" by themselves to grasp the running jump shot within the use of the photos and explanations in the task sheets. (FG 4-2)

Other PETE students, such as Sen and Ling, worried that if pupils were "not self-disciplined" and "not cooperative and active," it would be challenging to ensure the positive learning environment in CL classes that they expected (FG 2-2). It would be even tougher to practise CL if "pupils are uncomfortable with the group evaluation and feel bored spending time writing reflections on the sheet in every PE class" (FG 1-2).

The fourth common concern occurred in their associate teachers' attitudes toward CL. Before they headed into the practicum, the PETE students recognised that they would be using CL in the classroom of an associate teacher. Many of them emphasised the critical role of their associate teachers in their confidence and competence to implement CL in the practicum experience. De, for example, felt it was a necessity to ask for the associate teacher's support because "it is likely to make a big difference and increase my confidence if the associate teacher could take the lead and provide some feedback towards my practice of CL" (FG 4-2). Hua explained it would be "impossible and meaningless to use cooperative learning" if the associate teacher disliked and did not "accept the chaos in cooperative learning classes" (FG 4-2).

Moreover, some unique contextual factors in the practicum school, such as the instructional content, class composition, and assessment approach, were concerns for the

PETE students since they were to embark on teaching with CL. Zheng felt it was a challenge to teach pupils multiple sports using CL. According to the syllabus of PE class in the practicum school, the pupils in Grade Senior 3 would learn tai chi in the first 10 minutes and then move to study ping-pong or badminton. He questioned, “how should I form heterogeneous groups in this situation? And how could I use cooperative learning to teach ping-pong?” (FG 4-2). Juan, pupils in PE classes in the practicum school were from different *xing zheng ban*.¹² and this would exert an obstacle in grouping and interactions among group members. This was because the pupils “may be unfamiliar with each other and reluctant to communicate with others from different classes” (FG 4-2).

Varying Intentions to Employ Cooperative Learning

On the basis of examining various enablers and constraints, the PETE students demonstrated varying intentions regarding their use or nonuse of CL while on practicum. Three major categories emerged in the focus groups that reflected PETE students’ varying intentions to implement CL: willing to use CL, reluctant to use CL, and hesitate to use CL.

Half of the PETE students expressed their desire to employ CL in their student teaching as they perceived several enabling conditions. The first empowering factor identified was the strengths of CL for pupils and the teacher. Responding to why she decided to use CL in the practicum experience, Qian reported that it was because CL would be able to “increase pupils’ sense of cooperation” and “promote pupils’ high-level thinking skills” (FG 3-2). Yi thought the activity of group processing was significant for contextualising teaching plans and supervision in the class since the teacher could “have a good understanding of pupils’ opinions and problems through their reflections” (FG 3-2).

¹² Xing zheng ban means several students are taught in a fixed class unit and every xing zheng ban has an assigned class teacher (*ban zhu ren*) who is in charge of supervising all aspects of the school life of students in the class. It is a common term in Chinese education system. Pupils in the practicum school took their mainstream subjects, such as Chinese literacy, mathematics, and English in their xing zheng ban, while their PE classes were determined by the sports they selected. Since there is no equivalent word in English, xing zheng ban will be used hereafter.

Some other PETE students were motivated to verify the effectiveness of CL through their own teaching practices. As De suggested, “I expect to see how effective the cooperative learning is as a novel model in PE” (FG 4-2). Wei articulated a comparative perspective, stating that “I confirm I will use cooperative learning in practicum experience ... to try and prove how much it could achieve for pupils’ learning performance” (FG 2-2).

Another significant enabler was contextual factors such as small class size, teaching content, pupils’ characteristics, and associate teachers’ support. Juan, for example, showed her willingness to use CL in the practicum teaching because she was assigned to teach basketball for a group of 24 females in Grade Senior 2.

I think cooperative learning is good for my class. There are only 24 female students that could be divided into four to five groups. The females are likely to be cooperative that may decrease my pressure on classroom management. And I will teach them basketball, which sport is quite suitable for pupils’ cooperation. More importantly, they are Senior 2 pupils who have already acquired some fundamental movement skills. (FG 4-2)

Jie expressed her firm intention to employ CL because of her associate teacher’s positive attitude toward CL and support for her innovative practice. She reported that:

I think cooperative learning is entirely possible to be used in the Fanggu school.

Today my associate teacher said to me, “do what you want to try. I will support you to the greatest extent.” I am relatively interested in using it in my class later. (FG 2-2)

In contrast, four PETE students explicitly refused to implement CL in their practicum. One limiting factor acknowledged by them was the complex planning requirements, which would require a large amount of time and energy. Zi said that “I believe cooperative learning is worthwhile for pupils’ learning. But too much time needs to be allocated to the planning and preparation of task sheets. It is time-consuming” (FG 4-2).

Moreover, the PETE students feared the upcoming postgraduate entrance examination. Their anxiety about preparing for the examination was more important than employing what they had learned from the CL course. Hua pointed out that “I cannot spend too much time on using cooperative learning; rather, I have to focus more on the examination” (FG 4-2). From his perspective, he would not implement CL because he would need to invest more time compared to using a direct-teaching approach in student teaching.

The remaining PETE students expressed uncertainty about adopting the CL model. On the one hand, they wanted to use CL because of the value of this model in “promoting pupils’ physical and mental wellbeing” (FG 1-2). On the other hand, they feared that they lacked the expertise to manage CL in their practicum. The following quotes illustrate the hesitancy PETE students felt regarding their pedagogical knowledge to implement CL in their classes:

I think we have been introduced to too few cooperative learning strategies in the CL course. They are not enough for us to use in high school. (FG 3-2)

Although I know the main instructional procedures of cooperative learning classes, I am not confident in my ability to tackle the matter of contingency. (FG 4-2)

Therefore, whether this small group of PETE students would use CL or not use it depended on pupils’ characteristics and attitudes. For example, Zheng would employ CL if pupils were “active, self-disciplined, and cooperative” (FG 4-2). Otherwise, he preferred to use the traditional teaching approach because he “was more familiar with and skilled in classroom management using didactic teaching” than CL. For Bao, choosing CL or direct teaching should be based on pupils’ attitudes to be consistent with the student-focused philosophy. He decided to use both at first and then “if pupils like cooperative learning more, I will try my best to use cooperative learning and vice versa” (FG 1-2).

Value of the Notion “Student Centred”

After completing the course, a majority of PETE students appeared to have an understanding of a student-centred environment in CL classes. They acknowledged and emphasised pupils’ crucial role in their learning process within a CL lesson. Wei suggested that “we need to increase pupils’ autonomy and let them inquire interdependently” (FG 4-2). For De, rather than passively responding to a structured learning situation initiated by the teacher, pupils would “take charge of their learning” in terms of “forming and naming their groups, dividing and carrying out group tasks, and trying different ways to achieve learning goals” (FG 4-2). Yuan reflected on his experience of being a participant in the microteaching sessions where he enjoyed more ownership and control of learning. As he stated:

We are used to being asked to run, to sit down, or to do something else ... much more controlled by the teacher. But now, quite different we choose and decide what and how to do following the cues and information in task sheets ... discover the most appropriate way to practise on our own. (FG 1-2)

By the end of the course, PETE students appeared to be clear that the teacher should be a “facilitator” instead of “director” in CL classes (FG 3-2). As De proposed, to “achieve a legitimate student-centred class,” a teacher using CL in PE teaching should “delegate his/her authority and strengthen pupils’ role” in the class (FG 4-2). For Jie, while the teacher would have the role of the controller in terms of “preparing instructional materials and controlling the practice time,” they should be “a facilitator most of the time in class” (Jie, CM 2).

The PETE students’ understandings of the teacher’s role are more explicitly expressed in their statements of what a teacher needed to do to maximise pupils’ learning in CL classes. Yuan, for example, stated that the teacher does not “simply distribute task sheets to pupils” but “has to arouse pupils’ motivation to practise and investigate cooperatively” and “assist them in completing their individual accountabilities” (FG 1-2). Other PETE students, such as

Han, reported a change in their understanding of the teacher's role from a director and performer to a facilitator and encourager.

I think the teacher needs to take a back seat ... only provide guidance and encouragement when it is necessary. He/she is not in front of the class all the time ... keeps talking and demonstrating as what I was used to thinking alternatively, the teacher needs some strategies to accelerate pupils' autonomous learning. (FG 3-2)

In response to how they would employ CL in practicum, Hang indicated a need for him to clarify his role as a facilitator.

I should position clearly ... I won't intervene with pupils casually or just stand aside when they interact with each other ... but will provide them with appropriate resources for their inquiry ... go around and interject at opportune times ... questioning would be better than direct demonstration. (FG 3-2)

Merging Cooperative Learning With Direct Instruction

While the PETE students valued the student-centred classroom and teacher's role as facilitator, when initiating CL, they agreed with the compromise of combining CL and the direct-instruction approach. They preferred to use direct teaching in new lessons followed by using CL in review lessons. As Jie clearly stated, "I will not use cooperative learning until pupils are directly taught and have acquired the basic motor skills" (FG 2-2). Similarly, Yi also asserted that he would explain and demonstrate movements directly to pupils before they participated in cooperative practice in small groups.

Learning the forearm pass in the volleyball class, for example, pupils may find it challenging to send force and make the whole body coordinated to perform the skill without the intuitional instruction by the teacher. So, in the first lesson, I will explain and give pupils a demonstration of the skill in detail to imitate and practise it bare-handed. Once they have mastered the skills to a certain degree, they will review and

improve this skill with their peers in cooperative groups in the second lesson. (FG 3-2)

From the PETE students' perspectives, although CL was beneficial for pupils' learning, unless pupils had mastered the motor skills to some extent, they "would be confused with the concepts explained in the task sheets" (FG 4-2). This view closely aligned with their belief that pupils were not able to construct knowledge by themselves. Juan conceded that she thought pupils were "incapable of understanding the main point of movements thoroughly and becoming skilled at a new movement by themselves through the reading of task sheets and discussion with peers" (FG 4-2). Furthermore, Biao proposed that "I can't imagine how pupils could learn something new without teacher's direct instructions" (FG 1-2).

Most PETE students believed that the direct-teaching approach was more efficient for pupils' physical learning development than CL, especially when learning new motor skills. Qian, for example, confessed that "I think teacher's direct demonstration is quite more timesaving and effective than students' independent exploration of a new movement" (FG 3-2). Similarly, Juan said, "I assume pupils in cooperative learning classes will be slower to obtain new techniques than those who were taught directly" (FG 4-2).

Jie stated several times that CL would be inefficient in new lessons as it was an innovative and complex model for her as well as for pupils. She said, for example,

For us, cooperative learning is entirely new. Much less for them [pupils]. I believe they will be surely confused with learning new movements by themselves and unable to achieve the lesson goals in time. Also, it would be much troublesome for me to correct their errors as there would be several groups scattering around. (FG 2-2)

In Mou's opinion, the efficiency of the direct-teaching approach was superior to the CL model for pupils' motor skill learning because of the time required for practice.

As we all know, appropriate practice time is essential for pupils' motor skills acquisition. In a traditional PE class, the teacher using direct teaching explains and demonstrates pupils a new action in 10 minutes. Then there are more than 20 minutes left for pupils' practice. In contrast, if the teacher uses cooperative learning and asks pupils to get the task sheets for reading, discussion, and understanding, pupils may have only 10 minutes to practise the activity. (FG 1-2)

Strengths of Cooperative Learning for Pupils' Social and Emotional Learning

Whereas PETE students articulated that CL was of great importance for pupils' social and emotional learning, there were no comments in any of the data sets about CL's value for pupils' cognitive and physical learning. They said they thought sharing learning materials and assigned roles such as coach or recorder would help pupils work together and enhance their social skills, such as communication, cooperation, and team spirit. Yi, in the second focus group discussion, said, "pupils could improve their social skills from numerous communication opportunities with groupmates in cooperative learning classes" (FG 3-2). Rong added,

Cooperative learning could promote pupils' friendship since they would support and encourage each other when achieving group goals. Such as what we experienced in the course. I did not know many of you before attending the course, but now I make friends with you because we are a team and learn together in the past month. (FG 3-2)

Some PETE students also postulated that the sharing of ideas in the process of group discussion and interaction was conducive to supporting pupils to generate new ideas, as evident in the following statements from Juan:

Sometimes one person's thought is somehow subjective. When they communicate with peers, they may be able to figure out where is something wrong or immature.

Then they, with groupmates, can express different perspectives and generate a more appropriate and objective point of view. (FG 4-2)

Furthermore, the PETE students saw the benefits of CL in facilitating pupils' sense of responsibility and self-discipline as a result of the development of positive interdependence and individual accountability. Zheng explained that if the pupils' assessment scores were interdependent:

Those disengaged pupils are likely to control their unaccepted behaviours group learning is not your own business ... when you are absent, your groupmates' marks will also be affected as a member of the group, you are assigned a specific role and responsibility for a parcel of the group task. (FG 4-2)

Another strength of CL described by the PETE students was its positive influence on pupils' motivation and team participation. From the PETE students' perspectives, pupils in CL classes were unlikely to "keep making jokes or talk other off-task things" as they did in traditional group work (FG 1-2). They would be "more active to learn," however, because they "shared more ownership to understand and practise motor skills with their peers" (FG 3-2). Others explained they thought the CL model might encourage pupils to engage actively with learning tasks because of the key elements associated with CL. Yi claimed that, because of the positive interdependence, pupils in CL groups would be not "lazy or loaf about" because they are "interdependent with each other" (FG 3-2). Bao thought CL could promote pupils' participation in teamwork, through group processing, and interest in physical activities with a long-term effect because they "would try to make more effort if they know where and why they failed to work well during the evaluation process" (FG 1-2). Other PETE students, such as Rong and Han, said they believed that CL increased pupils' engagement in learning tasks because it was "quite fresh and not as boring as direct teaching" and that pupils

would “have more fun through interactions with peers” compared to being directed passively by the teacher (FG 3-2).

Finally, the PETE students expressed a belief in a range of other improvements in students’ affective learning, such as enhancing pupils’ self-confidence, self-esteem, and psychological health. For instance, Zheng believed that CL was able to increase pupils’ self-esteem through group processing. He claimed that “pupils are expected to obtain an appreciation of their strengths and weaknesses through peer evaluation” (FG 4-2). Bao saw the value of CL in promoting pupils’ psychological health as a result of peer encouragement, giving as an example the following:

If the manager fails to perform a movement successfully, the encourager will provide him/her some kind words, like “we believe in you. Come on. You can do it.” I believe the manager would then feel supported to keep working with little anxiety and frustration. (FG 1-2)

These data provide insights into PETE students’ enhanced knowledge of CL as a result of the course. They were not only able to identify the five elements of the authentic CL model but also integrated these elements into their improved definitions of CL. Moreover, they demonstrated an understanding of making task sheets, group composition, and conducting an orientation lesson to ensure efficient implementation of CL. In relation to implementing CL in the practicum, the PETE students expressed varying views concerned with multiple affordances and constraints associated with their own expertise as well as factors in the practicum environment, such as associate teachers’ attitudes towards CL, pupils’ characteristics, as well as the class size and class composition in the practicum school. While almost all PETE students believed that pupils in CL classes should be placed at the centre of the learning, with the teacher required to delegate authority, they expressed a preference for combining direct-teaching and CL methods as an alternative approach to

implementing CL on its own. This position was likely based on their implicit theories about how pupils learn; for example, the teacher is the authoritative source of knowledge and pupils are unable to construct knowledge on their own and acquire motor skills unless demonstrated by the teacher. Although the PETE students suggested that CL in PE classes had a substantial impact on students' social and emotional learning, they believed that CL in the physical learning dimension was inferior to that of a didactic teaching approach.

“I’m Developing, but Still Need to Improve a Lot”

In the third theme, I report data from the eight PETE students who implemented CL in the practicum school. The teaching experience with CL had a strong impact on students' understandings of the five key elements, group composition, and role play in CL classes. Their beliefs about the purpose of PE as a subject, pupils' ability to construct knowledge, and the effectiveness of CL appeared to change. However, they advocated that a CL CoP was needed as a means of supporting further development of their ability to use CL as they perceived they still needed to improve a lot.

A Nuanced Understanding of the Five Key Elements

The data suggest that the eight PETE students who completed the practicum experience developed a more nuanced understanding of the concepts of CL. Instead of merely listing items, three PETE students described the five key elements in depth. Wei, for example, clarified the interconnectedness of each element in his final concept map (see Appendix 15):

Group processing is a necessary procedure to evaluate pupils' learning performance.

Individual accountability guarantees pupils' engagement during the cooperative learning activities, avoiding the free riders. Pupils' social skills would be the determinant of the efficiency of group members' interactions and cooperation.

Positive interdependence would be assured if it is real cooperative learning within the

group. Face-to-face interaction could enhance pupils' social skills and many other qualities or capabilities. (Wei, CM 3)

Hang acknowledged the critical role of the five key elements for ensuring authentic CL and clearly explained how CL was much more than group work. He reflected during the semistructured interview that:

Through the several weeks of practice, I think I can talk more about cooperative learning now. The five key elements are the necessary parts. When defining it as cooperative learning, I must know what the elements are at first. Then I must ensure, for example, the group members are interdependent. It is a critical factor that cooperative groups exist continuously. Cooperative learning is not just I group them [pupils] and ask them to learn together. These elements act as a benchmark to assess my instructional behaviours. (Hang, SSI)

Yi was not only aware of the elements but also explained multiple strategies to achieve them in classroom teaching. He suggested the following:

Individual accountability can be achieved according to pupils' personalities and personal abilities. Positive interdependence includes goal interdependence, role interdependence, and ability interdependence. Face-to-face interaction can be achieved through pupils' mutual observation and correction, joint evaluation, and mutual help. Social skills comprise oral expression, encouragement, support, and acceptance. (Yi, CM 3)

However, five PETE students failed to recall all the elements in their final concept maps, although all were encouraged to implement them during the practicum. As Table 18 shows, Qian, Juan, Jie, Bao, and Biao mentioned only four of the five elements. They overlooked the element of social skills at the end of practicum even though some of them had stated this component before their practicum (e.g., Qian, Bao, and Biao). In response to

pupils' social skills for CL work, these five PETE students could not provide coherent suggestions, with their comments on social skills restricted to links with personality traits.

I think they [pupils] are better to open their heart, not be too introverted. (Qian, SSI)

First, I think pupils' personalities are critical. Then their vocal expression abilities and umm.... I am not very clear and don't understand the other one. But I think the most important is personality and then is verbal expression ability. (Juan, SSI)

Pupils should not be too introverted. If so, I think they will even have no courage to read the task sheet to group members because of shyness. (Jie, SSI)

I think the basic one is that they should be active and proactive to try. They must be motivated to learn and explore actively rather than passively rely on the teacher. (Bao, SSI)

[Long pause] umm ... social skills ... I don't know how to say. Could you take an example? They [pupils] were not active, so they hadn't too much communication.

I think they should be active to talk to others. (Biao, SSI)

In contrast, the other three PETE students, who recognised social skills as a key element of CL, were able to explain the required specific skills for effective CL work. For example, Wei highlighted the communication skills and conflict management skills required for pupils to participate in CL activities effectively.

At first, pupils should smile and be friendly. Second, they should be aware of their way of expressing different perspectives and providing feedback. Shouting is inappropriate. Pupils in high school are likely to be impulsive. But in CL classes, the teacher should teach them how to solve conflict constructively. (Wei, SSI)

Hang also identified the crucial role of communication skills, listening to others, and encouraging groupmates in the CL environment.

I think the first basic one is to learn how to listen to peers. And then pupils must learn to observe and other communication skills. For example, they had better express their different ideas tactfully. It is what we, as PE teachers, should do in cooperative learning classes. We should try to make an effort to encourage pupils more. Then they could learn how to promote their peers spontaneously. (Hang, SSI)

Similarly, Yi described support and acceptance as being crucial for pupils to work in cooperative groups successfully.

Learning in cooperative learning groups, pupils should be able to identify others' incorrect performance and then give feedback immediately. For example, if the groupmate passes the volleyball perfectly, they should offer some affirmative expressions such as, "Well done! Good pass!" They should not laugh at others who fail to perform but should provide encouragement and assistance for improvement. (Yi, SSI)

Table 18*PETE Students' Development of the Five Key Elements of Cooperative Learning*

No	Name	Positive interdependence	Individual accountability and personal responsibility	Promotive interaction	Social skills	Group processing
1	Qian	② ③	① ② ③	② ③	②	② ③
2	Juan	② ③	① ② ③	① ② ③		② ③
3	Jie	② ③	① ② ③	① ③		② ③
4	Hang	② ③	① ② ③	② ③	② ③	② ③
5	Yi	② ③	② ③	② ③	② ③	② ③
6	Wei	② ③	② ③	① ② ③	③	② ③
7	Bao	② ③	① ② ③	② ③	②	② ③
8	Biao	② ③	① ② ③	② ③	②	② ③

Note. “①” refers to the element that the PETE student mentioned in the first concept maps completed before the CL course. Likewise, “②” refers to the aspect that the PETE student mentioned in the second concept map drawn after the CL course while “③” refers to the element that the PETE student noted in the third concept map, after the practicum.

Newly Developed Pedagogical Content Knowledge of Cooperative Learning

At the end of their practicum, the eight PETE students who implemented CL still considered CL as a complex model that required an investment of time and energy in the teaching plan. This was not only because of making task sheets and orientation lessons, as they had previously commented, but also due to their increased knowledge of the importance of teacher's familiarity with pupils' characteristics for optimum group composition. Seven of the eight PETE students concurred that the teacher needed to be familiar with pupils' characteristics, such as their personalities, social relationships with their peers, and motor skills, before forming groups.

From all the PETE students' perspectives, pupils' personalities affect their interactions and efforts in cooperative work. Qian, for example, suggested that each group should have one active pupil as "it matters a lot for promotive group interaction" (SSI). Yi reported his negative experience of CL implementation, attributing one of the problems to an inappropriate grouping.

I should not have assigned the two active pupils in one group. They are too social to keep on task. As you observed, they often talked about unrelated issues together or even moved to other groups and disturbed others' work rather than an exerted effort on their own group tasks. (Yi, SSI)

The PETE students also expressed the opinion that pupils' personalities should be compatible with their assigned roles for them to be able to maximise individual accountabilities. Biao reflected on his teaching experience and claimed that it was "a big challenge for an introverted girl to be the role of encourager who is expected to arouse peers' motivation on learning with a loud voice" (Biao, CM 3).

Furthermore, the PETE students recognised that pupils' social relationships should be taken into consideration as they influenced communication among group members. Jie

described a scene in her reflective journal that happened in her volleyball class. A pair of friends talked to each other frequently but rarely interacted with the remaining groupmates with whom they were unfamiliar.

The negative experience in the cooperative learning class today is the interaction among group members. The two girls in Group 4 were off task a lot. They seldom talked to other groupmates who are from the different xing zheng ban. I spent considerable time encouraging them to interact with all rather than solely with friends. That challenged me a little bit. I would have separated them at the very start if I knew them better. (Jie, RJ 3)

As well as personality and social relationships issues, the PETE students emphasised the importance of understanding pupils' motor skill levels. Hang, for example, attributed one of his unsuccessful CL lessons to his unfamiliarity with the pupils' motor skills. As pupils in each group had a "different motor skill level and rate of progress," the teacher should have "set enough time for group interactions and inquiry" (Hang, RJ 2).

Interestingly, a change in attitude towards the roles of the group leader and encourager in CL was observed in the PETE students. Before entering the practicum placement, the PETE students advocated for the role of a group leader and questioned the value of the encourager. However, as a result of their school teaching experience, these PETE students questioned their initial assumptions. Biao, for example, initially proposed that the group leader was "an authority figure to make decisions in groups or run groups effectively" (FG 1-2). He learned during his practicum, however, that group leaders could negatively impact individual responsibility in cooperative groups since "other group members would over rely on their leader and fail to perform their individual accountability" (Biao, SSI). After their teaching experience in the practicum school, three of the eight PETE students who initially thought there was no place for the role of encourager, conceded that this role was

important for successful cooperative activities. Qian reflected on her implementation of CL in teaching pupils aerobics and evaluated the contribution of different roles, concluding that:

I now realise why Ms Zhou [the lecturer of the CL course] suggested I create the role of an encourager. They [encouragers] do make a big difference in my cooperative learning classes ... I mean, they often encourage other group members through some kind words or eye contact ... that is significant to the positive learning environment.

(Qian, SSI)

Changed Personal Philosophy About Physical Education Teaching

As well as increasing their content knowledge and pedagogical content knowledge of CL, the school-based teaching of CL enabled the PETE students to review the purpose of PE. The eight PETE students agreed unanimously that PE was not only for pupils' motor skill learning but also for other learning dimensions, such as cognitive learning, and social and emotional learning, and that PE should emphasise more than specific sport skills. Hang claimed, enthusiastically, that his newly developed opinion on what made good PE teaching was a result of his teaching experience of CL in the practicum school.

Now, I think good PE teaching is when pupils can enjoy and have fun in the class. If pupils are happy and eager to learn and share something with others in an active learning environment, that is a good PE class in my mind. (Hang, SSI)

Biao critiqued the traditional PE class that focused solely on pupils acquiring sports techniques even though there were four-dimensional instructional goals in the national PE curriculum. He claimed the experience of working with the CL model challenged his thinking about the legitimate lesson goals of PE classes.

This model [CL] not only highlights pupils' acquisition of motor skills but also requires PE teachers to foster pupils' communication skills, team spirit, leadership,

higher order thinking skills, and so forth ... cooperative learning reminds me to consider pupils' learning in diverse domains. (Biao, SSI)

Yi explained he initially thought that a PE class promoted pupils' motor skills and improved their fitness level, whichever approach was used. After experiencing CL in the practicum, he reflected on the possibility of broader aims for PE, stating:

Pupils' development in motor skills is just one aspect. More importantly, PE teaching needs to facilitate pupils' social and emotional interactions, improve their social skills and cognitive thinking capability. This is of great importance for pupils to develop their sense of lifelong physical activity as the curriculum suggested. (Yi, SSI)

Similarly, Juan shared the change in her PE teaching goal at the end of the practicum experience. In response to her friend's doubt about the effectiveness of her CL implementation, Juan felt confident to state that:

I found the pupils in cooperative learning classes were actively involved in learning tasks and obtained something by themselves. It does not have to be that pupils are highly skilled in techniques. The enhanced sense of autonomous learning, team spirit, and knowledge of lifelong physical activity are all crucial. (Juan, SSI)

The school-based teaching experience with CL appeared to promote PETE students' development as facilitators as well as their beliefs about optimum PE teaching. Whereas development in the CL course enhanced their understanding of *what* the teacher as a facilitator should do in CL classes, knowledge gained on practicum fostered *how* to be a facilitator in an authentic context. Bao suggested that, as a facilitator in CL classes, the teacher must be aware that "guidance for pupils is Socratic, rather than direct telling" (Bao, CM 3). Jie explained how she adopted Socratic scheme guidance to teach pupils forehead passing in volleyball in a new lesson.

I asked them [pupils] to read the task sheet in the first 3 minutes. Then I asked them some questions, such as how to prepare the movement physically, where, and how the palms should perform. It was not I explained and demonstrated directly; instead, I guided them on how to perform the movement by asking these questions within the use of cues in the task sheet. I found it worked very well. (Jie, SSI)

While initially, these PETE students indicated they believed pupils were unable to construct new knowledge independently, they appeared to have some confidence in pupils' capability to learn new through CL. For example, Qian, considering the impact of CL implementation in the practicum school, commented that:

At the very first, I insisted that I had to combine the direct-teaching approach with the cooperative learning model. I thought cooperative learning could only be used in review lessons. But Ms Zhou encouraged me to use cooperative learning in a new lesson independently. I started to do that in the sixth week. I was surprised to find that pupils were much more capable of acquiring new motor skills than I ever thought they could be. It is particularly when they [pupils] have improved their autonomous learning ability and are familiar with the routines in cooperative learning classes. (Qian, SSI)

Strengths of Cooperative Learning for Legitimate Learning Outcomes

Learning from their experience with school-based practicum, the PETE students consistently expressed confidence in the CL model promoting pupils' social and emotional learning outcomes. Firstly, pupils' friendship with their peers was enhanced because of their increased social and interpersonal skills, such as "listen to group members" (Hang, CM 3), "sharing of ideas in cooperative groups" (Juan, CM 3), and "showing care, empathy, and encouragement to groupmates" (Yi, CM 3). Furthermore, PETE students believed that the use of CL in PE classes improved pupils' emotional learning in terms of boosted "self-

confidence” (Qian, CM 3) and “intrinsic motivation” (Bao, CM 3) as a result of the positive learning environment.

As well as the social and emotional learning achievement, the PETE students claimed that CL could promote pupils’ cognitive learning and physical learning performance. Several PETE students commented they felt that CL had enhanced pupils’ cognitive learning and that pupils had “a deeper impression and understanding of movements” (Jie, CM 3) and “expanded higher order thinking skills about physical activities” (Biao, CM 3) because they had opportunities to discuss issues and explanations with groupmates. As Wei posited, the one who “explains the critical points of a movement to others profits himself” (Wei, SSI).

In contrast to their initial belief that the CL model was not as effective as direct teaching in promoting pupils’ physical skill development, all eight PETE students reported that pupils improved their motor skills in CL classes. Jie, for example, in comparing the two volleyball classes that used either the CL model or the direct-teaching approach, suggested:

In the last 3 weeks, when moving to learn forehead passing, pupils in the first class [the class using CL] acquired the skill quicker and better than their counterparts [pupils taught by direct teaching]. I am so surprised and inspired by that ... I think it may be because they became more comfortable with the instructional procedures of cooperative learning and have more time to practise and improve together. (Jie, SSI)

Advocacy for a Cooperative Learning Community of Practice

At the end of the practicum experience, most of the eight PETE students reported their intention to use CL in future PE teaching. Bao, for example, considering the responsibility of a PE teacher, stated that he would like to continue using CL in his future PE classes as this model was worthwhile in “promoting pupils’ wellbeing physically and psychologically” (Bao, SSI). He also suggested that “cooperative learning is of great potential

for Chinese PE teaching innovation, and it should be advocated from primary education to higher education” (Bao, SSI).

However, the PETE students said they realised that there was still a lot for them to learn about CL and its use in a range of PE contexts. As Juan reflected finally

The experience of implementing cooperative learning in the school significantly advanced my resilience in the PE class I am developing, but still need to improve a lot, such as the ability to stress new contingencies and sets of circumstances. (Juan, SSI).

Reflecting on his negative experience with the fourth CL class, Hang expressed his inability to deal with changes in routines:

Because of rain, today we had to change the teaching place from the outside playground to the indoor stadium. Hence, it wasted considerable time to reorganise the class. I was in a rush and the whole lesson was messy. I even forgot to emphasise the individual responsibility of each role as I usually do. This reflects my problem to cope with emergencies. (Hang, RJ 4)

Wei, likewise, recognised the need to improve his teaching ability to use CL productively in PE class:

For example, how to deepen the five elements in practice, primarily how to conduct the group processing effectively. Besides, the teacher needs to set an excellent example for pupils’ social-skills learning, such as praise and listen to others. I feel I will need to improve in these aspects. (Wei, SSI)

The PETE students also explained they felt they had limited theoretical knowledge and, more importantly, very limited practical experience using CL. They suggested establishing a CL CoP to support further understanding and implementation of this model, as expressed by Yi at the end of practicum experience:

To be knowledgeable about cooperative learning on a deeper level, I must learn more theoretical knowledge of this model at first. Then, it is crucial to share and discuss individual practice experiences with a group of PE teachers. Like what we did in the meeting [the weekly meeting in the practicum], we shared our challenges in cooperative learning classes while Ms Zhou and peers gave us their suggestions. (Yi, SSI)

The PETE students who implemented CL in the practicum school expressed a more comprehensive understanding of CL than articulated previously. Although some were still struggling with the interpretation of social skills, they had developed a deeper understanding of the interconnectedness of five key elements, as well as how to implement the key elements of CL. These eight PETE students were constantly developing their pedagogical content knowledge of CL, such as the importance of knowing about the characteristics of pupils and the value of acknowledging individual and group roles. PETE students' changed beliefs about the purpose of PE teaching and the effectiveness of CL in promoting pupils' physical and cognitive learning outcomes may be attributed to authentic teaching experiences in which they encountered how pupils learn and achieve in CL classes. Eventually, the PETE students advocated for a CL CoP for further learning and use of this model as they acknowledged that there was still much room for other improvements.

Chapter Summary

In summary, the PETE students experienced significant development in their perspectives on CL throughout the CLPL. In comparison with their initial superficial understanding of CL, the PETE students at the end of the CL course had learned that CL involved five key elements, differentiating it from traditional groupwork. Their explanations of teaching preparation, the teacher's role in CL classes, and approaches to using CL suggest that the course equipped these PETE students with the pedagogical content knowledge for CL

implementation. However, on completion of the course, the PETE students expressed concerns regarding their use of CL in school teaching and their lack of confidence in the potential of CL model in PE. For the eight PETE students' who implemented CL in school-based practicum, their knowledge of group composition increased. They also appeared to change their PE teaching and learning and their beliefs about CL's contribution. The eight PETE students called for the development of a CoP to support further development of understanding and implementation of CL.

The PETE students in the course obtained a great deal of knowledge of CL practice as a result of the microteaching experience of CL. How these pedagogical strategies were initiated in their practicum is examined in depth in the next chapter.

Chapter 5: PETE Students' Implementation of Cooperative Learning

Introduction

The purpose of this chapter is to answer the second research question, “How do PETE students implement cooperative learning during their practicum experience?” Each of the eight PETE students selected for this phase was observed for five to six class periods throughout the practicum experience—41 class periods in total. The data for this chapter come from class observations, field notes, analysis of documents (i.e., task sheets and reflective journals), and individual postobservation semistructured interviews with the eight PETE students. The results of the investigation of PETE students' implementation of CL within a school-based environment are presented in three themes: (1) establishing a positive cooperative learning environment, (2) putting key elements into practice, and (3) becoming a skilful teacher-facilitator. Each theme is discussed in detail below.

Establishing a Positive Cooperative Learning Environment

To prepare their pupils to use the CL model, the PETE students initially spent time creating a constructive CL setting. Three strategies used to create a positive CL environment were identified: (1) teaching lesson zero, (2) giving pupils' freedom to form heterogeneous groups within the criteria, (3) starting small (Dyson & Casey, 2016).

Teaching Lesson Zero

The class observations identified that five of the eight PETE students, who used CL in their practicum, taught lesson zero (see Appendix 16), that is an orientation session to explain CL to pupils before the start of their first lesson (see Dyson & Casey, 2016). They informed the pupils that they would learn primarily in small groups with their peers; pupils were also introduced to the learning materials, particularly the task sheets which are considered unique for a PE class within the CL model.

Reminders of the cooperative norms and roles were also given by some of the PETE students. For example, Jie's first CL lesson emphasised the concepts of small groups and task sheets as well as the group decision making within the following episode:

Jie informed pupils that they would learn and practise in small groups with the use of task sheets. She said,

Today, I will divide you all into four groups. In the coming few weeks you will learn together with your groupmates. Starting from the next lesson, I will give you task sheets as guidelines for group learning and independent exploration. You will be allowed to make a group decision about the learning activities from the 2–3 choices available in the task sheets. I expect you all to interact and discuss with your groupmates how to practise the movements.

(Jie, CO 1¹³).

Similarly, Juan's first observed lesson describes how she informed her pupils how the CL lesson would be structured, including the use of the task sheet and role play:

Once the group had been formed, Juan asked pupils to gather together, and then she explained how they would learn through CL, saying,

We will learn in small cooperative groups in the next several weeks. In the warm-up section, I will give you [a] warm-up sheet; in the motor skill learning section, I will give you a practice task sheet; I will give you an exercise sheet in the fitness training section. Everyone will play a particular role and undertake specific accountability to learn together. You are expected to improve together and correct errors mutually. (Juan, CO 1)

¹³ CO 1 refers to the first classroom observation with a specific PETE student. Similar notations are used for field note (FN), reflective journal (RJ), and semistructured interview (SSI).

The PETE students emphasised teaching the structures of CL in their first lesson, ensuring that pupils understood the norms, rules, and structures they would use in the upcoming lessons.

Giving Pupils' Freedom to Form Heterogeneous Groups Within the Criteria

The strategies for group composition employed by the PETE students were very similar. They established a range of criteria to ensure group heterogeneity before grouping which included: (1) small group size, (2) mixed ability, (3) different xing zheng ban affiliation, (4) mixed physical fitness, (5) different personality traits, (6) mixed gender. Specific measures used by each PETE student for grouping are illustrated in Table 19.

Table 19

Criteria Designed by the PETE Students for Group Composition

Criteria	Qian	Juan	Jie	Hang	Yi	Wei	Bao	Biao
Group size	√	√	√	√	√	√	√	√
Mixed ability	√	√	√			√	√	√
Different xing zheng ban affiliation			√	√	√			
Mixed physical fitness			√		√			
Different personality traits	√				√			√
Mixed gender								√

The first and most common criterion was the group size—all PETE students defined small groups with two to six students. Table 20 specifies the group size each PETE student defined in his/her class.

Table 20*Group Size Defined by the PETE Students for Group Composition*

PETE students	Content (gender)	Class size	Number of groups	Group size
Qian	Aerobics (girls)	30	6	5
Juan	Basketball (girls)	23	4	5–6
Jie	Volleyball (girls)	24	4	6
Hang	Basketball (girls)	20	4	5
Yi	Volleyball (boys)	28	7	4
Wei	Football/badminton (boys)	30	6/15	5/2
Bao	Basketball (boys)	21	4	5–6
Biao	Martial arts (mix)	30	5	6

As well as group size, mixed ability among group members was a criterion. To ensure the heterogeneity of group members' motor skills, the PETE students selected the most skilled pupils as temporary group leaders. Then the remaining pupils were asked to follow one of the leaders and invite other pupils. The following quotation shows that Juan selected the four most skilful basketball pupils as leaders. The other pupils chose their group leader and their other groupmates. A reminder of the heterogeneous motor skill level was highlighted:

As I just said, in cooperative learning classes, we will learn in small groups. Now we are going to form four groups with five or six members in each group. I want to select four of you who are most skilled in basketball, as I observed in the last few lessons, to be the group leaders. Then the remaining of you are free to choose your group leader and other groupmates. Please remember group members' motor skills should be at different levels. (Juan, CO 1)

Additionally, three of the eight PETE students (i.e., Jie, Hang, and Yi) considered learners' xing zheng ban affiliation. They asked pupils to form groups with those who were

from different xing zheng ban. Yi, for example, informed pupils that “there should not be more than two group members who are from the same xing zheng ban” (Yi, CO 1). He explained that this strategy is beneficial for “promoting face-to-face interaction among group members and developing pupils’ interpersonal skills” (Yi, SSI).

An alternative criterion for creating heterogeneous groups, used by Jie and Yi, was selecting pupils of mixed physical qualities, for example, pupils’ height. In her first observed CL lesson, Jie insisted the height of group members varied when forming groups by asking pupils to form groups freely based on this principle:

Please look carefully at the criteria in the grouping sheet. Group members should have different motor skill levels and height ... no more than the two tallest of you are in the same group ... as we all know, height is one of the important factors for volleyball competition. (Jie, CO 1)

Pupils’ personality traits was another criterion used by three of the PETE students, Qian, Yi, and Biao. As Qian pointed out at the end of the practicum, she mixed introverted and extroverted pupils to promote an “active learning environment and frequent communication among group members” (Qian, SSI). Likewise, Biao explained that he tried to spread the extroverted pupils across groups, because “I think the introverted ones might have little opportunity to contribute if his/her groupmates were all extroverts” (Biao, SSI).

Surprisingly, Biao was the only PETE student who used mixed gender as a supplementary condition to form heterogeneous groups. In his martial arts class, there were 10 females and 20 males. Biao required that each group should include two female pupils but did not specify the number of males. He recalled his grouping approach, reporting that “I was certain that I needed to mix the males and females at the very first. Like the old saying, boys and girls together, the work becomes lighter” (Biao, SSI).

Once informed about the criteria, pupils were free to choose their own groups within these conditions. Hang talked about his grouping strategy, “I made a list of conditions with reference to group composition. Then I freed pupils to invite their groupmates based on the conditions” (Hang, SSI). A grouping sheet with information about the group name, group members, role design and responsibility, and the group commitment was allocated to each group to assist pupils (see Appendix 17).

Starting Small

As a strategy to ensure the implementation of CL was manageable, the PETE students used only one or two CL structures throughout the practicum experience. All eight PETE students chose the Learning Teams. In addition, four of them also employed the Pair-Check-Perform to arrange pupils’ learning in a cooperative environment.

The CL structure of Learning Teams was used within a traditional sequencing of learning activities in a PE class (Dyson & Grineski, 2001; Tinning, 2010). Their lessons were routinely framed as a seven-step structure: (1) whole-class administrative activities, (2) warm-up activities in small groups, (3) review skills in small groups, (4) whole-class learning of skills, (5) small group practice of newly learned skills, (6) fitness exercise¹⁴ in small groups, and (7) group processing. A description of each step is summarised in Table 21.

¹⁴ Fitness exercise is a part of all PE lessons in the practicum school. It is based on the Chinese Physical Education and Health Curriculum Standards for High Schools (2017). Pupils are expected to take ten-minute exercise in each PE lesson to improve their fitness level and promote their physical health.

Table 21*The Seven-Step Structure of Using the Learning Teams to Implement Cooperative Learning in Physical Education*

Step	Name	What it is
1	Whole-class administrative activities	The PETE student checked pupils' attendance and then informed them of the learning tasks and the learning goals and/or emphasised group roles' responsibilities.
2	Warm-up activities in small groups	The PETE student gave each group a warm-up sheet to do cooperatively. S/he arranged the playground/gym to facilitate group activity.
3	Review skills in small groups	The PETE student gave each group a practice task sheet as a guide to review the skills that pupils had learned previously. S/he arranged the playground/gym to facilitate group activity.
4	Whole-class learning of motor skills	The PETE student explained and demonstrated the teaching points to all pupils and checked their understandings before learning in groups.
5	Small group drills of newly learned skills	The PETE student asked pupils to practise the motor skill with their groupmates following the cues in the practice task sheet. When the groups started work, the PETE student circulated among them and observed progress on the task and how the teams interacted. S/he arranged the playground/gym to facilitate group activity.
6	Fitness exercise in small groups	The PETE student gave each group a fitness exercise sheet for physical training. S/he arranged the playground/gym to facilitate group activity.
7	Group processing	The PETE student gave each group an evaluation sheet or verbally asked pupils questions to assess their group-learning process and outcomes.

My field notes from Hang's fourth class observation illustrate the way Hang used the Learning Teams through the seven-step structure in his basketball class:

11th Dec. 2018: This is the final observed CL lesson with Hang. It is his open lesson in the practicum placement. The processes of the 40-minute class are as follows:

- [0:00–2:35] Hang directed the announcement and attendance to the whole class. He then informed pupils the learning tasks and goals in physical, cognitive, and social domains.
- [2:35–7:10] Hang distributed each group a warm-up sheet and explained the sheet to all pupils. He restated the individual responsibility of each role before group practice of warm-up activities. He then stood aside, reminding pupils about the safety issues and quality practice while they warmed up in groups by themselves.
- [7:10–13:05] Hang gave each group a learning task sheet. He then asked pupils questions to recall the key points they learned in the last lesson. When pupils answered correctly, Hang signalled for students to practise in pairs. He stood aside and commented on each pair's performance.
- [13:05–14:55] Hang explained and demonstrated the cross-step to break the ball with the whole class two times. He checked pupils' understanding through random questions with one group coach.
- [14:55–28:07] Hang asked pupils to practise the cross-step skill in groups with the guidelines in the learning task sheet. He went around and reminded pupils to carry out their responsibility and interact with each other. He intervened in pupils' group learning by providing them with closed/open questions, contextual suggestions, corrections, and demonstrations.
- [28:07–32:56] Hang gave each group a fitness training sheet and explained the sheet before pupils' independent practice.

- [32:56–40:00] Hang gave each group an evaluation sheet to assess their learning process and outcomes. After the pupils' discussion, Hang randomly selected three roles to share. Hang then summarised and ended the class. (FN)

Hang structured his class step by step with pupils required to complete tasks in the restricted time, carry out their roles, and fulfil their assigned individual responsibility. Pupils were expected to work in groups using task sheets focusing on the acquisition of motor skills.

Pair-Check-Perform (Dyson & Grineski, 2001), a CL structure to hold pupils individually accountable and mutually interactive by giving one another feedback, was implemented by four PETE students (i.e., Qian, Jie, Yi, and Wei). Qian, for example, used the Pair-Check-Perform to review the four routines pupils had been taught previously in her aerobics class. The task was to use Pair-Check-Perform as a strategy for mutually assessing the learning cues for the routines. Pupils were expected to be responsible for assessing their groupmates' performance and providing groupmates with feedback.

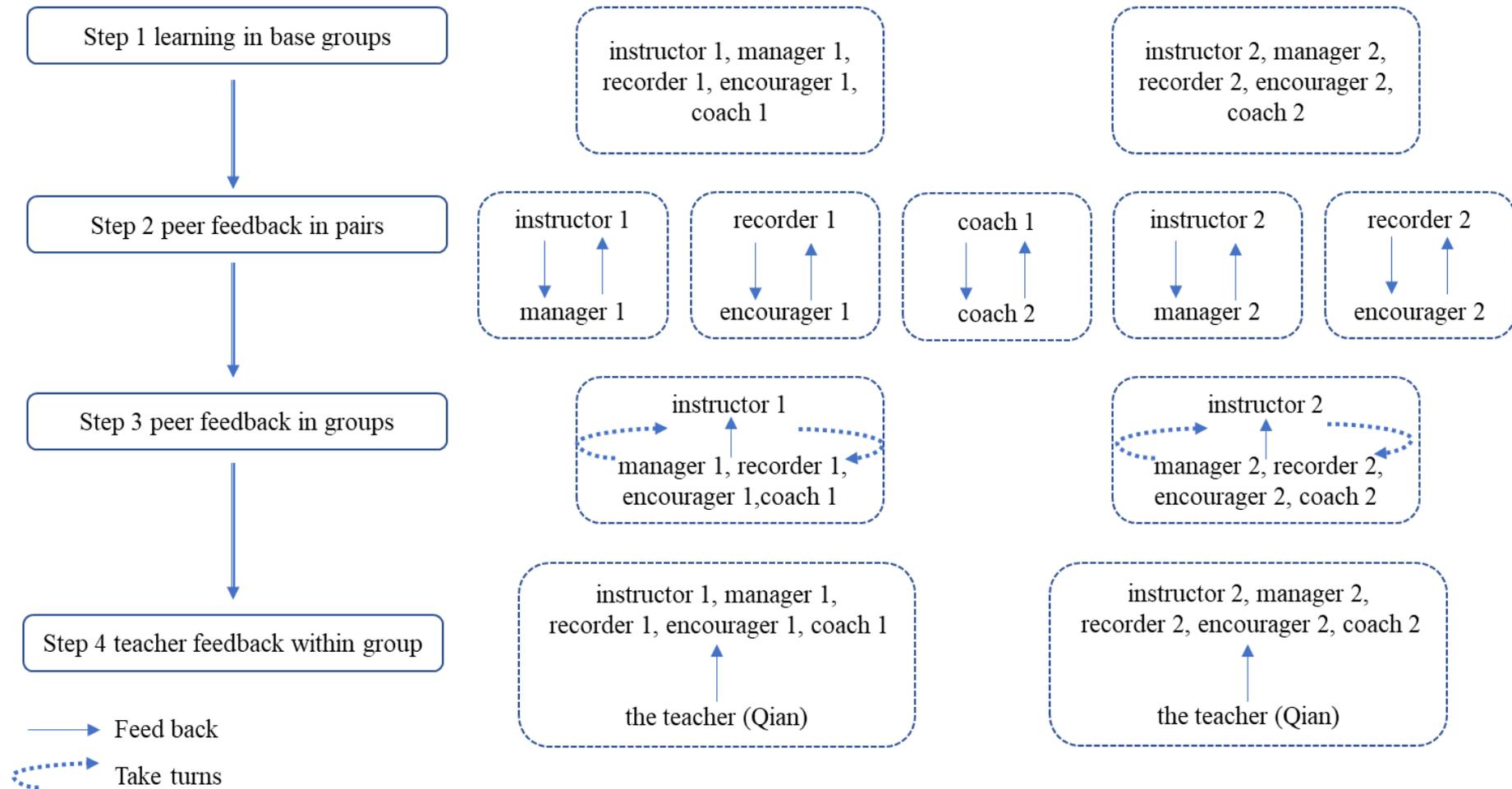
As Figure 7 illustrates, Qian separated the group of five members into pairs. Two coaches from different groups were assigned to be a pair and the remaining four members in one base group were divided into two pairs. Qian then gave each pair of pupils a practice task sheet within assessment learning cues to evaluate their partner's performance. She explained that as one partner (e.g., Instructor 1) practised the first routine, the other partner (e.g., Manager 1) was required to provide encouragement and feedback. When one partner had performed correctly, the roles were reversed. The pupils continued to use this peer teaching strategy to learn four routines. When pupils in each pair had performed the four routines correctly, they were asked to go back to their base group of five and take turns to perform the four routines individually. When one of the group members completed performing, the other four groupmates were expected to offer further feedback on the individual performance.

Finally, Qian asked each group to perform the routines together and evaluate their group performance.

To summarise, in constructing a positive CL environment, the PETE students adopted one or two CL structures, formed heterogeneous groups, established pupil roles, and trained them for the student-centred learning activities. The PETE students tried to ensure their pupils thoroughly understood what they were supposed to be doing and how they were supposed to behave. These PETE students endeavoured to establish heterogeneity in the groups through a range of criteria. Balancing the pupils' desire to create their own groups and teachers' need to have control in creating learning teams, the pupils were allowed to choose their groupmates independently according to predetermined conditions designed by the PETE students. To make their pupils, and themselves, comfortable with this new pedagogical model in PE class, the PETE students focused on one or two CL structures throughout the practicum experience, following the seven-step learning structure. However, the pupils had a lack of ownership of their own construction of knowledge and were restricted to learn and perform motor skills step by step when using task sheets.

Figure 7

PETE Students' Implementation of the Pair-Check-Perform



Putting Key Elements Into Practice

The PETE students endeavoured to ensure their lessons incorporated the five key elements based on their understandings acquired in the CL course. They used different strategies to attain each element, which generated five categories of strategies: (1) three ways of structuring positive interdependence among team members, (2) concurrent use of verbal and written directions to reinforce individual responsibility, (3) complementing verbal instructions with teacher modelling to enhance promotive interaction, (4) showing rather than telling to develop social skills, and (5) individualised strategies to reflect on group functioning.

Three Ways of Structuring Positive Interdependence Among Group Members

Analysis of class observations and instructional materials data identified three methods used by the PETE students to strengthen positive interdependence: (1) complementary roles, (2) shared materials, (3) divided tasks.

As described previously, the PETE students used small, heterogeneous groups to which members with varied roles were assigned (see Table 22). Although most pupils freely chose their roles from the predetermined list, the more skilled pupils were often placed in the role of the instructor or coach by the PETE students; these roles were routinely used throughout the implementation of CL. An exception was Wei, who did not assign roles but taught badminton with pupils in pairs. In most of the PETE students' classes, each pupil in a group played a distinct role. Juan and Bao were the exceptions as they assigned five roles, although their group sizes both ranged from five to six. As a compromise, they suggested a pair of pupils in some groups to play the same role. Bao, for example, said to Group 3 with six pupils, that "two of you can play the same role, the coach, the manager, or any other role. Depending on what you want" (Bao, CO 1).

Table 22*Roles Designed by the PETE Students to Promote Positive Interdependence*

PETE students	Group size	Assigned roles
Qian	5	Instructor, manager, recorder, coach, encourager
Juan	5–6	Instructor, manager, recorder, coach, encourager
Jie	6	Instructor, manager, recorder, coach, encourager, timer
Hang	4	Manager, coach, encourager, organiser
Yi	4	Manager, coach, encourager, organiser
Wei	6	Instructor, manager, recorder, coach, organiser, reporter
Bao	5–6	Instructor, manager, recorder, coach, organiser
Biao	6	Leader ¹⁵ , manager, recorder, coach, encourager, organiser

The second most commonly used technique to promote positive interdependence was the use of shared materials, such as task sheets and equipment, by pupils in a group to complete the learning task. The PETE students normally provided each group with only one task sheet in each section. For instance, Yi prepared seven copies of a warm-up sheet and gave each group in his class one copy and encouraged group members to read the sheet together before warming up (Yi, CO 4). All PETE students, except Qian and Biao who did not use any equipment in their classes, were regularly observed asking the manager in each group to get only a limited number of basketballs, volleyballs, or footballs for group learning. As Juan reminded her pupils, “there were only three basketballs for each group. Please share the ball with your groupmates” (Juan, CO 5).

Pupils were also tasked with choosing how they could be positively interdependent with one another through their group roles, with each designed to implement one aspect of a task. For example, the focus of the following CL episode was for the learning team to work on giving performance-related feedback to groupmates associated with divided tasks for each

¹⁵ Biao changed the role of leader to the role of instructor in his third observed CL lesson because he noticed the disadvantages of having a group leader.

role. Hang whistled and asked pupils to stop practising. He then explained the second task to all pupils by saying,

in the next 10 minutes, you are expected to work together to make progress in overhead pass through commenting on each other's performance following the guidelines in the task sheet. Every member is responsible for a different task every time and then shift. For example, the organiser can first be the performer while the manager reads out the learning cues in the task sheet. The coach then evaluates performance and gives feedback to the organiser. The encourager encourages the organiser with some positive words, such as showing a thumbs up for a nice pass. When the organiser has performed the pass successfully, roles are reversed. (Hang, CO 4)

Generally, the PETE students promoted positive interdependence by assigning roles that required pupils to work together in small groups, share their resources, and provide mutual support and assistance.

Concurrent Use of Verbal and Written Directions to Reinforce Individual Accountability

Individual accountability was observed in all PETE students' lessons through the concurrent application of verbal and written directions. While the PETE students gave verbal instructions on roles, they also appeared to make use of a task sheet to clearly explain roles and expectations and to hold each pupil accountable.

Two ways the PETE students commonly used to reinforce individual accountability using verbal directions included (1) reiteration of role responsibility, and (2) questions about fulfilment of role responsibility. As indicated previously, the PETE students adopted the Learning Teams, a CL structure, and assigned a specific role to each group member. In almost all observed CL lessons, they reiterated the roles within the Learning Teams, such as coach, recorder, and manager. At the start of the following episode, Wei spent 4 minutes

checking the attendance and informing learning teams about the learning tasks and objectives. Roles within the Learning Teams were then clearly defined:

The encourager, please remember to encourage your groupmates to focus on the task because the playground today is quite noisy. Your groupmates might be easy to be distracted. The coach, you need to read out the learning cues for your group and make sure group members are all participating and knowledgeable. For the recorder, please do not forget to record the number of practices and write down the learning outcomes in the evaluation sheet. The manager, you are responsible for getting the equipment listed in the task sheet for your group. (Wei, CO 1)

During the lesson, when Wei was circulating, and facilitating group learning, he asked some questions about roles to make sure pupils carried out their role responsibilities:

Wei looked at this watch and asked pupils if they had finished the first learning task. But there was no response. Wei then asked again, “recorders, please tell me how many times your group has practised the inside foot pass.” Only two recorders responded. Wei then approached each group and asked the recorder to tell him the answer. One recorder said he forgot to record the team’s practice. Wei said, “it is all right. But please remember that this is your responsibility. You contribute to your group through the recording learning process.” (Wei, CO 1)

Most of the PETE students clearly defined the task of each allocated role in the task sheets. The written directions emphasised pupils’ individual accountability, verbal instructions often accompanying the written directions, as in Hang’s task sheet for sliding defence skills (see Figure 8). The sheet showed that each team member was expected to be accountable and carry out the corresponding tasks of their role. When pupils were reading the sheet together, Hang explained each role’s responsibility and encouraged them to be responsible.

Figure 8

Task Sheet With the Definition of Role Responsibility Designed by Hang

Sliding Defence Skill Task Sheet

Learning cues:

- **Core points:** keep gravity on one level, arms open, eyes on each other, feet follow closely
- **Difficult points:** coordinate pedalling and striding, cohesion, and coherence

Role responsibility:

- **Organizer:** choose an appropriate place to practice, make sure enough space for group practice, and caution the distance with other groups.
- **Coach:** read out the task sheet, explain the learning cues, and check and give feedback to team members.
- **Manager:** record the number of practices and monitor team members to complete tasks in 5 minutes.
- **Encourager:** encourage team members to be involved and remind each member the role responsibility.

All PETE students appeared to highlight the importance of group members' individual accountability, either through repeating each role's assigned responsibility, or observing each group and collecting data on fulfilment of accountability, or writing each role's responsibility into the task sheets.

Complementing Verbal Instructions With Teacher Modelling to Enhance Promotive Interaction

The PETE students achieved promotive interaction in teams through two approaches: (1) various verbal instructions encouraging and facilitating interpersonal communication, and (2) teacher modelling to perfect the use of these instructions. The eight PETE students were observed to remind team members, verbally, about mutual interaction several times in each CL lesson. The most common instruction given by PETE students was to encourage team

members to gather together and read task sheets before taking action. The groups were expected to interact and cooperate to complete tasks following the learning cues in the sheet. Jie, for instance, instructed the whole class, “please read out the cues and discuss them with your groupmates before starting a practice” (Jie, CO 2).

Half the PETE students also suggested inclusive group involvement when they circulated to facilitate pupils’ group work. The following example describes Qian’s emphasis on inclusive group discussion when she saw group members interacted negatively:

Qian approached Group 3 and noted the role of the instructor reading the task sheet by herself. She asked the instructor to read together with the remaining group members and said: “You shouldn’t read individually. Please guide all others to read and make an understanding of the learning cues.” She followed by saying to other students, “Please gather together. I know you are from a different xing zheng ban. Don’t be shy. Now you are a group to learn and make progress together.” (Qian, CO 4)

There was further evidence demonstrating PETE students’ promotion of group interaction in terms of inclusive group involvement in Juan’s third observed lesson. The purpose of this episode was for Juan to encourage an injured pupil to join in group work and contribute through observation and reading out the learning cues for her groupmates. Juan asked pupils to start reviewing the movement. Then the coach from the second group approached Juan and asked for a break as she had injured her ankle. Juan said to the coach,

If you feel uncomfortable a lot, please sit aside and observe your groupmates’ performance. You can record their performances and share them with them during the group processing. If you feel better later, please be involved in your group. You might like to read out the cues in the task sheet for others. (Juan, CO 3)

Another strategy to arouse promotive interaction in teams is the application of peer tutoring. The more skilled pupils were regularly encouraged to help and assist the skill

development of less skilled teammates. The following extract, which represents Biao's implementation of promotive interaction, is an example of verbal instructions as peer tutoring. Biao asked the pupil in the role of leader (the more skilled pupil) to lead the whole team and demonstrate the martial arts routines to others.

The leader asked Biao to confirm if she had performed the sixth routine right. Biao praised the leader's performance and said to her, "you did a good job. Please stand in front of your group and direct others to perform this routine." Biao then arranged the group in two rows, with the leader standing in the first row and the remaining pupils in the second line. He then observed the group work for one and a half minutes and reminded the leader, who acted as a mini teacher, to correct the remaining pupils' errors. Biao moved to other groups and repeated that "the skilled members should help the unskilled members to improve." (Biao, CO 2)

However, PETE students noticed that to make use of their verbal instructions, pupils needed more than just an invitation; they required direction. In this case, they used teacher modelling to promote interaction among team members. For example, a group of pupils in Juan's class was off task as they did not know how to work in a group. Juan demonstrated different ways to provide help and assistance to groupmates' learning motor skills:

Juan asked the pupil with the role of the instructor to be her partner and stand facing her. Juan then read out the learning cues one by one, and the instructor performed the movement step by step, following Juan's guidelines. After that, Juan talked to all group members saying, "now it is your turn. Do as we did just now. Please cooperate with your groupmates. One person reads out the cues to assist the remaining members' performance." (Juan, CO 2)

To stimulate active interaction among group members, Wei showed pupils how to provide feedback and correct errors within the task sheet. He said,

Please observe your groupmates' practice and try to comment on others' performance.

The key points and some common errors have been written in the task sheet. If you don't know how to provide peers feedback, please read out these cues and take them as guidelines to evaluate their performance. (Wei, CO 1)

In general, PETE students encouraged pupils, verbally, to read the task sheets together and get involved in the group work to support each other's learning. To ensure interpersonal dynamics among group members more effectively, PETE students also directly demonstrated to pupils how to influence each other's learning through assistance and feedback.

Showing Rather Than Telling to Develop Social Skills

Two of the PETE students, Hang and Wei, reinforced the significance of actively listening to each other based on learning about the importance of teaching pupils' interpersonal skills required for high-quality cooperation in the CL course. The following quote is an example of the instructional behaviours demonstrated by Hang to reinforce the importance of listening for effective CL:

Please keep quiet! When someone is speaking, we should listen to them. So that others will listen to you as well when you are speaking in the group. As we all know, listening is the basic way to show respect to one other and maintain a productive relationship with others. Please keep this key point in mind. (Hang, CO 4)

Similarly, Wei reminded his students of the importance of listening during group processing. The following extract from Wei's class observation describes his emphasis on pupils' ability to listen to others:

Wei whistled and asked all pupils to get close in 30 seconds. He then invited the reporter of the first group to share "what went best in your group?" When the reporter was reporting his group's answer, some pupils were joking or bouncing the ball. Wei asked them to keep quiet and listen to the reporter. He said,

When someone is sharing his group's learning, we should listen to him and pay attention to their thoughts with an open mind. Each group has a different way of learning and practising. Others' experience is worthy of our learning.

Please listen to others quietly and carefully. (Wei, CO 1)

Most of the PETE students pointed out that "showing is more effective than telling" to teach social skills (Qian, SSI). They preferred to set examples for pupils by demonstrating appropriate social skills for CL. As Yi posited, "I think the teacher should demonstrate the needed interpersonal skills, such as being gentle, easy-going, and encouraging, before asking pupils to perform because pupils are likely to be influenced invisibly by the teacher, such influence is very powerful indeed" (Yi, SSI).

The social skill demonstrated most frequently by all PETE students was giving praise to one another. Every participating PETE student was observed to praise pupils' physical performance and social interactions regularly by clapping and with encouraging words. Biao, for example, led the whole class in applauding a team's demonstration and cooperation that occurred within the following episode:

Biao invited the second group to perform a routine in front of the class for all pupils and then led the remaining groups in clapping to applaud the second group. After the demonstration, Biao led the class clapping again and praised the second group's performance. Biao said,

This group did a very good job. They performed precisely, well organised, and cooperated with each other. Particularly, the instructor created special instructions to guide group members to complete at the same pace. That is fantastic. Other groups, please learn from them. (Biao, CO 4)

Some of the PETE students also displayed trust and support to pupils within teacher-student interactions. Qian, for instance, often communicated with her students in trusting and

supportive ways. In her final observed CL lesson, she encouraged a pair of pupils, who often stood at the back of the gym and rarely engaged in the group interaction, to give feedback mutually. Qian said,

Please work together with your partner. One of you performs while another one observes and checks her performance. Can you achieve it? Belief in yourself, and you can Don't be afraid to comment on others' performance Follow the guidelines in the sheet and speak out if she achieves the benchmarks or not. And then reverse your roles. Can you? Don't be shy I believe you both can do it. (Qian, CO 5)

The demonstration of social skills suggests that many of the PETE students may have lacked an understanding of this element or strategies to enhance social skills. All except Hang and Wei were challenged to teach their pupils explicitly the necessary social skills for high-quality cooperation, such as sharing, accepting, and leadership, and to motivate them to use these skills. Although they stated that demonstrating social skills during lessons was more important than telling pupils, they did not reinforce pupils' use of these skills or provide feedback on how pupils used these skills.

Individualised Strategies to Reflect on Group Functioning

Unlike the other four elements, group processing was not regularly observed in observations of the eight PETE students who employed CL in their practicum. Jie and Biao omitted group processing throughout the practicum because of time constraints, even though they were cognisant of its importance. When Biao was questioned about how he and the pupils evaluated the group functioning, his response identified challenges associated with the implementation of group processing:

I did not conduct the reflection in my class ... but I should have done that to gain information and feedback from pupils for my planning But as you know, we had

too much to do in the 40-minute class, the martial arts routines learning, the fitness training activities and test ... I did not have enough time to assess their performance.

(Biao, SSI)

In the CL classes, the group processing time of six of the PETE students ranged from 3 to 6 minutes. They either verbally questioned the pupils or allocated each team an evaluation sheet for group discussion and reflection. In contrast to Qian and Yi, who asked pupils about the learning outcomes directly, Juan, Hang, Wei, and Bao used the evaluation sheet in every CL lesson. The evaluation sheet was regarded as a useful tool for guiding pupils' assessment because, as Juan said, "many pupils were challenged with the evaluation as it is quite new for them" (Juan, SSI). The evaluation sheet often explicated the criteria for assessment of each role as well as providing three open-ended questions that allowed pupils to say something about their group-learning experience and plan for the next lesson (see Appendix 18).

To support pupils' evaluation of group functioning using the evaluation task sheet, the PETE students reminded the pupils of the processing norms and reinforced the points through discussion, evidence-based responses, and active engagement. Hang, for instance, explicitly emphasised, "please talk to your groupmates. Everyone should state one point of view and express your own opinion regarding the evaluation questions" (Hang, CO 1).

Juan highlighted the importance of trustworthiness during group processing. When circulating during group discussion, she stated, "please ensure your reflection is evidence-based. It will be meaningless if the group processing is not based on reality" (Juan, CO 3). As Juan reflected on her implementation of the group processing, "the pupils often said good words about their group performance. But it was not always the case according to my observation" (Juan, SSI). In her reflective journal, Juan described her experience with the group processing in detail:

I am not satisfied with pupils' attitudes toward peer evaluation. Some of them are too shy to speak out exactly how they feel. Even worse, most of them did not evaluate critically and objectively because of *mianzi*¹⁶. I kept underscoring the role of group processing. But it seems it did not work well. (Juan, RJ 4)

In Bao's class, although pupils were meant to be involved in discussion and reflection on group functioning, they did not use the evaluation sheet and were more interested in talking or watching. Bao was observed to walk around the playground and monitor group processing by calling out reminders for the pupils to "stay together", "focus on the evaluation questions", and "take turns to share your thoughts" (Bao, CO 4).

The PETE students further facilitated the group processing by randomly selecting a role on each team as the representative to answer evaluation questions in the class. When some pupils were overwhelmed when expressing and explaining their answers, the PETE students provided them with some hints. Scaffolding was evident when Yi reminded pupils to focus on mutual interactions when reflecting on their social learning outcomes:

Yi randomly selected the role of coach in the third group to answer a question on how the group worked together as a team. When Yi noticed the coach kept silent for 5 seconds and had difficulty explaining, Yi asked him:

How does each of your group members make an effort for the group work?
For example, have your groupmates given feedback to each other or helped each other to make progress? Or has your group discussed the learning cues and shared ideas? Something like that. (Yi, CO 4)

¹⁶ The concept of *mianzi* is regarded as an extremely important notion in Chinese society. The meaning of this concept has extended from the "front of head" to the figurative sense of "reputation" or "good name" (H.-C. Hu, 1944). Under the influence of Confucianism, *mianzi* has served as the basis for "strengthening and expression the harmonisation of human relationships among men in society" (C.-Y. Cheng, 1986, p. 340). Folk collocations in Chinese related to *mianzi* include *liu mianzi* (i.e., enhance face), *gei mainzi* (i.e., give/gain face), and *diu mianzi* (i.e., lost face). Here, Juan stated that pupils in her classes seldom critique peers' performance because they intended to enhance peers' face to avoid face-threatening situations and ensure group harmony.

While some PETE students ended the group processing after pupils shared what happened in their groups, Juan and Hang endeavoured to interpret and transfer pupils' responses for further thinking and effective learning in future lessons. For example, following pupils' sharing of the ways in which they cooperated as a group, Hang built on his understanding of the pupils' feedback and provided them with suggestions to improve their learning as they moved into the next lesson:

Please be brave to comment on your groupmates' performance in the future, like what you did in this class. In addition, I expect you all can learn from each other, rather than imitate the teacher's performance only. There is no precise scale for each action in basketball. As well, there is more than one approach to acquire the defence skill or other skills. You can discuss with your groupmates and explore new ways. (Hang, CO 5)

While the PETE students adopted a range of strategies to implement each of the five elements, their achievement of these elements was not mutually exclusive and independent. The complementary roles and divided tasks were closely associated with individual accountability, and the interdependent task sheet positively promoted the interaction among group members. Discussion in group processing was utilised as an opportunity to develop social skills. However, the encouragement of peer tutoring initiated by the PETE students negatively affected the fulfilment of each role's individual accountability. Once the more skilled pupil acted as a mini teacher to help and assist groupmates' learning, not all group members would fully carry out their individual accountability as described in the grouping sheet. Furthermore, group members did not interact with each other equally.

Becoming a Skilful Teacher-Facilitator

Throughout the 10-week practicum experience using CL, the PETE students progressively developed their ability to teach with the student-centred instructional model

and to move from direct teaching to a role as teacher-facilitator. The development trajectory in the teacher's role is apparent in three subthemes: (1) being a director controlling the learning and pacing in the class, (2) switching between the director and facilitator monitoring groups' work, (3) being a facilitator scaffolding pupil's learning in various domains. Each is described below.

Being a Director Controlling Learning and Pacing in the Class

At the start of the implementation of CL, the eight PETE students appeared to play a decisive and directive role in pupils' learning and in determining how pupils spent their time learning in the groups. The analysis of the videos highlights the patterns emerging in the teacher's role in CL lessons. These, for example, included (1) demonstrating individuals or the whole-group learning tasks through direct supervision, (2) correcting mistakes on the spot while the groups work, and (3) pacing and progressing the learning within the teacher's expectation.

Biao, for example, controlled the learning environment by demonstrating skills to pupils when he went around the playground overseeing the groups' performance. In the following episode, Biao actively intervened through telling and modelling the movement, giving little opportunity to the pupils to explore it by themselves and with their peers:

When pupils were practising the fundamental movement skills of martial arts with the task sheet in groups, Biao hovered and observed groups' work intently. He noticed the third group of pupils stopped practising and were confused about the task sheet. Biao then approached them and asked, "where don't you understand?" As soon as pupils responded, Biao stood in front of the group, explained and demonstrated this movement twice. The pupils stood in one line imitating Biao's action step by step.

(Biao, CO 1)

Wei watched for pupils' every mistake and corrected it on the spot to ensure that the pupils did their work exactly as he planned and directed. During the class observation, for example, I observed Wei correcting errors pupils made in his football class:

Wei approached a pair of pupils in Group 2 and found one of the pupils passed the ball to his partner very high. Wei stopped the pupil's practice immediately and corrected his errors with demonstration and clarification, "the learning task now is rolling pass. Remember to kick the postmedian part of the ball, rather than the upper or the bottom parts, which would make the ball too high and too far." The pupil passed the ball once again, following Wei's guidelines. Wei praised his improved performance and further reminded him, "remember to swing your leg before kicking. Please keep my words in your mind." (Wei, CO 1)

Furthermore, it was apparent that the PETE students controlled the pace and progress of learning in their initial employment of CL to meet their expectations and teaching plans. Jie, for instance, frequently shouted out when the groups were struggling with the learning cues, "don't stand silently. Be quick to start your practice. Instructors, hurry up, read out the cues for your groupmates quickly" (Jie, CO 1).

Further evidence concerning the teacher's control over the pace and progress of learning can be seen in Qian's behaviour in her first CL lesson. The learning goals in her first lesson were to, as a team, review Routines 2 and 3 and learn Routine 4. After the warming-up exercise, Qian told the class what they needed to do and said, "don't spend too much time talking. Let's try as fast as possible. You have only 5 minutes to review the Routine 2 and 3 now" (Qian, CO 1). My field notes describe Qian's behaviour in the lesson as focused on getting students to complete the tasks in the allocated time:

5th Nov. 2018: This is the first CL lesson by Qian. She had overguided the progress of learning with a restricted timeline. She gave pupils limited

opportunity to follow their own pace, although some groups were struggling with the learning tasks. Qian kept checking her watch and teaching plan.

Through the microphone, I heard her speak to herself, “there is no time left for this session. I have to stop their drills.” She then stopped group learning and guided the whole class to learn Routine 4. However, at least two groups required more time to practise as they had difficulty performing Routines 2 and 3. Qian ignored their requirements and kept following her teaching plan.

(FN)

Switching Between Being Director and Facilitator Monitoring Groups' Work

By the third CL lesson, there were differences in how the PETE students managed the group work. They began to “guide on the side” to reinforce rules, norms, and safety issues or scaffolded pupil’s learning by questioning (Metzler, 2011, p. 32). That is, the PETE students stood aside to monitor by offering advice, guidance, and reminders while pupils went about their tasks. They were not, however, consistently acting as facilitators, and instead, they switched between the roles of director and facilitator. Although some of the PETE students used open-ended questions, they rarely gave pupils enough time and opportunity to respond and reflect. Alternatively, they preferred to answer the questions themselves, demonstrate how the skills should be performed, and then move on to the next learning task. For example, Qian questioned the pupils on practising burpees safely but did not wait for the pupils’ response. Instead, she explained and demonstrated the movement by herself immediately:

Qian moved to the back of the second group and observed the group pupils practising burpees for 2 seconds. She then talked to them, “how do we perform the burpees?

What should we notice? How about the legs when your hands reach the ground? We need to pop the legs straight back into a pushup position. Yes?” Qian then stood

upright with her feet shoulder-width and hands out in front of her. She started to squat

down and push up by popping her legs straight back. After the demonstration, Qian asked the group to perform the burpees once again. She observed, praised pupils' improved performance "Right. Good job." (Qian, CO 4)

It was even evident that the PETE students changed roles between director and facilitator when they supported the groups in different ways. Whereas six of the eight PETE students facilitated some groups' learning by guided discovery, they supervised another group by telling them the answer. For example, the following episode observed in Juan's third CL lesson shows her acting as both facilitator and director while the groups worked. Juan facilitated the third group's learning by asking open-ended questions and providing them with contextual suggestions. On the other hand, she directly explained and demonstrated the skill to the first group. I wrote in my field notes:

29th Nov. 2018: This is the third observed CL lesson with Juan. Worthy of note are the changes Juan experienced in this lesson. She started to support pupils' learning by asking questions. She asked the first and fourth group questions like "how should the shoulder perform when practising throwing and catching the basketball over the cones with cross-steps?" or "how should the foot perform?" However, it seems that she was not skilful in questioning because she also directly explained and demonstrated the movement to the second and third group, saying, "observe my action. You see, I am taking a run-up with my foot," "remember to turn towards the offensive direction and lean the shoulder. Like this." (FN)

Being a Facilitator Scaffolding Pupils' Learning

Although many of the PETE students switched between directing and facilitating pupils' learning, three PETE students appeared to settle into a routine of consistently facilitating by the end of their practicum experience. They rarely taught content directly to

groups, instead, they used open-ended questions, referred to resources, and encouraged pupils to assume their roles to scaffold pupils' learning.

For example, Yi refrained from rushing to the rescue and answering a group's problems directly. Instead, he redirected the group to its resources and asked pupils to turn to groupmates for help before the teacher stimulated social interactions among group members. In his final observed CL lesson, some pupils did not understand the learning cues in the task sheet and asked for an explanation. Yi relayed their questions and said, "please make sure no one in your group can understand what these cues mean before you ask me" (Yi, CO 5). The pupils then went back to their groups and talked to each other. Yi explained the information to pupils only when the pupils came back again and asked him more questions.

Jie encouraged the pupils to make mistakes and to explore the opportunity as a strategy for becoming skilful in facilitation. Rather than explaining and demonstrating the underhand serve to the whole-class before groupwork, Jie took a step back and asked pupils to work out how to perform the skill on their own. She afforded the pupils 5 minutes and encouraged their discovery by repeating, "try your best to do it by yourself now. Come on. I believe you all will achieve it" (Jie, CO 5). When some pupils made mistakes, Jie said,

It doesn't matter if you are not successful. You may like to go back to the learning cues in the task sheet and then reflect on why you failed. You can also invite your groupmates to observe and comment on your performance. (Jie, CO 5)

Jie appeared comfortable giving her pupils the time and opportunity to discover things for themselves and did not correct their errors at the first sign of difficulties. As she reflected in the semistructured interview, "I was surprised about and happy with what they [pupils] could work out and make progress on without my direct instruction" (Jie, SSI).

Another example of a skilful facilitator is Hang, who rarely taught didactically but scaffolded groups' learning through several thought-provoking questions beginning with

“why” or “how come.” In Hang’s basketball lesson, a pupil in the third group asked him a question about defence tactics. Hang respond to the pupil’s problem with three open-ended questions which went beyond the information in the task sheet. The following interactions between Hang and the pupil show how he helped the pupil think about the problem. He asked a few stimulating questions and afforded the pupil enough time to construct the knowledge and understanding of defence skills in basketball by herself.

Pupil: Does the defender need to open her hands within the step slide?

Hang: What do you think? *(Hang encourages the expression of the pupil’s own idea)*

Pupil: Well, maybe yes. *(the pupil provides a short answer)*

Hang: Why? *(Hang asks an open question to elicit information)*

Pupil: To widen the range in defence. *(the pupil explains with reason)*

Hang: Good job. You can simulate a defence situation. What is the purpose of the defence? *(Hang asks an open question and prompts the pupil to link ideas)*

Pupil: [after a long pause] To prevent the offender from passing, dribbling, and taking a shot. *(the pupil explains)*

Hang: Very good. So how should the hands perform? *(Hang acknowledges pupil’s answer and prompts her to think of the performance of the activity)*

Pupil: Like this. Open my hands and keep them up and out. *(the pupil explains with performing)*

Hang: Excellent. Keep trying with your groupmates. *(Hang praises the pupil’s thinking and doing and encourages group interaction)* (Hang, CO 5)

The eight PETE students were becoming more skilful in scaffolding pupils’ group learning in CL lessons. Although some of them had difficulty maintaining the role of the authentic facilitator required in CL, at the end of the practicum, three more consistently

supported pupils or groups in their learning indirectly through questions, contextual suggestions, and promotion of communication between groupmates.

Chapter Summary

This chapter has described PETE students' implementation of CL in their practicum. Observations revealed that each PETE student had adopted various strategies associated with good practice of CL, such as conducting orientation lessons to prepare pupils for CL, balancing pupils' freedom and teacher's criteria to create heterogeneous groups, and starting with no more than two CL structures. The eight PETE students, in general, consistently implemented the five key elements. Throughout the 10-week practicum, they moved from being directors to facilitators scaffolding pupils' learning. Together these results provide important insights into PETE students' competency in implementing CL in a real-world setting. However, PETE students' development of their perspectives on CL and their pedagogical competency is not by chance but is associated closely with their engagement in the CLPL. The next chapter examines and reports on the characteristics of the CLPL that influenced PETE students' professional growth.

Chapter 6: Influential Experiences and Factors on Professional Growth

Introduction

The purpose of this chapter is to answer the third research question, “What characteristics of cooperative learning professional learning influence PETE students’ perspectives on and practices of cooperative learning?” I identify the key experiences and factors that influence PETE students’ perspectives on and practices of CL throughout the CL course and their school practicum experience. The data in this chapter come, partially, from focus groups with the 20 PETE students and from the semistructured interviews with eight PETE students who participated in implementing CL during school practicum, the lecturer of the CL course, and associate teachers in the practicum school. Postlesson interviews with the lecturer and field notes data have also been analysed and utilised. Three major themes highlighting influential experiences and factors are: (1) microteaching experience: learning by doing with cooperative learning; (2) reflection on learning and implementation of cooperative learning; and (3) coaching facilitation from the lecturer, associate teachers, and peers. Each theme is discussed and illustrated below.

Microteaching Experience: Learning by Doing With Cooperative Learning

The microteaching experience in the CL course had a great impact on PETE students’ growth of knowledge of CL. Three of four components of a typical microteaching format (Grossman, 2005; Macleod, 1987) were identified as the most beneficial factors: demonstration and modelling of master teachers, the practice of CL in the form of peer microteaching, and immediate feedback from the lecturer.

Observing and Participating in Teaching Modelling of Cooperative Learning

In the second workshop session of the course, a demonstration lesson of implementation of CL by an experienced PE teacher at a Chinese middle school, to “provide

an overview of CL” (Lecturer, PLI 2¹⁷), was presented to the PETE students. The lecturer suggested that contextualising the CL model by using video in the local setting was important for expanding PETE students’ knowledge of CL; that is moving from knowing about CL as a learning model to understanding how CL could be implemented in a “real” classroom. As she reflected,

Showing them [PETE students] how cooperative learning was actually used could be more helpful than merely theorising it on paper. The video helped them to understand how to make use of the task sheets. More importantly, it gave them an example of how cooperative learning was applied in China. I know some of them were sceptical about the feasibility of cooperative learning as an exotic model in the Chinese context in the first place. (Lecturer, PLI 9)

The PETE students agreed with the lecturer on the value of the demonstration video for their learning of CL. Jie, for example, acknowledged that she did not have an understanding of CL before watching the video. She stated that “the theory lesson in the first workshop is too abstract and boring,” and she began to understand the CL model in PE “at the moment [they were] watching the demonstration video” (FG 2-2).

Moreover, some PETE students claimed that seeing CL in use in a classroom helped them gain a more comprehensive understanding of the model. The experienced teacher in the video enhanced the PETE students’ learning by demonstrating, specifically, how a classroom can be arranged for CL groups. As Juan commented:

The teacher in the videotape demonstrated how to use the cooperative learning model in a PE class, such as how to group pupils, allocate task sheets to support groups’ learning, and conduct the group processing I think it helped me know several

¹⁷ PLI 2 refers to the second postlesson interview with the lecturer. Similar notations are used for semistructured interview (SSI), focus group (FG), and field notes (FN)

details in a cooperative learning class before practising it. The video likely acted as a cornerstone of my understanding of cooperative learning. (FG 4-2)

The lecturer also modelled CL implementation following Johnson and Johnson's (2009) conceptual approach, deliberately and concurrently integrating CL teaching strategies and instructional procedures into the third workshop session. The PETE students experienced cooperative activities first-hand as learners in the session. The lecturer described her practice of CL after the third workshop:

I was trying to make them [PETE students] experience a “real” CL lesson. I asked them to create four heterogeneous groups within the criteria of mixed gender and particular diverse sports. Each of them was suggested to play a specific role and carry out corresponding responsibilities. After that, I started my modelling session and taught them the forearm pass of volleyball. I kept encouraging them to learn and make progress together with their groupmates and use the task sheets. I emphasised the importance of social skills, such as listening, cooperation, and trust. In the final 10 minutes, they were involved in group processing, discussing and reflecting on their group function. (Lecturer, PLI 3)

From the perspective of the PETE students, observing a teacher using CL and experiencing the CL model in the workshop worked together to help them master the body of knowledge associated with CL. They overwhelmingly reported that direct encounters with CL as learners were a key to their learning of CL. Sen, for instance, commented, “I knew cooperative learning as I experienced [it]” (FG 2-2); Hua added, “we actually knew what cooperative learning was all about because we were participating in it, rather than just being all theories” (FG 2-2); and Hang explained, “Ms Zhou's [the lecturer of the CL course] modelling made it easier to understand what we actually learned about because it was a part

of what we did in the session” (FG 3-2). Han further articulated the impact of the lecturer’s modelling on her understanding of the implementation of CL:

I now know how cooperative learning is structured. Just like Ms Zhou demonstrated, the teacher in the cooperative learning lesson needs to prepare a series of task sheets and allocate them to students in the cooperative learning lesson. It seems there are certain patterns for the teachers to follow as well as the traditional PE teaching. For example, there is a discussion session at the end of the cooperative learning lesson for students to evaluate and reflect on their group function. (FG 3-2)

Furthermore, the lecturer’s modelling provided the PETE students with insights into their practice of CL. This is particularly evident in the eight PETE students’ use of a pedagogical strategy for group composition. As recorded in my field notes,

20th Oct. 2018: It is pretty interesting to see that all the eight PETE students who employed CL in their practicum simulated the lecturer’s grouping strategy. The teacher set criterion at first, and then pupils were free to invite their group members. The PETE students made some modifications to the criteria according to their pupils’ information. For example, they did not set the criteria of mixed gender as the lecturer did in the course. This is because most of the PE classes in the practicum school are single gendered except for the martial arts class. (FN)

While a didactic lecture on theory had a limited impact, the lecturer’s modelling, alongside the video modelling of a schoolteacher, appeared to contribute significantly to the PETE students’ understandings of CL. These personal experiences with CL gave this cohort of PETE students a better overall picture of CL in action.

Experimenting With Cooperative Learning Through Peer Microteaching

Following the teachers’ demonstration and modelling of CL, four peer microteaching sessions were conducted. These sessions appeared to facilitate the PETE students to master

the requisite content knowledge and pedagogical content knowledge to implement CL. More than half of the participating PETE students suggested that their deeper understanding of the five key elements of CL was the result of their participation in the peer microteaching. For example, Juan remarked that the experience of playing roles and carrying out relevant responsibilities helped her to “understand the element of individual accountability” (FG 4-2). Qian valued the experience of face-to-face interaction where “we were used to sitting in a circle facing our friends when doing reflection” (FG 3-2). For others, a greater appreciation of positive interdependence occurred through working with each other when “they had only one task sheet available to read and discuss together” (FG 3-2), or when they were “rewarded as a group” (FG 1-2).

The peer microteaching strategy in the CL course also increased the PETE students’ pedagogical content knowledge of CL. Almost all PETE students commented that their mastery of the instructional procedures of CL increased through practising CL with peers. For instance, one student stated that “teaching cooperative learning with peers made more of an impact on me. I now know how cooperative learning is applied in a PE class. The instructional procedures are retained in my memory with a strong impression” (FG 3-2), and another that, “the most helpful thing was practice [of] teaching ... a very good experience helped me [to be] much familiar with the process of a cooperative learning lesson” (FG 1-2).

It is apparent that the pedagogical strategy of learning by doing empowered the PETE students to be more sensitive about their planning and classroom management instructions. Juan claimed that she had built on her experience of peer microteaching when implementing CL during the practicum experience:

I had visualised a concrete unsuccessful experience when I engaged in the cooperative activities in the course. Those experiences helped me notice the details in the process of teaching and learning in cooperative learning classes. I have taken these

experiences into account when designing the task sheets and dealing with the off-task behaviours or group conflicts in my classes. (Juan, SSI)

Others valued the consistency between the peer microteaching and their future implementation of CL in their practicum school, suggesting that peer microteaching facilitated their preparedness to employ CL. Hang, for example, stated that choosing the teaching content of the peer microteaching from the syllabus of the practicum school enhanced his familiarity with, and confidence to use CL:

It is really good to know what we are asked to teach pupils in advance. The much better thing is that we have an opportunity to practise before heading to the practicum classroom cooperative learning is new and challenging for us to use. But it [peer microteaching] makes it easier as we have practised it to teach the same content. I feel confident and well prepared to use cooperative learning in my class. (FG 3-2)

PETE students' statements were congruent with the lecturer's purpose of the peer microteaching sessions. From the lecturer's perspective, peer microteaching was aimed at "engaging PETE students in cooperative learning in a range of contexts and orienting them to teach in a school PE classroom" (Lecture, PLI 4). In the following comment, the lecturer recommended peer microteaching as an invaluable experience for the PETE students' learning to implement CL:

Being a great potential approach, peer microteaching allowed them [PETE students] to experiment with aspects of practice and then learn from that experience ... experiencing the managerial issues in cooperative learning classes ... and talked about the means for resolving these problems. I feel these experiences will enable them to be competent in using cooperative learning in their practicum classrooms. (Lecturer, PLI 9)

PETE students' engagement in peer microteaching sessions was also considered to influence their understanding of student-centred classrooms. Whereas in traditional teacher-led lectures students observe presentations, record notes, and complete assignments, during peer microteaching students are "more active, interactive, and collaborative" in group planning, implementing, and reflection (FG 3-2). Through the several peer microteaching sessions, the PETE students realised that the lecturer modelled the notion of student-centred teaching well. As Yuan reflected,

This course is much different than what we previous engaged in, we are the centre of the course, rather than Ms Zhou [lecturer of the CL course]. It is not like a traditional lecture we accept cooperative learning as what the teacher tells us. Instead, we are valued for making decisions and sharing our perspectives. I think this is a kind of student-centred teaching. (FG 1-2)

Qian appreciated the experience of student-centred teaching as they engaged in the peer microteaching sessions and stated:

The idea of the centre of the course has made a huge difference because I understand the impact of it, such as a sense of equality ... an equal relationship between the lecturer and us ... and proactiveness to engage in the learning process. (FG 3-2)

Notably, not only could the PETE students realise the value of sharing control of learning for their own development, but they could also see how this would be important for their own students. As Wei explained:

I see the value of having the chance to decide something rather than responding to a learning situation prescribed by Ms Zhou. I would implement that in my class, like what she suggested to use multiple choices in the task sheets [this] would be available for pupils, enjoying ownership of learning and being motivated to engage in learning activities. (FG 4-2)

Immediate Feedback From the Lecturer

Another valuable influence frequently mentioned by the PETE students was the lecturer's immediate written and oral feedback on their instructional planning for peer microteaching. Nine of the 20 PETE students suggested that they were confident in making task sheets and their employment of CL in the future, as evident in Wei's statement:

Ms Zhou commented a lot in my initial task sheets and gave me many suggestions, such as the user-friendly organisation, understandable jargon, and appropriate use of photos ... even some minor issues, like the font size of table content [she] also offered me some other ideas to design activities making pupils accountable and interdependent. I feel I have generally gained the skills to plan and use cooperative learning in the Fanggu high school. (FG 2-2)

The lecturer's immediate oral feedback about PETE students' performance in peer microteaching, followed by written feedback, was highly valued. Several PETE students said they appreciated the cues provided by the lecturer for managing their dual roles of the learner and the teacher in the course. For example, during peer microteaching, the PETE students were challenged to think "beyond the student experiencing cooperative activities now and consider how to react to the situation if you are the teacher" (FG 4-2). Comments such as this encouraged the PETE students to view CL from a teacher's perspective. Rong's comments revealed she learned from the constant feedback provided by the lecturer throughout the peer microteaching sessions:

Ms Zhou kept reminding us that we are not only the students participating in the cooperative activities but also the teachers who need to reflect on the instructional behaviours, such as how to organise scattered groups efficiently She reiterated several times [it] makes me think in depth in the role of teacher. (FG 3-2)

According to the lecturer's reflection, she focused on providing feedback to PETE students on how they should tackle managerial issues such as group conflicts, and how to scaffold pupils' learning through guiding, questioning, and sharing control with pupils. As she explained:

The teacher in a cooperative learning class is not the sage on the stage. For example, when pupils evaluate and discuss their group function, the teacher should guide them on the side, observe their interaction, and sometimes need to ask open questions to promote their further thinking for future learning and set goals by themselves. I expect them [PETE students] to be able to master the skills of facilitation, such as questioning and effective guiding. (Lecturer, PLI 5)

For the PETE students, receiving feedback from the lecturer that focused on scaffolding facilitated their understandings of CL. The lecturer's comments on "strategies to arouse pupils' proactivity" and "tactics of reacting to pupils' questions" deepened their cognisance of the necessity for the teacher to "take a back seat and appreciate pupils' ownership of learning" in CL classes (FG 1-2). Students in other focus groups appreciated the lecturer's feedback on how the teacher in a CL environment needed to become good at asking questions and supporting students' thinking rather than supplying answers. Hang, for instance, stated that the lecturer's feedback deepened his understandings of facilitation:

It is impressive that she followed and talked to me throughout my practice of cooperative learning in the eighth workshop. She challenged me to reflect on why I directly explained and demonstrated sports skills as traditional teachers do. She suggested exploring alternative ways to promote pupils' group work ... through the process, and I gained skills in several facilitation strategies—asking open questions to stimulate pupils' thinking, promoting hints through suggestions, and praising pupils' good performance. (FG 3-2)

The microteaching experience in the course gave the PETE students exposure to CL through mastering teachers' modelling, peer microteaching, and constructive feedback, which enabled them to gain a body of content knowledge and pedagogical content knowledge of CL. Learning by doing, with CL, apparently helped PETE students to make connections between what they were taught and how they could apply CL in their practicum.

Reflection on Learning and Implementation of Cooperative Learning

Another strong influence on the PETE students' perspectives and use of CL was the multiple reflective activities structured by the lecturer or engaged in by the students independently throughout the CL course and practicum. I noted three approaches using structured reflections in my field notes:

15th Nov. 2018: The lecturer endeavoured to engage the PETE students' insufficient reflective practice. First, a nearly 30-minute group processing section was arranged at the end of each workshop for the PETE students to reflect on their learning experience around a particular topic, such as the instructional procedures of Learning Teams, the teacher's role in a CL class, the enactment of five key elements, the classroom management strategy, and the design and utilisation of instructional materials. Second, in the seventh microteaching session, the PETE students had the opportunity to evaluate and reflect on their instructional materials (e.g., task sheet) in depth. Third, the eight PETE students who used CL in their practicum were invited to a weekly meeting for reflection and sharing of their practice of CL. (FN)

Several PETE students spoke about how they had come to understand the element of group processing through group discussion:

I rarely engaged in such group discussion before this course we sat in a circle. We expressed individual opinions regarding what went well or not well, how we assisted each other for group progress, and what we needed to work on or improve I

learned the importance of respect, listening, and self-confidence during the discussion this kind of discussion is important for influential group learning. (FG 2-2)

Others considered reflection on task-sheet making as beneficial in expanding their pedagogical content knowledge of CL. The PETE students valued the opportunity to “discuss and analyse thoughts with peers ... [that] everyone had shared” (FG, 4-2). Sharing different views about designing task sheets and receiving constructive feedback from peers, they said, was a valuable experience for increasing knowledge of teaching preparation for CL. For example, Sen stated:

The essential aspect of the course that helped my learning of cooperative learning teaching was the reflective session focusing on making task sheets. We had an opportunity to talk with our peers. So that the knowledge of five was greater than an individual. We are learning from our peers and that of discussion. (FG 4-2)

Likewise, the lecturer highlighted the crucial role of reflection on making task sheets for PETE students’ development of understanding CL. The lecturer suggested that the group processing in which the PETE students actively engaged to evaluate the advantages and shortcomings of their task sheets “brought the mistakes to the surface” (Lecturer, PLI 7). Thus, this activity, according to the lecturer, improved PETE students’ competence in lesson planning pertaining to CL.

In addition, seven of the 20 PETE students talked about how reflecting on the microteaching sessions afforded them the opportunity to realise the benefits of CL as an innovative pedagogy. Bao, for example, asserted that “even the students, like Yuan, who had previously been fairly passive in learning became much more proactive and engaged cooperative learning is likely to be significant for students’ participation” (FG 1-2). Another student stated that the reflective practice at the end of microteaching “enabled me to look

back the experience with cooperative learning I can see cooperative learning could benefit learners' communication and other social skills ... enjoyment in group learning Just like what we experienced" (FG 4-2).

As the practicum proceeded, some of the PETE students appeared to proactively reflect on their behaviour and adjust their actions in response to what had happened in their practicum classrooms. The autonomous reflective practice strongly promoted the PETE students to become more skilled in implementing CL in their practicum. For example, as Wei explained, "I thought about why the class was chaotic, then I tried to avoid it in the next lesson and made progress step by step" (Wei, SSI). A similar perspective was expressed by Qian:

Reflection by myself after my teaching immediately ... highlighted for me I probably don't do well enough just now I haven't achieved what I expected I can do it better next time so, I spent more time preparing the task sheet and rehearse my teaching to ensure the class would run smoothly. I reflected in this way and revised a lesson pertinently to ensure it reaches its potential. (Qian, SSI)

In summary, the PETE students valued the abundant opportunities to reflect on microteaching of CL in the course and on the practice of CL in the practicum. The reflections in the course familiarised the PETE students with an expanded knowledge of key elements, teaching plans, and the effectiveness of CL. During the practicum, organised or self-directed reflections helped the PETE students focus on their instructional behaviours in CL classes, modifying and improving their pedagogical strategies of CL.

Coaching Facilitation of the Lecturer, Associate Teachers, and Peers

Another powerful influence for the PETE students' development of understanding and implementing CL was the coaching facilitation provided from three different sources: the lecturer, the associate teachers, and peers in their practicum. Multiple interactions among the

tripartite group appeared to make a big difference for the PETE students' perspectives on and practices of CL.

Sustained Support Received From the Lecturer

The lecturer of the CL course acted as the university supervisor for PETE students' practicum experiences. The eight PETE students stated that this ongoing coaching offered sustained and robust support to their implementation of CL in the practicum school, as evident in my field notes:

14th Dec. 2018: The lecturer actively engaged in PETE students' practicum, particularly the eight PETE students' practice of CL. She had regular visits to the practicum school. Each of the eight PETE students was observed in class 2–3 times and followed by a 10–15-minute communication with the lecturer, sometimes, but not always, with the participation of the associate teacher. Additionally, the lecturer also arranged weekly meetings with the PETE students every Friday midday and reacted to their challenges in CL classes. (FN)

Being observed teaching and subsequently getting constructive feedback from the lecturer was perceived by the PETE students to be valuable for their development in practising CL because it was given during CL in real classrooms. The PETE students appreciated discussions with and receiving advice from the lecturer about their performance in teaching. Wei, for instance, talked about the lecturer's profound influence on his use of the CL structure of Pair-Check-Perform:

I feel Ms Zhou is very good at commenting and clarifying when went well or didn't go so well ... and then asked, "have you thought about maybe trying this instead?" when I moved to teach pupils badminton, the original learning teams in the football class seemed not so applicable. She reminded me to group again and

make a pair of pupils learning together and giving feedback to each other. Without her help, I feel I wouldn't have gone so far. (Wei, SSI)

The PETE students also valued the encouragement and praise from the lecturer during the postlesson communication; from their perspective, positive feedback was crucial for their confidence and persistence in their implementation of CL. Inspiring words, like “this is really good ... keep at it” had given them “a lot of confidence to practise putting ideas into action” (Qian, SSI) and empowered them “to use cooperative learning for teaching martial arts during practicum” (Biao, SSI).

Moreover, the lecturer's participation in the weekly meetings, as well as sharing her expertise in CL, also played a crucial role in PETE students' practice during their practicum. This is particularly apparent when PETE students expressed their difficulties in successfully achieving the five elements of CL. The lecturer acted as an expert, offering various practical ideas to consider and employ. My field notes, taken during the third meeting, recorded the lecturer's help for PETE students' engagement with CL:

9th Nov. 2018: This is the third weekly meeting among the lecturer and the eight PETE students. The meeting began with the lecturer inviting the PETE students to share their obstacles or confusion with implementation this week. The eight PETE students talked about the issues of chaotic organisation, pupil's insufficient use of task sheets, and the credibility of group evaluation. The lecturer kept taking notes and then shared her opinions with the PETE students with reference to the discussed issues. The PETE students looked very pleased with the lecturer's suggestion and expressed their desire to trial them the next week. It seems the lecturer knew about CL and even the instructional environment in the practicum school. (FN)

Acceptance and Trust Demonstrated by Associated Teachers

In contrast with the lecturer's support which focused on the implementation of CL, most of the suggestions and mentoring from associate teachers focused on general issues of PE teaching, such as safety issues, classroom routines, and the organisation of class instruction content. In response to the question of what kind of mentoring was received from his associate teacher, Wei explained that "Mr Huan seldom suggested to me how to teach with the cooperative learning model but told me more about ensuring the classroom environment was safe for pupils" (Wei, SSI).

Data from the interviews with associate teachers strongly support the PETE students' statements. Five of the seven associate teachers acknowledged that they gave feedback on PETE students' teaching from mainly managerial and disciplinary perspectives, such as the effective use of the whistle and teacher positioning. As some associate teachers admitted, they "rarely [have] the chance to do professional development training on innovation, such as cooperative learning" (Yu¹⁸, SSI) and had no "practical experience using the alternative approach in their classes other than the traditional direct instruction" (Min, SSI).

While the associate teachers had no teaching experience with CL, they consented and welcomed the PETE students' use of CL in their classes. As stated by Biao,

Mr Cao is a very supportive person [he] left the way open to me I am really grateful that he persuaded pupils to cooperate and support my teaching at the very first. That helped a lot ... making my practice of cooperative learning possible, I think. (Biao, SSI)

A similar sentiment was expressed by Bao, concerning the associate teacher's encouragement of the use of CL in the open lesson:

¹⁸ Yu is Hang's associate teacher in the practicum. Other associate teachers mentioned in this section include Min, Cao, Sun.

Mr Min's support matters a lot for my use of cooperative learning he even encouraged me to use cooperative learning in my open lesson. He often tells me that cooperative learning as a new educational approach might have great potential for pupils' learning ... don't get slack ... practice makes perfect I think that matters a lot to me. (Bao, SSI)

As well as accepting CL, the associate teachers had similar beliefs about merging CL with some direct instruction. Some of the associate teachers' perspectives argued that "pupils must be skilled at a certain level" otherwise, it would be "hard and time consuming" for them to gain new skills within a group or even "impossible to understand the cues in the task sheet" (Yu, SSI). Four associate teachers suggested that it was more practical for the teacher to "directly teach pupils the motor skill at first ... giving them the concept formation of actions ... and then make them practise and improve skills with group members in review lessons" (Sun, SSI).

These beliefs about the value of combining CL and direct instruction appeared to influence the PETE students' adoption of the mixture approach. While the associate teachers supported the PETE students' approach without being concerned about the teaching progress and pupils' learning pace, the PETE students had an opportunity to put their ideas about CL into practice without a heightened sense of anxiety and fear of criticism from their associate teachers. Hang's comments revealed how support from his associate teacher to use CL boosted his confidence in combining CL with direct instruction:

It is tough for me to use cooperative learning ... and the pupils as well we all don't have any experience like this I told Mr Yu my plan that pupils would learn new movements following my demonstration and then work with group members to review and improve the stage. He ultimately agreed and commended this approach

because it would not go far away from the requirements in the syllabus. His approval of this approach confirmed my thoughts and gave me some confidence. (Hang, SSI)

Assistance and Sharing Provided by Peers

As well as mentoring by the lecturer and associate teachers, the eight PETE students assisted and supported each other while stimulating their learning and practice of CL in the practicum. Regular conversations and mutual review via social media supported the preparation and planning of their CL lessons through sharing ideas and learning from each other. In the following extract, Jie described how she was supported to develop a more creative lesson:

The Cooperative Learning Vanguard¹⁹ helped me a lot for my first lesson plan of cooperative learning, Yi suggested I insert some pictures showing pupils how to cooperate with a partner when practising a forehand pass with a fixed volleyball but I didn't find that kind of photo. It was he who suggested that I took pictures by myself and then use them in the task sheet How ingenious he is! It did work brilliantly in my class. The pupils found those photos helpful for them to understand the cues in words. (Jie, SSI)

Weekly meetings and group discussions among the eight PETE students during their practicum experience enabled them to share their practices, ask for help about their teaching obstacles, and exchange knowledge about CL. These discussions provided them with additional teaching strategies and helped them visualise changes to improve their own activities. In the fourth weekly meeting, Juan talked about her confusion and lack of confidence to teach a difficult movement, such as the spin move in basketball. Jie shared her own teaching experience which motivated Juan to teach through Socratic scheme guidance

¹⁹ The eight PETE students who implemented CL in their practicum experience created a WeChat group and named it "The Cooperative Learning Vanguard." The researcher and the lecturer were invited to the group.

rather than direct instruction. I recorded the following conversation between Juan and Jie in my field notes:

23rd Nov. 2018: Today, I was surprised to witness the active peer interaction among PETE students in the weekly meeting. In particular, the conversation between Juan and Jie seems exciting and influential.

Juan: I explained a lot this week to teach the pupils spin moves in basketball because this skill is new and complex for them. Is it fair to direct them throughout the cooperative learning class?

Jie: I don't think so. Previously I was the same, and only used cooperative learning in my review lesson. I made some changes from the last two lessons and found pupils actually can work it out by themselves.

Juan: How? I am concerned they may be unable to understand the cues in the task sheet if the movement is complex.

Jie: I highlighted the most important words in my task sheets. If they were still confused, I would ask them questions. Within the source of the explanation in the task sheets, they can answer all the questions and then cooperate with their peers and practise together.

Juan: Umm ... Sounds good. I need more thinking about that ... use more questioning [to] stimulate their learning. (FN)

The frequent meetings and interactions among PETE peers developed their beliefs about the necessity of a CL community through enhancing their problem-solving abilities as they learned and grew together using the CL model. As Yi indicated, it is inevitable for teachers, especially for student teachers, to “confront diverse issues in CL classes” as this innovative pedagogy is “not only new for us but also fresh for pupils” (Yi, SSI). A CL CoP for “regular interaction, rapport building, sharing of individual teaching experience, and

perspective taking” was considered crucial for the ongoing implementation of CL (Hang, SSI).

There is evidence that the eight PETE students’ consistent use of CL in their practicum was strongly facilitated by the coaching facilitation from their lecturer, associate teachers, and peers. Postobservation feedback provided by the lecturer during the practicum helped the PETE students optimise their pedagogical strategies and enhance their confidence and persistence in using CL. By sharing her expertise in CL, the lecturer helped the PETE students identify the challenges they encountered during their implementation of CL. Although the associate teachers offered little guidance related to the practice of CL, because of their limited knowledge and experience of this model, the PETE students’ practice of CL was possible because of their acceptance of and trust in PETE students’ experimentation in their classrooms. Their acceptance of CL gave in the PETE students’ the confidence to employ CL albeit in combination with direct instruction. Mutual assistance and sharing among the PETE students either through social networks or weekly meetings in person appeared to facilitate PETE students’ sense of CoP.

Chapter Summary

This chapter has described factors that strongly influenced PETE students’ perspectives on and practices of CL throughout the CLPL. The PETE students valued their opportunities to learn by doing and reflecting on their actions. The microteaching experience appeared to familiarise the PETE students with the key elements, the group composition approach, making task sheets, and instructional procedures associated with CL. Reflecting on the hands-on experience of CL, the PETE students were cognisant of facilitation strategies and the strength of CL. Implementing CL, an innovative pedagogy, into the practicum school was not smooth and trouble-free. The sustained coaching facilitation from the lecturer,

associate teachers, and peers tremendously affected the eight PETE students' implementation and further development of understanding in relation to CL.

In order to understand how the CLPL interacts with PETE students' perspectives on, and practice of CL, a discussion of the IMoPG (Clarke & Hollingsworth, 2002) is presented in the next chapter. Pertinent CL and relevant teacher education literature from the PE field and the context of China informs the discussion.

Chapter 7: Discussion

Introduction

This qualitative case study explored and interpreted PETE students' perspectives on and implementation of CL within CLPL in their PETE programme. It first investigated how PETE students developed their perspectives, and how they acquired their practices of CL. Secondly, it investigated the characteristics of the CLPL that influenced the PETE students' perspectives on and implementation of CL.

Three research questions guided the research. The first question focused on the development of PETE students' perspectives on CL throughout the CLPL. The findings in Chapter 4 reveal that at the completion of the CLPL, the PETE students articulated a more sophisticated understanding of CL than in their initial simplistic explanation. The second research question focused on how the PETE students implemented CL during their school-based practicum experience. The findings presented in Chapter 5 indicate that while the PETE students made efforts to construct a positive learning environment, their implementation of CL was challenging. The third question investigated the characteristics of the CLPL that influence PETE students' perspectives on and practice of CL. The findings of Chapter 6 report that the microteaching experience of CL in the course, coaching facilitation received during the school-based practicum, and ongoing reflection were conducive to PETE students' development.

In this study, I argue that the CL course, which included several microteaching sessions, provided the PETE students with lived experiences of the key elements (e.g., positive interdependence, individual accountability, face-to-face interaction, social skills, and group processing) and instructional strategies associated with CL. However, the knowledge of CL acquired in the course was fragile. The further coaching facilitation provided by the

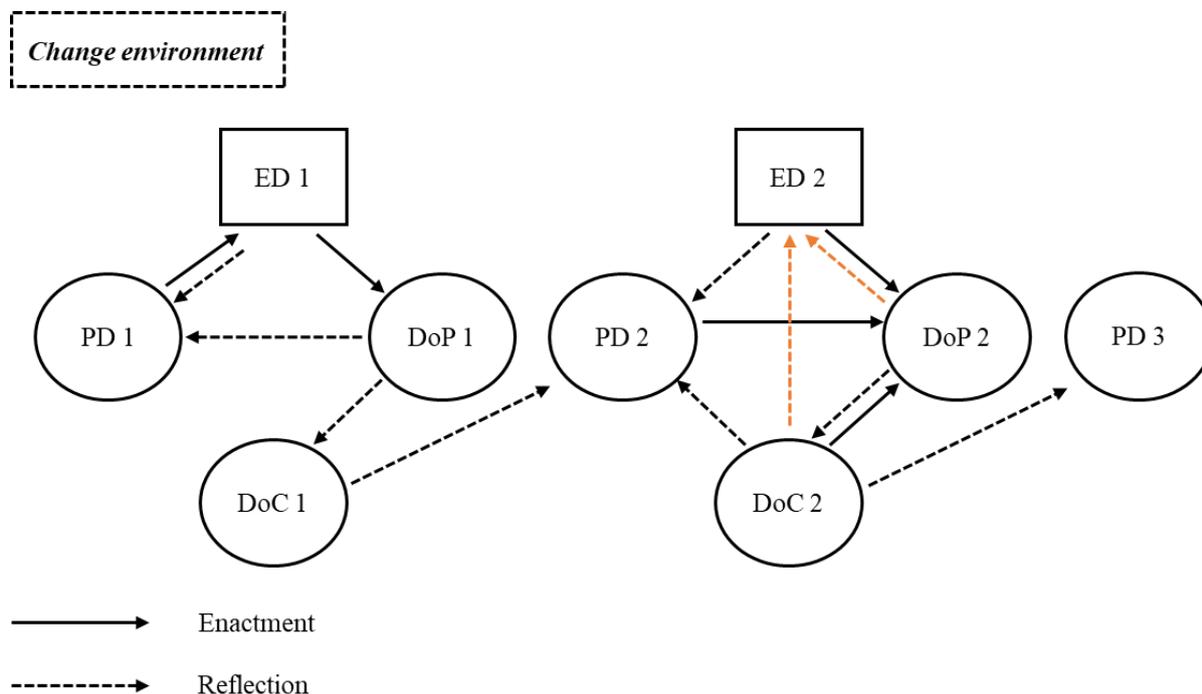
lecturer, associate teachers, and PETE peers in the school-based practicum was necessary for changes in PETE students' beliefs in and ability to implement CL to be maintained.

Given the interpretive nature of the current research, an important focus has been the need to look for explanations for PETE students' development of understanding and ability to implement CL within the CLPL. I used Clarke and Hollingsworth's (2002) IMoPG as the theoretical framework to explore and illuminate the PETE students' professional growth, which is their "inevitable and continuing process of learning" (p. 947). The IMoPG draws attention to "change as growth or learning" that (student) teachers, as active learners in a learning community, develop through professional activity (Clarke & Hollingsworth, 2002). As mentioned in Chapter 2, the authors of this model proposed that teachers' change occurs in recurring cycles through the mediation of reflection and enaction among four domains: personal domain, external domain, domain of practice, and domain of consequence. Because of the interrelated and multidirectional nature of (student) teachers' professional growth (X. Wang et al., 2014), the IMoPG is a useful tool for my study; the identification of interconnectedness among the four domains accommodates multiple nonlinear individualised pathways to PETE students' development in the change environment (see Clarke & Hollingsworth, 2002).

The findings of the present study demonstrate that the PETE students experienced two cycles of changes throughout the CLPL. Figure 9 shows the corresponding growth network. Cycle 1 represents PETE students' learning during the CL course, while Cycle 2 refers to PETE students' growth during their school practicum. The ensuing discussion is, therefore, structured under two overarching themes that emerged from the data. These themes are "Learning through microteaching of cooperative learning: Important but insufficient" and "Putting cooperative learning into practice within the real-world experience: Problematic but promising."

Figure 9

PETE Students' Growth Network in the Cooperative Learning Professional Learning



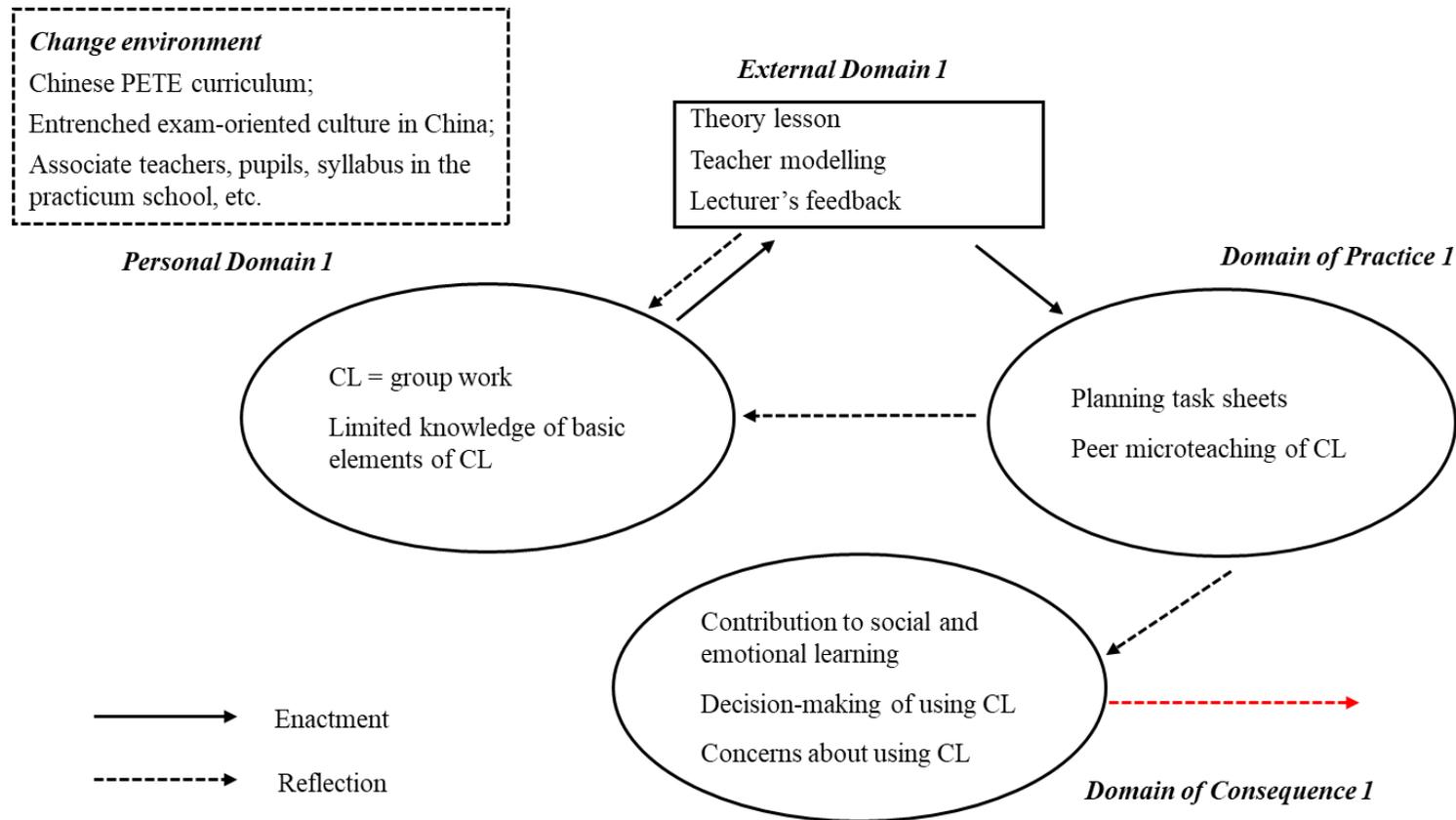
Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence). The orange dotted lines are two additional interactions that emerged in the current study.

Learning Through Microteaching of Cooperative Learning: Important but Insufficient

The first theme that emerged from this study reminds us of both the significance and limitations of microteaching for student teachers' professional growth. This study indicated that, whereas the PETE students had developed knowledge of CL through microteaching, they did not appear to believe in the foundational theories and full potential of CL and had concerns about CL in their school practicum (see Figure 10). The following sections are structured to explain each domain of the operationalised IMoPG during the CL course. After that, I discuss the interaction between the four domains and provide a rationale for PETE students' developed perspectives on CL as a result of the CL course.

Figure 10

The PETE Students' Development During Cycle 1 Learning in the Cooperative Learning Course



Note: The arrow marked by red dashes pertains to the link between two phases *Cycle 1 learning in the course about CL* and *Cycle 2 Implementation of CL in school-based practicum*. The perceived outcomes as a result of learning in the course led eight PETE students eventually to employ CL in their practicum classroom, which made durable changes in their knowledge of and beliefs about CL possible.

Personal Domain 1: Superficial Understanding of Cooperative Learning

The personal domain in the IMoPG includes (student) teachers' knowledge, beliefs, and attitudes (Clarke & Hollingsworth, 2002). Before they engaged with CL in the microteaching during the course, the PETE students in this study demonstrated a superficial and simplistic understanding of CL. Similar to Ruys' (2012) study on CL in ITE, the PETE students in the present study commonly perceived CL as some kind of group work. The essential elements of CL define the model as a more complex pedagogical practice than just group work. Johnson and Johnson (2009) warned that cooperation among students is much more than making students work alongside their peers. A cooperative situation needs to include some of the five basic elements (i.e., positive interdependence, individual accountability, face-to-face promotive interaction, social skills, and group processing) (Johnson & Johnson, 2002), encourage heterogeneous grouping, and be a student-centred approach to learning (Dyson & Casey, 2016). At the start of the CL course, most of the PETE students mentioned only two of these elements, individual accountability and promotive interaction.

These PETE students had rarely experienced CL in their school PE classes, which may contribute to their limited understanding of CL. Lortie (1975) proposed that student teachers enter their teacher education programme having had thousands of hours as schoolchildren, observing and evaluating professionals in action through an *apprenticeship of observation*. Consistent evidence has demonstrated that (student) teachers do not arrive for teacher training as *tabula rasa*, a blank slate, but have preexisting beliefs about teaching and learning strongly influenced by their past experiences (Feiman-Nemser, 2008; Timperley, 2013). In the field of PE specifically, PE teachers' beliefs are thought to be strongly influenced by their prior PE and sporting experience (Green, 2000, 2002). Likewise, the PETE students in the present study came with perspectives on CL based on their previous

schooling experiences. In line with the findings of Quennerstedt (2013), the PETE students in this study reflected on their school PE classes as being free-time activities in K-12 schooling where they decided on whether to play games or sit aside. Even with instructional and learning tasks, their PE teachers had generally adopted a teacher-centred and skill-based approach with a focus on the requirements of the entrance examination. They reported having very limited experience cooperating with peers in PE classes before studying in the PETE programme.

External Domain 1: Learning Cooperative Learning Through Microteaching

The external domain is described as the external source of information or stimulus for teachers' learning and growth (Clarke & Hollingsworth, 2002). Darling-Hammond and Bransford (2005) pointed out that teachers (including student teachers) must be exposed to powerful learning experiences for their professional learning and development. In the case of learning about the CL model, there is a consensus that an experience of CL while in ITE is an effective strategy (Brody & Davidson, 1998; E. G. Cohen et al., 2004; Gisbert et al., 2017; Jolliffe & Snaith, 2017; Legrain et al., 2021; Sharan, 2010). This could be achieved in the form of microteaching (Lyman & Davidson, 2004; Wallestad, 2009; Zach & Cohen, 2012), experiential learning (Koutselini, 2009; Veenman et al., 2002), or modelling (McAlister, 2012). In the current study, the PETE students in the CL course were exposed to a pedagogy of microteaching (Long, 1994; Macleod, 1987) for their theoretical learning and instructional practice of CL.

The PETE students experienced microteaching in three phases: the presentation (input), practice, and feedback. An examination of the practice phase of microteaching follows in the next section Domain of Practice 1: Practising Cooperative Learning Through Peer Microteaching, while discussion about the events in the presentation and feedback

phases of microteaching is presented in the section Interaction Between Initial Understanding of Cooperative Learning and Microteaching Activities.

Domain of Practice 1: Practising Cooperative Learning Through Peer Microteaching

The domain of practice refers to the professional experimentation that (student) teachers conduct in classrooms with students (Clarke & Hollingsworth, 2002; Witterholt et al., 2012). In the present study, experimentation with CL in the course was through peer microteaching. Within the approach of peer microteaching, peers acted as students engaging in the lessons (Sen, 2009). The PETE students in the present study alternated between being the “teacher” and the “pupil” during the peer microteaching sessions.

Peer microteaching was intended to prepare the PETE students to employ the CL model in their practicum experience. For example, all the teaching content in the peer microteaching sessions was chosen from the curriculum of the practicum school. In comparison to 5–10 minutes of classical microteaching (He & Yan, 2011; Long, 1994), peer microteaching sessions for the PETE students were expanded to 40 minutes to be consistent with the length of PE classes in the practicum school. Previous studies suggested that professional training for (student) teachers should make overt connections with their practicum classrooms and help them understand how to adapt CL to their contexts (Baines et al., 2003; Gillies, 2008; Jolliffe, 2015; Legrain et al., 2021). The findings of the current study foreground strongly the value of teacher educators creating a coherent and authentic set of learning experiences for student teachers undergoing teacher education (see Darling-Hammond, 2006).

Domain of Consequence 1: Many Value It, But Not All Adopt It

The domain of consequence in the IMoPG is what Clarke and Hollingsworth (2002) describe as the “salient outcomes” (p. 953). These outcomes reflect the inferences (student) teachers draw from the experiences of their classrooms. There are two categories of outcomes

the PETE students demonstrated after the CL course: (1) contribution to students' social and emotional learning, (2) decision making to adopt CL.

Contribution to Students' Social and Emotional Learning. The cohort of PETE students in this study was overwhelmingly positive, after the course, about the impact of CL on learners' social and emotional learning. These findings mirrored those of previous studies that have examined the effect of CL as a pedagogical practice in K-12 PE settings (Bjørke & Moen, 2020; Casey & Fernandez-Rio, 2019; Casey & Goodyear, 2015; Dyson, Howley, & Shen, 2021a; Dyson, Howley, & Wright, 2021).

The findings of this study revealed that the PETE students believed that CL benefited learners' social and interpersonal skills (e.g., cooperation, communication, and team spirit), friendships among group members, and sharing of ideas for constructing new knowledge. Similar results have been documented in previous studies, which reported that students in PE classes using CL increased their cooperative skills and preferences for working in groups (Bayraktar, 2011; Dyson, Howley, & Shen, 2021a; Goudas & Magotsiou, 2009; Velázquez Callado, 2012), built positive interpersonal skills and in relations to team members (Bayraktar, 2011; Casey & Dyson, 2009; Casey et al., 2015; Dyson, 2001, 2002; Dyson & Strachan, 2000, 2004), and showed a willingness to learn new perspectives and skills of constructing knowledge together (Casey & Goodyear, 2015).

Furthermore, the PETE students said they believed that CL could be effective for learners' emotional learning in that it promoted a sense of responsibility, developed self-discipline, self-confidence, and self-esteem, as well as increasing proactivity and engagement in physical activities. These findings provide additional evidence of the emotional developmental outcomes of CL and concur with Dyson, Howley, and Shen's (2021a) suggestion that pupils were "learning to listen, feeling part of something, encouraging each

other, showing empathy, including their classmates, recognizing fairness, and exercising responsible decision-making” (p. 149).

However, given the PETE students’ espoused belief in the contribution of CL to learning content, reflexively, I am concerned that the microteaching experience did not enable them to recognise the full potential of CL in PE. At the end of the course, this cohort of PETE students did not appear to be confident in the effectiveness of CL in promoting cognitive and physical learning. Data from the second focus groups and concept maps demonstrate that many PETE students acknowledged CL’s primary contribution to learners’ social and emotional learning, with some even claiming explicitly that CL’s value for physical learning was inferior to that of didactic teaching. These results differ from those of previous research on CL in PE, which indicated that in addition to social and emotional learning, CL’s contribution to cognitive and physical learning was promising (Altınkök, 2017; Barrett, 2005; Casey, 2013; Casey & Dyson, 2009; Casey et al., 2009; Darnis & Lafont, 2015; Dyson, 2001, 2002; Dyson et al., 2010; Dyson & Strachan, 2004; Hastie & Casey, 2014; Lafont et al., 2007; O’Leary & Griggs, 2010).

The difference in the findings may be for three reasons. First, it might be that the PETE students had very little experience with student-centred learning of any kind. The novelty of the student-centred learning experience led them to focus on the social interaction opportunities that occurred in the CL course. Second, it may be because of the aim of microteaching, which was not to focus on teaching the content but instead to experiment with various techniques (Sen, 2009). The PETE students focused primarily on grouping, classroom organisation, and approaches to achieve the five elements of CL in the course. Their goal was not to develop sports skills or to validate the effectiveness of CL for students’ skill learning. Third, the PETE students acted as pupils in microteaching but were not representative of a “real” class of pupils (see Amobi, 2005). Most of the PETE students had already obtained

various motor skills as required by the PETE curriculum.²⁰ (MoE, 2014a). In this case, the PETE students would be less likely to view the learning outcomes of CL in PE in relation to skill development.

Decision Making in Adopting Cooperative Learning. The findings of this study demonstrate that the decision to use CL in a school placement was not straightforward for the PETE students and likely reflected various affordances and constraints regarding the use of CL. While half of the PETE students expressed their desire to employ CL in their practicum, the other half explicitly rejected it, or were hesitant to use CL. Data collected during the practicum further show that only eight of the 20 PETE students eventually implemented CL in the practicum school. Previous research on CL in ITE has not reported that student teachers have been reluctant or hesitant to use CL after learning. Instead, it is suggested that student teachers have generally had a positive predisposition to use CL in their practicum or future classrooms as a result of the professional learning training (Bouas, 1996; Gisbert et al., 2017; Gwyn-Paquette & Tochon, 2002; Hilikirk, 1991; Jolliffe, 2015; Schniedewind, 2004; Veenman et al., 2002). In Jolliffe's (2015) study, the student teachers reported that they had overwhelmingly used CL in their teaching.

The difference in findings may be attributed to the context of this study. As Clarke and Hollingsworth (2002) suggested, particular elements in the change environment make (student) teachers' professional growth possible. The current study found an association between PETE students' decision to adopt CL and their perceptions of constraints and affordances in the practicum. Consistent with previous studies on in-service teachers' adoption of CL (Abramczyk & Jurkowski, 2020; Bores-García et al., 2021; Dyson et al.,

²⁰ According to the MoE (2014), one of the goals of the PETE major is to equip the PETE students with certain levels of motor skills. Chinese PETE students are usually required to take several sports courses in the first three years of the PETE programme, such as athletics, basketball, volleyball, football, badminton, ping-pong, gymnastics, martial arts, aerobics, and so forth. These courses are mainly skills oriented. PETE students' skills performance represents the largest percent in the final assessment of these courses.

2018), the PETE students noted that the time-consuming and labour-intensive planning process constrained their employment of CL. In comparison with a traditional teaching approach, CL requires teachers to invest a great deal of time designing task sheets for group learning, in addition to the general teaching plan (Jolliffe & Snaith, 2017; Schniedewind, 2004). It is not surprising, therefore, that Hua acknowledged that time constraints influenced his decision to use the traditional direct-teaching approach rather than CL.

Another factor constraining PETE students' use of CL in the practicum was the pressure of the graduate entrance examination²¹. Hua confessed that he preferred to spend more time preparing for this examination than immersing himself in training to use CL. This suggests that high-stakes testing may reduce the amount of innovative practice expected of student teachers, particularly in China, while reinforcing an examination-oriented culture (Dello-Iacovo, 2009).

The remaining PETE students identified their lack of expertise and knowledge of CL as the main factor influencing their decision not to use CL in their practicum. For example, Han did not feel confident with her knowledge about CL structures as her only experience of the structure of Learning Teams was in the CL course. These results are consistent with earlier findings that (student) teachers' lack of experience or knowledge of CL results in the gap between the promise of CL and its implementation (Bouas, 1996; Dyson et al., 2016; Sharan, 2010). These findings have important implications for teacher educators to consider devoting more time to equipping student teachers with knowledge of diverse CL structures and classroom management capability in CLPL.

²¹ Graduate entrance examination refers to the Chinese Unified National Graduate Entrance Examination. It is a selective examination and consists of two examinations. The preliminary examination is organised by Chinese National Examination Authority at the end of December or the start of January annually. The secondary examination is arranged by admission institutes independently for those who have passed the preliminary examination. It is one of the largest national examinations in China. In 2018, there were 2,380,000 Chinese students registered for the preliminary examination (Xinhua Net, 2018).

In contrast, some of the PETE students' beliefs about CL's contribution to learners' social and emotional learning enhanced their desire to use CL. For example, Qian reported that she implemented CL because it benefited pupils' sense of cooperation, a result consistent with previous studies reporting that the perceived benefits of CL influenced student teachers' acceptance of CL (Tochon & Gwyn-Paquette, 2003; Nattiv et al., 1991; Schniedewind, 2004; Veenman et al., 2002). These results reinforced the view that positive experiences with CL in peer microteaching would strongly influence student teachers' thinking and decision making (Clarke & Hollingsworth, 2002). This implies that teacher educators should demonstrate CL's value through both relevant experiences and reading before expecting student teachers to accept CL.

In addition, contextual factors (e.g., small class size, gifted pupils, and supportive associate teachers) were enabling conditions for PETE students' adoption of CL. Unlike the traditional large class size²² in China, PE classes in the practicum school were small in comparison, with 20 to 30 pupils in each class. For example, Juan suggested that having "only" 24 pupils in the basketball class was a factor that enabled her use of CL in the practicum. She thought a small class size would decrease the pressure on group composition and classroom management issues. These results corroborate previous findings (Gurvitch, Blankenship, et al., 2008; Metzler et al., 2008a; Ruys, 2012) and contribute additional evidence suggesting contextual factors such as class size contribute to student teachers' adoption of innovative pedagogical models, such as CL in the current study.

Change Sequences: Professional Growth Pathways During the Course

Clarke and Hollingsworth (2002) suggested a change sequence to signify how (student) teachers' changes in one domain are influenced by changes in other domains

²² Large class size is one of the challenges in Chinese schools, particular for the primary and secondary schools in urban areas. The MoE (2014) reported that 31.2% of classes have 56 students and above in Chinese secondary schools.

through the mediation of “reflection” and “enaction” (p. 951). Given that the IMoPG is a useful heuristic for identifying specific patterns in (student) teachers’ professional growth (Ayalon & Wilkie, 2020; Clarke & Hollingsworth, 2002; Hung & Yeh, 2013; Witterholt et al., 2012), I have identified three change sequences demonstrated in the findings. These three change sequences illustrate the mechanism of interaction between PETE students’ initial understanding of CL and microteaching activities, beliefs about implementing CL, and reflection on the consequence of experimenting with CL. In the next sections, I discuss these three sets of change sequences in detail.

Interaction Between Initial Understanding of Cooperative Learning and Microteaching Activities. The connections between the personal domain and the external domain (see Figure 11, Arrow 1) represent how (student) teachers’ knowledge and beliefs influenced their interaction with others in professional learning (Justi & van Driel, 2006). Within the context of this study, the PETE students’ initial superficial understandings of CL were likely to influence their discussions and conversations with the lecturer and their peers in the course. The lecturer reported, for instance, that the PETE students were initially sceptical about the accountability of CL in the Chinese context. Subsequently, some students acknowledged the importance of seeing a video showing a school PE teacher modelling CL in a class while the lecturer identified for the PETE students how CL was being enacted in the PE class.

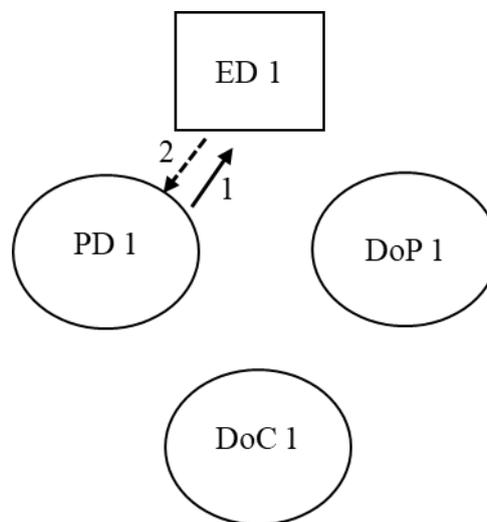
The external domain also influenced the personal domain through the mediation of reflection (see Figure 11, Arrow 2). The PETE students in the present study reflected that microteaching experience with CL in the course benefited the development of knowledge of CL. Previous research has also reported that learning by doing was critical for student teachers’ growth in understanding and using the CL model (E. G. Cohen et al., 2004; DelliCarpini, 2009; Jolliffe, 2015; Jolliffe & Snaith, 2017; Koutselini, 2009; McAlister, 2012;

Veenman et al., 2002). For student teachers, experiencing CL is “at the core” of understanding CL and, eventually, transferring and applying it to classrooms (Brody, 2004, p. 187). To understand better the influence of the microteaching experience on PETE students’ understanding and practice of CL, I discuss each component of microteaching below.

Figure 11

The Change Sequence Signifying the Interaction Between PETE Students’ Initial

Understanding of Cooperative Learning and Microteaching Activities



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

Firstly, the results revealed that the theory lesson during the input phase of microteaching, using didactic lecture techniques, had limited influence on PETE students’ understanding of CL. While it is necessary for student teachers to understand the theoretical foundations of CL and critical elements that govern its use (Brody, 2004; Johnson & Johnson, 2017), an instructional approach, in the form of a traditional didactic lecture (Korthagen et al., 2006), did not satisfy the needs and interests of the PETE students in this study. As Jie confessed, the theory lesson was “boring” (FG 2-2). Previous research on ITE has suggested that student teachers are more interested in teaching than theoretical topics because the theory was perceived to have only marginal relevance for the realities of school classrooms (Forzani, 2014). In addition, some Chinese scholars have suggested that the Chinese PETE curriculum

focuses more on technical courses than theoretical courses (L. Chen, 2020; H.-J. Lin, 2008). The findings of the current study provide a new understanding of student teachers' perspectives on theory learning, suggesting that traditional lectures fail to attract PETE students' interests and to motivate their active learning of theory. The PETE faculty could consider adopting innovative pedagogies to promote PETE students' interests and participation in the learning of theory.

In contrast to a single theory lesson, the PETE students identified the video as a valuable tool for learning CL. Juan considered the video a "cornerstone" for her commitment to CL since it provided her with an overview of the instructional strategies in a real-world context (FG 4-2). For the PETE students, seeing CL in action in a real classroom, through a video, was more appealing and enjoyable. Because it focused on implementing CL, not learning about CL, the video model gave the PETE students a complete picture of CL in PE classes.

The lecturer's modelling of enacting CL, following on from the video, encouraged the PETE students' preliminary understanding of how CL is used. The lecturer modelled approaches for heterogeneous group composition and strategies to achieve the five key elements of CL. Because CL became part of both the content and the process (Nattiv et al., 1991; Veenman et al., 2002), the PETE students came to understand the five elements and heterogeneous groups by experiencing them as learners. Learning, as Kolb (2015) describes it, is a process whereby "knowledge is created through the transformation of experience" (p. 49). The lecturer's modelling was a catalyst that enabled the PETE students to understand the content knowledge (e.g., knowledge of five elements) introduced in the theory lesson and, more importantly, to develop the strategies (e.g., group composition) to implement CL. The PETE students' positive responses substantiate the previous findings that modelling is

essential for student teachers' understanding and engagement of CL (Foote et al., 2004; Jolliffe, 2005; McAlister, 2012; Rolheiser & Anderson, 2004; Schniedewind, 2004).

Another external stimulus in the course that facilitated PETE students' learning of CL was the lecturer's feedback on their peer microteaching with CL. The findings indicated that the lecturer's written feedback on PETE students' task sheet positively influenced PETE students' planning capacities and increased their confidence in employing CL. Thought-provoking questions and other oral comments from the lecturer regarding PETE students' teaching performance stimulated their ability to reflect later on the issues of classroom management and the teacher's role. Hang, for example, reported that he began to reflect on his scaffolding strategies after the lecturer questioned his initial didactic instructions in the peer microteaching session.

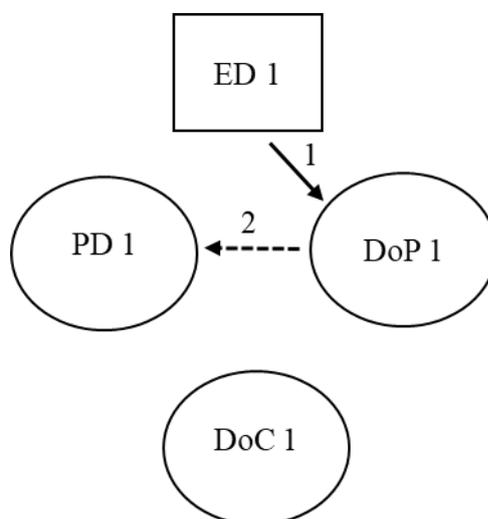
Reflective practice has long been a high priority in teacher education (Dewey, 1904/1965; Slade et al., 2019) and PETE programmes (Rovegno, 1992; Standal & Moe, 2013; Tsangaridou & O'Sullivan, 1994). Previous research (Tsangaridou & Siedentop, 1995) has suggested various strategies to nurture student teachers' reflective practice; for example, teacher educators' feedback stimulating student teachers to analyse and review their teaching performance and classroom events more critically. The finding that PETE students' reflection was stimulated by the feedback from the lecturer suggests an important area for further research to explore the nature of these reflections and how the teacher educator's feedback helped in stimulating reflection.

Beliefs About Implementing Cooperative Learning. The external domain and the domain of practice connection occurs when (student) teachers experiment with a new teaching strategy introduced during professional training (Clarke & Hollingsworth, 2002). Arrow 1 in Figure 12 links the change in the external domain to the change in the domain of practice through enaction. After being taught about and modelled CL (External Domain 1),

the PETE students practised CL with their peers in peer microteaching (Domain of Practice 1). Following the peer microteaching, the PETE students reflected on their acquired knowledge and beliefs related to the experience of peer microteaching (Personal Domain 1) (see Arrow 2 in Figure 12).

Figure 12

The Change Sequence Signifying the Mechanism of PETE Students' Beliefs About Implementing Cooperative Learning



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

The importance for teachers in CL classes delegating authority and giving learners the power to construct knowledge has been emphasised by advocates of CL (Casey et al., 2015; E. G. Cohen et al., 2004; E. G. Cohen & Lotan, 2014; Dyson & Casey, 2016; Goodyear & Dudley, 2015). The results of this study revealed that reflection on the microteaching experience impacted PETE students' knowledge of and beliefs about student-centred learning. The PETE students came to believe that the teacher in CL classes should be a facilitator, and they should delegate their authority to control the learning activity to pupils. They stated that pupils should, on their own, take charge of forming and naming groups, divide and carry out group tasks independently, and make decisions to achieve the group goals.

At the end of the CL course, however, many PETE students suggested during practicum, CL would work best in combination with some direct instruction. They stated that they would use direct teaching in initial lessons to demonstrate and model movements and skills to pupils. CL would only be employed in the subsequent review lessons for pupils to consolidate the movements in groups for further improvement in their motor skills. As one pedagogical model may not be capable of achieving the entire breadth and depth of learning goals in specific contexts (Lund & Tannehill, 2010), each model needs to be sufficiently flexible and leave space for local adaptation (Haerens et al., 2011; Hastie & Casey, 2014; Kirk, 2013; Lund et al., 2008). The CL model, in particular using the structure of Learning Teams based upon Johnson and Johnson's conceptual approach (Dyson & Grineski, 2001), is very general and does not provide a format for a lesson that teachers can follow (Goodyear, 2013). The structures must be decontextualised, interpreted by teachers, and then recontextualised to adapt to particular curricula and students (Gwyn-Paquette & Tochon, 2002).

A hybrid implementation of pedagogical models has increasingly been recommended among academics in PE (Casey, 2014) to enable teachers to maximise the impact of each model to reach all students fully (Fernandez-Rio, 2014). The possibility of merging CL with Sport Education/Tactical Games (Dyson et al., 2004) and CL with Teaching for Personal and Social Responsibility (Fernandez-Rio, 2014) has been analysed. Using empirical approaches, Casey and Dyson (2009) hybridised the CL and Teaching Games for Understanding to teach tennis to sixth-grade pupils, and Casey and MacPhail (2018) implemented CL with Tactical Games-Sport Education to teach sixth- and seventh-grade pupils track and field and soccer. It is less certain if the PETE students' use of CL and direct instruction in this study could be considered a hybridisation of an instructional model, or whether they were adapting CL to the contexts they were working in.

Since CL is a pedagogical model that has been imported from western countries, it is understandable that the PETE students could not merely “implement” it, but also “interpreted, translated, and recreated” CL when considering several cultural, contextual, and individual factors (Meng et al., 2020, p. 2). I argue that combining direct instruction and the CL model can be seen as an accommodation (Smagorinsky et al., 2004). In this study, PETE students tended to reconcile their experimentation with the innovative pedagogy within contextual factors (e.g., PE syllabus and pupils in the practicum school), Chinese traditional teaching methods, and PETE students’ educational experiences.

Taking account of the context, the PETE students preferred to initially utilise direct instruction before making pupils study cooperatively. The objectives described in the Chinese PE curriculum (MoE, 2017) require pupils in the practicum school to learn sports techniques and improve physical skills in PE classes. However, as the associate teachers stated, most of the pupils in the practicum school were poorly skilled at fundamental skills and sports. Under such circumstances, it was unrealistic to expect the pupils to “learn with, learn by, and learn for each other” (Metzler, 2011, p. 227) through CL at the outset. Instead, the PETE students needed to explain directly and demonstrate the techniques to pupils. This was followed by providing an opportunity for pupils to revise and consolidate learning with group members in the subsequent review lessons.

In addition, there is a long-standing appreciation of, and respect for, direct teaching among Chinese teachers, including the PETE students in this study. This can be traced back to Confucianism, a philosophy that has been historically ingrained in the ways of teaching and learning in Chinese schools. Teachers from the Confucian learning tradition are described as “authority figures who have perfect knowledge and correct answers” (Choi, 2016, p. 56). Students are expected to acquire the “correct knowledge” authorised by teachers (Ho & Hau, 2010). Moreover, Confucianism emphasises hierarchical human relationships

(L.-J. Wang & Ha, 2012a; Zhao, 2020), so that teachers, with the authority of expertise, are expected to have higher status and more leadership in classrooms. Students are required to be obedient and respect teachers (namely *Zun Shi Zhong Dao*). These aspects of the Confucian tradition have had a considerable impact on PETE students' thoughts about how students should be taught.

PETE students' educational experience is also likely to influence their proposition to merge CL with direct instruction (see Green, 2002; Lortie, 1975). Despite changes in the national curriculum and pedagogical reform policies (MoE, 2001b, 2010, 2014b), the nature of teacher-centred instruction in Chinese schools remains largely unchanged (Dello-Iacovo, 2009; Han, 2018; H. Li, 2013; Zhao, 2020). Similar findings have been reported in Chinese PE (Ji & Wang, 2004; Yuan et al., 2019). As discussed previously, the PETE students were used to being taught through teachers' direct explanation and demonstration in their schooling PE. It is not surprising, therefore, that although the PETE students knew about and valued student-centred learning, they did not know how to put it into authentic practice. Instead, they were more likely to replicate their schooling PE teachers' approach of telling in their classrooms, particularly when teaching pupils new content.

Several scholars have acknowledged that it is difficult for teachers to move out of their "comfort zone" when learning to teach in a new way (Casey, 2014; Casey & Goodyear, 2015). Loughran (2010) also noted that making student teachers implement teaching procedures with which they are unfamiliar means having them move outside of their comfortable space. This challenge closely aligns with Tinning's (2010) assertion that "pushing one's theoretical positions means moving out of one's comfort zone" (p. 195).

In this study, the PETE students were required to shift from the comfort of direct instruction to more student-centred or constructivist teaching of CL, an approach they had rarely experienced (see Casey & Dyson, 2009; Gurvitch, Blankenship, et al., 2008). Using

CL in PE classes requires a conceptual shift in how a teacher operates (Dyson, 2002). The PETE students were challenged to think of teaching through a technical lens to frame teaching as a complex endeavour that involves labour-intensive activities and constructive, facilitative strategies for pupils' learning. Without thorough experience, teachers can be vulnerable to frustration and or even failure in their employment of the student-centred approach (Casey & Dyson, 2009; Stran et al., 2012). Introducing new skills to pupils was even more challenging for the PETE students. Thus, they would return to the teacher-directed instruction they knew best and with which they were most comfortable when working with new lessons. It could be argued that these PETE students preferred to accommodate the CL model as an addition rather than as an alternative to traditional direct-teaching methods.

While the PETE students appreciated the constructivist approach and valued pupils' ownership of their learning in CL classes, the continue inclusion of some direct instruction may suggest that they did not fully embrace CL. The PETE students suggested that their pupils would share the control of group composition, distribution of group tasks, and approaches for achieving group goals. However, they displayed a preference for direct instruction of new content, a teaching approach closely associated with the behaviourist learning theory (Burton et al., 2004; Rout & Behera, 2014) to teach pupils movements through explicit and guided instructions. Consistent with the in-service teachers in Karmina et al. (2021), the PETE students had less confidence in pupils' ability to learn new movements without being taught directly by the teacher. Biao explicitly stated, "I can't imagine how pupils could learn something new without teacher's directions" (FG 1-2). These propositions imply that the PETE students believed that the teacher remains the primary transmitter of knowledge and that at the end of the CL course, their beliefs and implicit theories about how people learn remained firmly linked to behaviourism rather than constructivism.

It could be argued that while these PETE students knew about and knew how to use CL after the course, they did not believe in the learning theory that informed the practice. Microteaching for 4 weeks only may have been insufficient for the PETE students to embrace CL upon leaving the confines of the PETE classroom context. More likely, the lack of attention to confronting PETE students' deep-seated beliefs and assumptions about the nature of teaching and learning, shaped by an apprenticeship of observation (Lortie, 1975), explains why the course did not impact the PETE students' beliefs. As discussed previously, student teachers' preexisting beliefs strongly affect what and how they learn and eventually how they approach teaching in the classrooms (Feiman-Nemser, 2008; Green, 2002; Richardson, 2003). Several studies on ITE have emphasised the importance of teacher educators engaging student teachers' taken-for-granted and deeply entrenched beliefs at the start of teacher training (Feiman-Nemser, 2001, 2008; Timperley, 2013). If teacher educators prepare student teachers to view teaching in ways that are compatible with constructivist theories, rather than as transmission, this is particularly essential (Hammerness et al., 2005).

Adopting CL as an innovative pedagogical model demands not just changes in behaviours but also a consideration of PETE students' beliefs about the theoretical foundations of the approaches (see Richardson, 2003). A failure to connect the values implicit in CL with the PETE students' own beliefs regarding authority in teaching and the nature of knowledge may distort their practice of CL (see Brody & Davidson, 1998; Jolliffe, 2015).

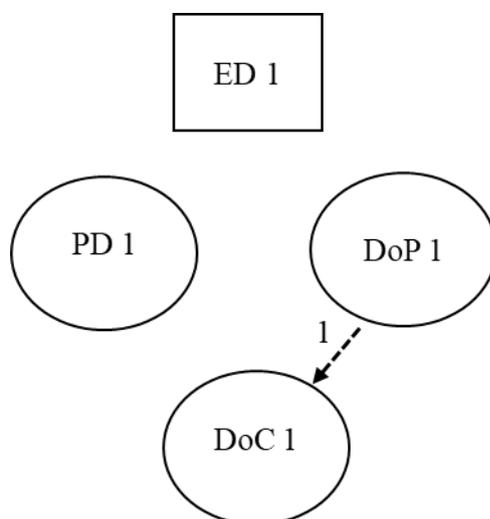
Reflection on the Consequences of Experimenting With Cooperative Learning.

Clarke and Hollingsworth (2002) proposed that the domain of consequence represents the outcomes of experimentation by (student) teachers. As discussed above, the PETE students' reflection on the microteaching experience of CL in the course demonstrated that they acknowledged the benefits of CL for the learners' social and emotional learning (see Figure

13, Arrow 1). However, during the microteaching experience of CL, the PETE students were not aware of content knowledge and skill-based outcomes for the pupils in PE classes. That is, they could not see any potential for cognitive and physical learning outcomes from CL in PE because of their limited experience of student-centred learning and the technique-oriented aim of peer microteaching.

Figure 13

The Change Sequence Signifying PETE Students' Reflection on the Consequences of Experimenting With Cooperative Learning



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

Distrust of the efficacy of CL may partially explain why 12 of the 20 PETE students in this study did not use CL on practicum. Furthermore, all PETE students expressed concerns regarding their employment with CL. Biao, for instance, was concerned about his ability to design task sheets, similar to previous studies (Harris & Hanley, 2004; Lyman & Davidson, 2004; Zach & Cohen, 2012), while others were not confident of their classroom management capability using CL. Some were concerned that pupils might be unable to understand the learning cues in the task sheets or their interests might be not engaged. Others were concerned that their associate teachers would not accept the pupil agency expected as part of CL, which may be because of their critical role in evaluating student teachers'

practicum performance (Huo, 2017; S.-Y. Li et al., 2003) and supporting student teachers' implementation of pedagogical models (Foote et al., 2004; McAlister, 2012; Slostad et al., 2004; L.-J. Wang & Ha, 2012b).

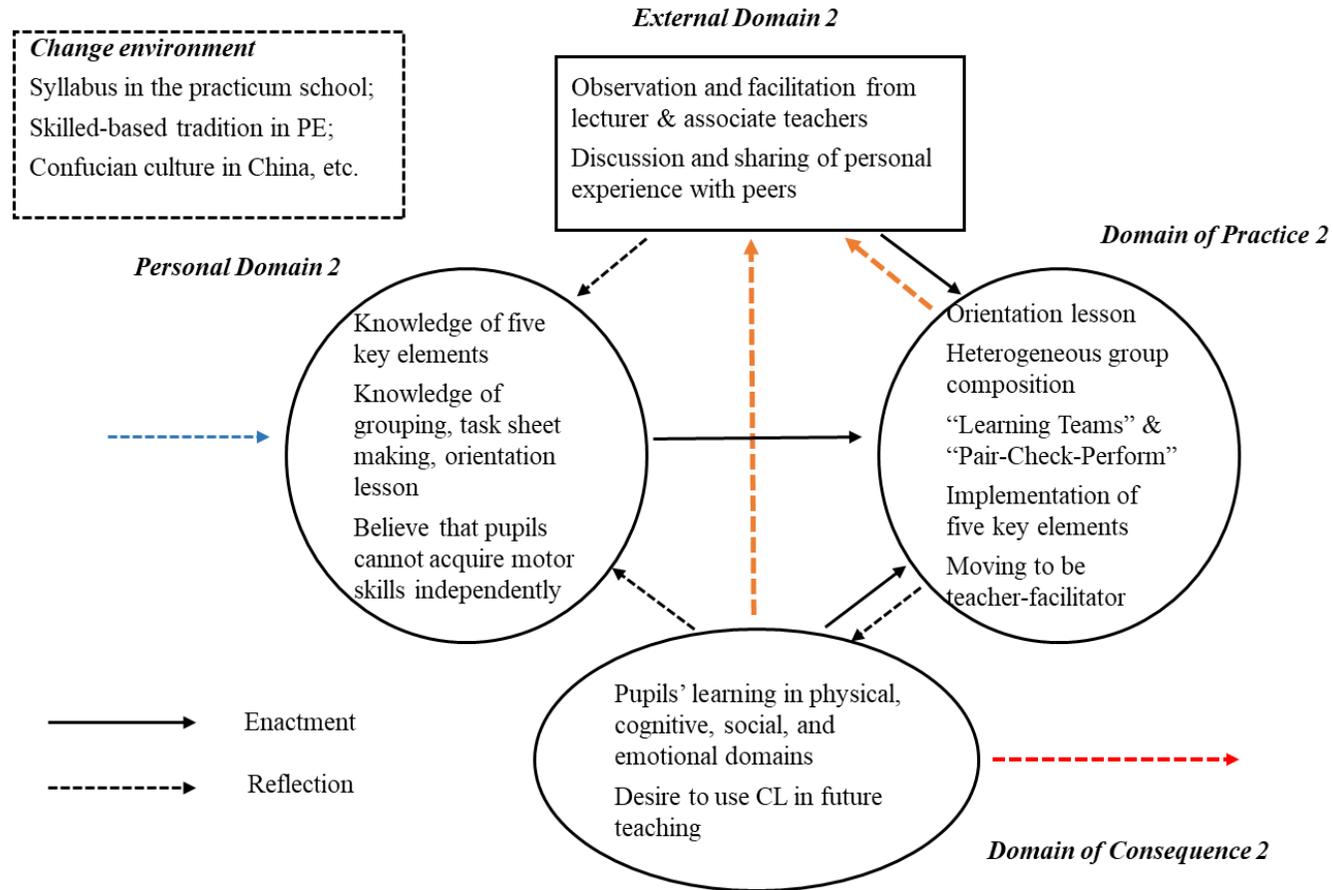
In summary, while the practice of microteaching contributed to PETE students' increased content knowledge and pedagogical content knowledge of CL, this study confirmed that microteaching was insufficient to equip the PETE students with a congruent belief about teaching and learning for the use of CL. Microteaching experience alone was insufficient for preparing the PETE students for real-life school teaching with CL or for them to grasp the full potential of CL and address their concerns about using CL in practicum. Many of the PETE students were unwilling to be vulnerable and "risk" using CL teaching activities in the practicum school. PETE students who decide to use CL should have ongoing support and guidance to implement CL in their practicum classrooms and to address their concerns.

Putting Cooperative Learning Into Practice Within the Real-World Experience: Problematic but Promising

Evidence for the second theme is based on the eight PETE students who used CL in their school-based practicum. Although the implementation of CL by these PETE students in the practicum school was challenging, there were promising outcomes in students' knowledge and beliefs. The school teaching experience, with the sustained coaching facilitation from the CL community, including the lecturer, associate teachers, and PETE student peers, as well as opportunities to observe pupils' learning with CL, contributed to their beliefs about the value and their more sustainable ability to use CL. The following sections provide an explanation of IMoPG operationalised during the practicum (see Figure 14). After that, I discuss PETE students' changes that occurred in the practicum by examining the interconnectedness of each domain of IMoPG.

Figure 14

The PETE Students' Development During Cycle 2 Implementation of Cooperative Learning in the School-Based Practicum



Note: The arrow marked by blue dashes represents the link between Cycle 1 and Cycle 2. The red arrow links PETE students' growth of CL during the practicum and expected continual learning and/or use of CL in their future. The two orange arrows are additional arrows based on the original model of IMoPG.

Personal Domain 2: Know What, Know How, But Don't Believe in It

Through reflecting on the microteaching experience in the CL course, the PETE students were able to understand the five essential elements of CL, approaches to group composition, preparation of task sheets, and the necessity of an orientation lesson. However, the PETE students' beliefs about teaching and learning did not change during the short term of their microteaching experience. They said they believed that pupils could not acquire motor skills on their own without the teacher's direction, explanation, and demonstration and that CL should be used as a supplementary approach to direct instruction in PE teaching. Knowledge of and beliefs about CL, embedded in the PETE students' Personal Domain 2, influenced their behaviours at the start of practicum teaching.

External Domain 2: Coaching Facilitation as a Supportive Stimulus of Implementation

The findings demonstrated that the coaching facilitation provided by the lecturer, as well as that given by associate teachers and peers, scaffolded (Samaras & Gismondi, 1998) the eight PETE students sufficiently for them to experiment with the CL model during their practicum. Previous studies have also demonstrated that coaching facilitation is essential for student teachers to implement CL during a teaching practicum (Bouas, 1996; Ledford & Warren, 1997; Tochon & Gwyn-Paquette, 2003).

The lecturer was critically important, both practically and emotionally, in supporting the PETE students' ability as well as their persistence in implementing CL. The majority of PETE students who implemented CL in practicum reported that they highly valued the feedback conversations with the lecturer immediately after a CL class and that the feedback helped them reflect upon their instructions, review the process of the CL lesson, and explore alternative ways of working. These findings support other research results indicating that teacher educators' constructive feedback on outcomes is helpful when student teachers are working with innovative approaches during practicum (Gwyn-Paquette & Tochon, 2002;

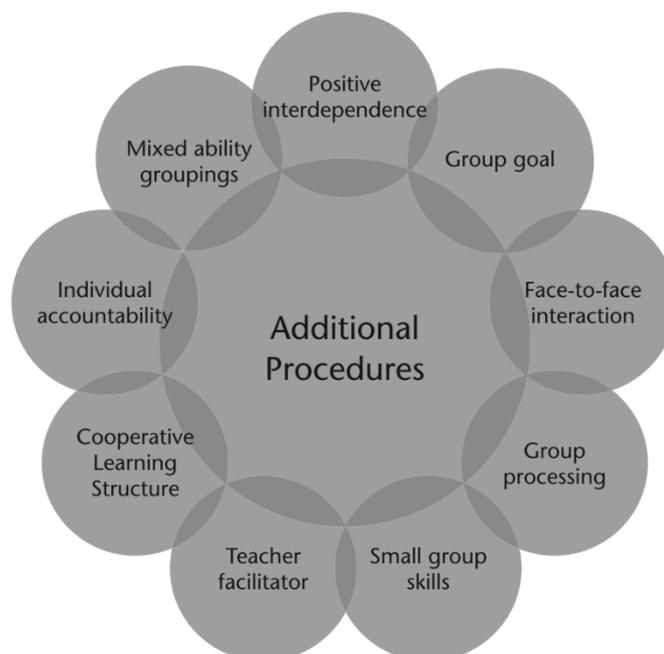
Schniedewind, 2004; Tochon & Gwyn-Paquette, 2003; L.-J. Wang & Ha, 2012a). The findings also suggested that the lecturer's encouragement and praise promoted the PETE students' confidence and resilience when implementing CL throughout the practicum. More than 40 years ago, Fuller and Brown (1975) stated that it is not easy for student teachers to step into field experiences because of the accompanying anxiety and uncertainty. Later, Tsangaridou and O'Sullivan (1994) suggested that teacher educators should support student teachers to build self-confidence by providing confirmation and praise of their success and areas of strengths, and not focusing only on areas that need improvement.

Although associate teachers contributed relatively little to decisions about how to plan and implement CL, they provided moral support through their acceptance and trust of PETE students' introduction of CL. This is consistent with previous research on student teachers' adoption of innovative pedagogies (Deenihan & MacPhail, 2013; Gurvitch, Blankenship, et al., 2008; Gwyn-Paquette & Tochon, 2002; L.-J. Wang & Ha, 2012a). In these studies, the associate teachers had neither used CL previously nor experienced it in their teacher education programme or in-service training. Whereas the eight PETE students in this study received few suggestions about CL from the associate teachers, they received information about the particular context or general practical knowledge for managing a classroom. Furthermore, all the eight PETE students mentioned that their associate teachers were very supportive and just "left the way open" (Biao, SSI) to their experimentation. The climate of trust (Stanulis & Russell, 2000) allowed the PETE students to innovate creatively, with little fear that their efforts would reflect on their final practicum assessment. While these findings differ from associate teachers' resistance to CL reported by Harris and Hanley (2004), they are consistent with other studies (Gwyn-Paquette & Tochon, 2002; Tochon & Gwyn-Paquette, 2003) which indicated that associate teachers were open to the use of CL and helped with classroom management.

Another external source of influential support that emerged during the practicum came from exchanges and interactions among the PETE students through social media and weekly meetings. Receiving help and support from peers enabled PETE students to access additional strategies and methods about task-sheet preparation and facilitation, thus expanding their CL teaching repertoire. Likewise, Joyce and Showers (2002) suggested that peer coaching plays a significant role in the community of teachers, such as the PETE students in this study, when they attempt to master innovations and to plan and develop lessons.

Domain of Practice 2: Creating a Positive Cooperative Learning Environment

The evidence from across the data sets suggests that the eight PETE students who used CL in the practicum context created a positive learning environment. Chapter 5 illustrates that most of the eight PETE students conducted an orientation lesson to prepare pupils to learn in a new way. Furthermore, they implemented eight of nine additional procedures (Dyson & Casey, 2016), including mixed-ability groupings, CL structure, teacher-facilitator, and the five key elements (Johnson & Johnson, 2009). Dyson and Casey (2016) suggested that these “additional procedures” (see Figure 15) can be criteria to judge whether it is merely group work or if it is appropriately CL. In what follows, I discuss their orientation lessons and each of the implemented additional procedures.

Figure 15*Additional Procedures of Cooperative Learning in Physical Education*

Note. Adapted from *Cooperative Learning in Physical Education and Physical Activity: A Practical Introduction* (p. 47), by B. Dyson and A. Casey, 2016, Routledge. Copyright 2016 by Taylor & Francis Group.

Orienting Pupils to Cooperative Learning. This study shows that five of the eight PETE students accepted the advice from the lecturer to “go slow to go fast” and conducted an orientation lesson for pupils. They explicitly stated, for the pupils, the requisite cooperative norms and rules, learning materials, and structures of the coming CL lessons, at the start of the CL class. Several CL developers have argued that, for successful practice, it is essential to orient learners to the climate of the CL classroom (E. G. Cohen & Lotan, 2014; Dyson & Casey, 2016; Gillies & Boyle, 2011). CL involves moving from a traditional teacher-director approach to a teacher-facilitator approach (E. G. Cohen, 1994b). Learners in CL classes are, correspondingly, expected to take more responsibility and ownership for their learning. The teacher needs to take time explaining the specific roles, tasks, and activities in CL classes (E. G. Cohen & Lotan, 2014; Dyson & Rubin, 2003) and prepare learners for targeting cooperative skills (Casey & Dyson, 2009; Gillies & Boyle, 2011).

An orientation lesson might be even more essential in the Chinese context because of the challenge for practicum school pupils who were being exposed to the CL model for the first time. Traditional PE classes in China are normally organised with the students in several rows and with the PE teacher standing in front of the pupils. Pupils are used to engaging in physical activities through the teacher giving a direct explanation and demonstration (Meng et al., 2020) with pupils having limited interaction with peers. However, in PE classes using the CL model, learners are expected to learn in a very different way (Dyson & Casey, 2016). They need to understand how the lessons are structured with the use of task sheets and organised with several groups scattered in the playground. They also need to realise that the learning of movements is no longer just through imitation of the teacher but requires more interactions with groupmates. Pupils in the practicum school could be uncomfortable with these changes and need time to understand what is expected of them in CL classes. In this study, the PETE students thoughtfully prepared the pupils for the tasks and the challenges of working together at the time of the initial introduction.

Grouping Pupils With Constructive Strategies. Most CL advocates are committed to maximising heterogeneity in groups to promote students' performances (E. G. Cohen & Lotan, 2014; Dyson & Grineski, 2001; Gillies & Boyle, 2010; Slavin, 1991). Likewise, in this study, the PETE students endeavoured to form heterogeneous groups through setting a variety of criteria, such as mixed ability, physical qualifications, and gender. They sought a balance between a teacher's control of the criteria and pupils' desire to choose their groups. The eight PETE students used grouping sheets that clarified the criteria and then invited the pupils to form groups, unlike earlier studies which reported that most teachers assigned pupils to groups (Barrett, 2005; Casey et al., 2009; Dyson & Rubin, 2003; Metzler, 2011) or pupils were grouped by self-selection (Karmina et al., 2021; Shimazoe & Aldrich, 2010); it was consistent, however, with Velázquez Callado et al. (2014).

The CL course visibly influenced the PETE students' practice of group composition. The lecturer explained the criteria, as established in the CL course, before PETE students' selection of grouping. Surprisingly, the PETE students did not simply replicate the criteria suggested by the lecturer (i.e., small group size, mixed ability, and gender) but increased the heterogeneity in consideration of the context of their practicum classrooms. For example, because of the composition of PE classes and learning tasks in the practicum school, some of the PETE students created the criteria of different xing zheng ban affiliation and mixed physical abilities. This suggests that the PETE students tried to integrate what they had learned into their practicum; more importantly, it seems that their practices of group composition were based on the principle of heterogeneity, not just "copying" the lecturer.

The PETE students, however, encountered barriers using such an approach to form heterogeneous groups in their practicum classrooms. The PETE students' interviews at the end of practicum revealed that heterogeneity was difficult to achieve as the pupils did not strictly follow the given criteria. For example, Jie applied the criterion of different xing zheng ban affiliation; however, because she did not know pupils well at the beginning of the CL implementation, a pair of friends from the same xing zheng ban joined the same group and talked to each other frequently. Consequently, little interaction occurred between these two pupils and the remaining group members, which compromised the heterogeneity of the group. Moreover, the PETE students failed to intervene when pupils did not follow the given criteria. As a result, heterogeneous groups could not be guaranteed through inadequate use of grouping criteria.

The present study has demonstrated, for the first time, that genuine heterogeneity in CL may not be possible if pupils have the freedom to form groups unless the (student) teacher is familiar with pupils (Arnon & Reichel, 2007; Bullock, 2015). Lafont et al. (2017) claimed that PE teachers should pay attention to pupils' characteristics for functional interaction in

group work. Others have suggested that teachers should try to be aware of their pupils' social relationships, personalities, and social and cognitive development when they enter practicum schools (see Oakley et al., 2004; Shimazoe & Aldrich, 2010). O'Leary et al. (2015) suggested that associate teachers could spend time sharing information about pupils with student teachers to help them construct appropriate groups for CL.

Structuring Cooperative Learning Lessons in Seven Steps. The findings of this study indicated that the eight PETE students focused on one or two CL structures throughout the practicum experience. Similarly, previous studies have reported that starting small is manageable (Dyson & Casey, 2016) and allows teachers to gradually become more student-centred (Goodyear & Dudley, 2015; Dyson & Rubin, 2003). In contrast to previous research, in this study, there was no evidence of confusion about the variations of CL structures (Dyson et al., 2016) or uncertainty about the use of CL structures (Karmina et al., 2021). The PETE students were confident with their use of CL structures, in particular the structure of Learning Teams, maybe due to their experience of Learning Teams in the CL course. As many of the PETE students acknowledged, being involved in the peer microteaching sessions as a result of a concerted effort to teach student teachers about CL through CL, made them comfortable with the use of the instructional procedures. It implies that the pedagogy of microteaching is useful for preparing teachers, including student teachers, to become familiar with and to use CL structures.

The findings suggest that the PETE students made variations to the structure of Learning Teams (see Dyson & Casey, 2016) specifically for their pupils and the context of the practicum school. They followed the seven-step structure to CL following steps of whole-class administrative activities, small group warm-up, small group review skills, whole-class instruction, small group drills, small group fitness exercise, and group processing. While it is apparent that within the practicum school context, which required fitness training as part of

PE lessons, the PETE students retained the traditional sequential path of PE lessons (Hoffman, 1971), they also implemented most of the additional procedures of CL (Dyson & Casey, 2016). The implementation of the seven-step structure supports Casey and Kirk's (2021) proposition that pedagogical models, such as CL in this study, can operate at a local level.

The retention of the seven-step structure reveals PETE students' preoccupation with motor skills and performance, but with elements of CL integrated to focus also on pupils' interactions with peers. Following the seven-step structure, the PETE students, such as Hang, spent more than half the lesson time reviewing, teaching, and consolidating techniques. Their instructional behaviours focused mainly on making the pupils skilled at sports, such as volleyball, basketball, and martial arts, thus emphasising the sport techniques required by the physical and health education curriculum in China (MoE, 2017). For Chinese PE teachers, the main requirement is to improve pupils' sports skills and performance (Meng et al., 2020).

Notably, the PETE students did not concentrate only on pupils' physical learning but also focused on pupils' social and emotional learning. For example, they placed pupils in small groups and distributed a task sheet to each group to warm up, or reviewed taught skills, developing pupils' feelings of belonging, sense of cooperation, and awareness of others. Previous research has reported that PE teachers in the 21st century have not moved beyond traditional physical education-as-sport-techniques (Kirk, 2010; Quennerstedt, 2013; Tinning, 2010). The findings of this study, however, suggest that the implementation of CL within the seven-step structure could build on the traditional dominant PE teaching and enable PE teachers to perform multidimensional teaching and learning objectives holistically. PETE students' creative use of the seven-step structure could be useful for Chinese PE teachers to deliver the curriculum targeting pupils' improvements in sport participation, sports skills, physical health, mental health, and social adaptation (MoE, 2017).

Not surprisingly, given the context and the pressures of meeting the aims of the Chinese PE Curriculum, CL was used by the PETE students as a form of *guided discovery* as opposed to *divergent discovery* (Mosston & Ashworth, 2008). This can be seen from the frequent use of multiple task sheets within the seven-step structure, such as the warm-up sheet, practice task sheet for review, practice task sheet for drilling, fitness exercise sheet, and group processing sheet. The PETE students included everything they would normally say in the task sheets. The pupils, working towards a predetermined target, were required to follow the step-by-step instructions given to them on the task sheets, with little control over the movement sequences and few opportunities to discover solutions to achieve their learning goals. While the task sheets could be considered a physical representation of delegation of teacher's authority (E. G. Cohen, 1994b; E. G. Cohen & Lotan, 2014), they were rarely used for pupils in this study to construct new knowledge or physical skills but instead for cooperating with group members to revise and consolidate previously taught sports techniques.

Implementing Five Essential Elements. Results of this study demonstrated that six of the PETE students delivered the five essential elements fully while the other two employed a “watered-down” version (see Curtner-Smith et al., 2008). That is, two PETE students (i.e., Jie and Biao) only implemented four of the five key elements, omitting group processing, whereas optimally there should have been evidence of the five elements of CL (Casey & Quennerstedt, 2020; Dyson & Casey, 2012, 2016; Johnson & Johnson, 2002). However, there are many examples reported in the literature where fewer than five elements are present (Antil et al., 1998; Karmina et al., 2021; Slavin, 1996), especially in the real world of a school-based PE class (Dyson, Howley, & Shen, 2021a; Goodyear, 2013).

The element of group processing is regarded as a useful guide for the transfer of learning through group reflection (Dyson & Casey, 2016; Dyson et al., 2010; Sutherland et

al., 2019). There is evidence in this study of two of the PETE students omitting this vital aspect of CL because of overcrowded curricula and classroom time constraints. For example, Biao was overwhelmed by teaching martial arts routines, organising fitness training, and fulfilling other administrative activities in the 40 minutes of each PE lesson. These findings are consistent with earlier studies reporting that the extraneous demands placed on the teachers limited the time they had available to invest in evaluating group functioning (Casey et al., 2009; Dang, 2017; Goodyear, 2013; Harris & Hanley, 2004).

The other six PETE students implemented group processing through verbal questions or evaluation sheets, emphasising active involvement and positive interaction. The PETE students also reiterated their expectations of an evidence-based response for group processing. A possible explanation may be that, as collectivists, Chinese pupils strive for group harmony and positive social relationships (Bond, 1991; K.-W. Chan, 2014); pupils are unlikely to critique peers directly or disagree with others to avoid face-threatening situations and conflict within the group. It is not surprising, therefore, that Juan complained that pupils always gave a high rating to groupmates' performance which was often inconsistent with her observation.

With the other key elements of CL, positive interdependence was practised in role interdependence, material interdependence, and task interdependence (see Johnson & Johnson, 2002). The practice of individual accountability was through the reiteration of the responsibility of each group role and questioning about each role's fulfilment of role responsibility. Wallhead and Dyson's (2017) study reported similar outcomes. To achieve promotive interaction, the PETE students found that it was not enough to invite pupils to interact with their groupmates through inclusive group involvement and peer tutoring; they also modelled how pupils could provide feedback to groupmates. This finding corroborates other research which suggested that direct teaching and modelling seeking or giving help can

have a positive effect on the frequency and quality of support given and received (Gillies, 2006; Mercer et al., 2004; Ross, 2008).

Several studies have reported that simply placing individuals in groups and telling them to work together will not in and of itself promote cooperation (Gillies, 2016; Johnson & Johnson, 1989). Pupils need to be taught to listen to others, share ideas and resources, comment constructively on others' ideas, take others' perspectives, make democratic decisions, and make brief and sensible contributions to group efforts (Casey & Dyson, 2009; E. G. Cohen & Lotan, 2014; Gillies, 2016; Gillies & Boyle, 2008). The PETE students in this study were observed to apply the element of social skills, such as appraising, trust, sharing, and accepting, through teacher modelling. Although these results differ from Slostad et al. (2004) and Sapon-Shevin (2010), who suggested that pupils should be explicitly taught social skills, they are consistent with those described by other researchers (Gillies, 2006, 2008; Gillies & Haynes, 2011; Gillies & Khan, 2008; Goodyear & Dudley, 2015; Sharan & Sharan, 1987). These studies reported on contexts that promoted the development of social skills through teacher modelling.

In general, the eight PETE students' CL implementation on practicum included the five key elements which are congruent with expectations for effective CL reported in previous research (Dyson & Casey, 2016; Johnson & Johnson, 2009). The achievement of these elements, however, is not mutually exclusive and independent as they are inherently interconnected with each other. All the PETE students ensured the element of positive interdependence through assigning group roles by placing skilled pupils in the role of coach or instructor. These more able pupils were encouraged to be peer tutors, leading the team and assisting groupmates' learning, a situation which is consistent with Lafont's (2012) description of peer tutoring as "when one person assumes a partial solution by helping or advising the other partner and so allowing him to progress" (p. 137). Peer tutoring was an

important strategy implemented by the PETE students for the element of promotive interaction. Using peer tutoring, however, challenges the achievement of individual accountability. In many instances, the student with the role of coach stood at the front acting as a teacher leading the remaining group members. This resulted in limited opportunities for other group members to fulfil their responsibilities. Learning, thus, was occurring on an individual basis, rather than as a team in which all pupils supported the success of each other (see Johnson & Johnson, 2009).

Furthermore, labelling pupils' level of motor skills and placing them in a peer-tutoring learning environment may result in inequality among group members, which is inconsistent with the purpose of CL for learners to work together as equal partners (E. G. Cohen, 1994b; Gillies, 2006; Slavin, 1991). Some of the PETE students assigned the role of coach or instructor to more skilled pupils, who were then accorded higher status to tutor poorly skilled pupils with sports learning. The focus on only pupils' physical ability when assigning roles gave rise to inequitable interactions rather than equitable information exchanges. To ensure equality in the interaction among group members, teachers (including the PETE students in this study) should consider pupils' differing cognitive abilities when working on ill-structured tasks (E. G. Cohen, 1994b; E. G. Cohen & Lotan, 2014). CL is more of a holistic approach to learning in cognitive, physical, social, and emotional domains (Casey & Kirk, 2021; Dyson, Howley, & Shen, 2021a).

Facilitating Pupils' Learning. As described in Chapter 5, the eight PETE students evolved from being didactic teachers to teacher-facilitators during their school-based practicum. Advocates for CL highlight the importance of teacher-facilitators being a "guide on the side" rather than "the sage on the stage" (E. G. Cohen & Lotan, 2014; Dyson & Casey, 2012; Goodyear & Dudley, 2015). Students are expected to learn from each other, in small groups (E. G. Cohen, 1994b), rather than from the teacher (Dyson & Casey, 2016). The

teachers' fundamental role in CL is to facilitate students' learning and create a student-centred environment (Bähr & Wibowo, 2012; Dyson & Rubin, 2003).

A shift from the teachers' control of learning pace in the first CL lessons was observed where some of the PETE students empowered pupils with ownership to explore their ways of learning in the end. Previous research has suggested that the teacher using CL should delegate authority (E. G. Cohen, 1994b), trust students with their ability to problem solve (E. G. Cohen et al., 2004; Dyson, Howley, & Shen, 2021a), and let students "work at their own pace" and "progress at their speed" (Casey et al., 2009, p. 415) without the need for direct intervention, even when they make mistakes (E. G. Cohen & Lotan, 2014). At the beginning of the practicum, the PETE students were concerned that the pupils might not be able to understand learning cues on task sheets and achieve the learning goals in the time allocated in the teaching plan. They deliberately looked for opportunities to intervene in group learning, giving prompt corrections, and direct demonstration when pupils made mistakes. Nevertheless, in the last two CL lessons, some of the PETE students felt comfortable providing enough time for pupils to understand and practise movements independently before intervening.

Further evidence of PETE students' facilitation was apparent in their dialogue with pupils. In contrast to saying "please keep my words in your mind" (Wei, CO 1), in earlier classes, in their final CL lessons the PETE students appeared to use questions more, such as beginning with "how do you think?" or "how about...?". Their linguistic change is compatible with Gillies (2014, 2016) who suggested that the teacher in CL classes needs to use more positive, affective language rather than the traditional authoritarian, rigid, or less friendly messages. Asking open or divergent questions is more likely to encourage students to express their ideas and promote higher order thinking (Dyson et al., 2004; Goodyear & Dudley, 2015; Sharan, 2015), and exemplifies the definition of facilitation techniques, which

is to enhance students' "reflection, integration, and continuation of lasting change" (Priest et al., 2000, p. 19).

It would appear that the PETE students were transitioning to teacher-facilitators through expanding their pedagogy from a didactic orientation to peer orientation (see Goodyear & Dudley, 2015; Kutnick et al., 2005). Similar to previous studies on teacher-facilitators in the CL environment (Darnis & Lafont, 2015; Lotan, 2004), Yi was seen to hand over specific responsibilities to the groups and to facilitate interactions through tasks with group members. In contrast to directly answering pupils' questions, Yi sought to redirect them to learning materials and peer assistance.

Domain of Consequence 2: Cooperative Learning in Achieving Legitimate Learning Outcomes of Physical Education

The PETE students who used CL on practicum had evidence of CL achieving the legitimate learning outcomes of PE, that is, pupils' learning in the cognitive, physical, social, and affective domains (Kirk, 2010). In comparison with PETE students at the end of the CL course, who perceived CL's contribution as only to learners' social and emotional learning, at the end of the practicum, the eight PETE students acknowledged CL's impact on the pupils' cognitive and physical learning as well. This finding suggests that practice in real school classrooms, with the support of the lecturer, associate teachers, and peers, contributed to PETE students' evaluation of the CL model for pupils' learning.

Consistent with other research (E. G. Cohen, 1994b; Darnis & Lafont, 2015), the PETE students in this study reported that pupils improved their impressions and understandings of sports techniques as a result of explaining them to their peers. Pupils were asked to read out the learning cues in the task sheets and use them to comment on groupmates' performance. In the process of providing explanations to other people, pupils may have developed an enhanced understanding of specific sports skills (see E. G. Cohen,

1994b; Ross, 2008). Further investigation of this as an outcome of peer tutoring would be a valuable area for future research.

As reported in previous studies, CL may require time to be established (Dyson & Casey, 2016; Dyson et al., 2016). Pupils in the present study became increasingly familiar with the CL environment and some collected task sheets before being asked to by the PETE students. There was a corresponding reduction in the time required by the PETE students to give explicit and detailed instructions on CL procedures so that pupils spent more time discussing, practising, and improving movement performance. The empirical findings in the present study enhance the understanding of CL's potential contribution to students' physical learning as a result of increased practice time in CL classes (Rink, 1996).

In addition to cognitive and physical learning outcomes, the PETE students who used CL in practicum reported CL's benefits for social and emotional learning in that there was an increase in pupils' social and interpersonal skills, self-confidence, and proactivity, as well as in engagement in discussion and practice of physical movements. Previous research on CL (Alcalá et al., 2019; Casey & Goodyear, 2015; Dang, 2017; Fernandez-Rio et al., 2017), suggesting CL increases pupils' intrinsic motivation and leads to greater concentration in physical activities because of the positive learning environment, is confirmed by this study.

Growth Networks: Professional Growth Pathways During the Practicum

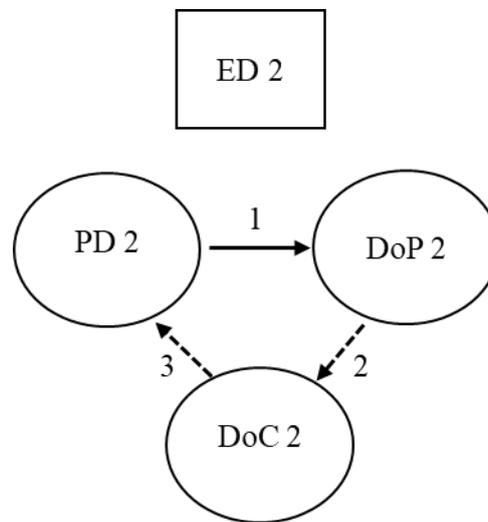
Clarke and Hollingsworth (2002) coined the term "growth network" to differentiate from "change sequence," referring to more lasting changes that signify teachers' professional growth. The findings in this study demonstrated four growth networks occurring during PETE students' practicum experience, which illustrate how the interactions of four domains of IMoPG resulted in the PETE students' growth in four aspects: changed perspectives on group roles, reconsideration of the purpose of PE as a subject, shifts from being directors to

facilitators, and the appeal for a CoP. In what follows, I discuss each growth network in depth.

Changed Perspectives on Group Roles. Clarke and Hollingsworth (2002) stated that (student) teachers' knowledge and beliefs strongly influence their teaching practice in classrooms. The outcomes of teaching practice, in turn, change teachers' knowledge and beliefs. At the end of the CL course, Biao expressed the belief that the role of leader was important for group labour division and group organisation. In practice, therefore, he designated the role of leader for his martial arts class (see Figure 16, Arrow 1). However, the emergence of free riders (Johnson & Johnson, 2009), as described in Chapter 4, highlighted the tension of having a group leader in a CL environment. Because group members relied on the group leader, they did not fulfil their allocated individual accountability (see Figure 16, Arrow 2). Subsequently, at the end of the practicum, Biao reflected on his teaching experience and suggested, in his final concept map, that there should not be a group leader in CL classes (see Figure 16, Arrow 3). Ross (2008) also suggested roles in CL classrooms should not be hierarchical. As the role of group leader determines group deliberation through authority, it does not promote a positive social climate in the classroom. Other research has similarly highlighted the importance of educating pupils on shared leadership and shared responsibility in CL classes (Casey & MacPhail, 2018; E. G. Cohen & Lotan, 2014; Dyson, Howley, & Wright., 2021; Johnson & Johnson, 1989). With proper training, pupils are able to develop and perform leadership functions that would contribute to the status-equalising process, because their peers would view the pupil in the leadership role as competent and contributing to the group (E. G. Cohen & Lotan, 2014).

Figure 16

The Growth Network Signifying PETE Students' Changed Perspectives on Group Roles



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

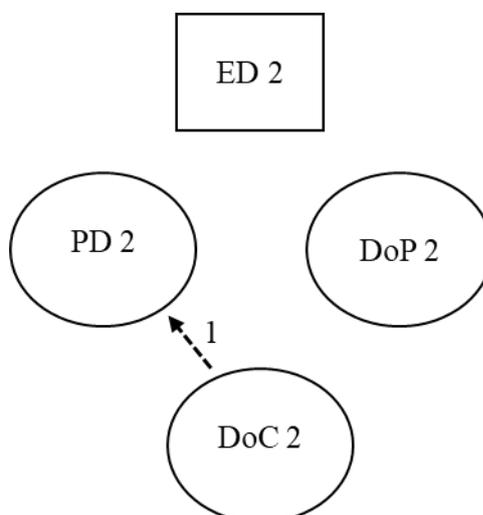
At the end of the practicum, the PETE students also changed their perspectives on the role of the encourager. Some of the PETE students, at the end of the CL course, thought there was no need to assign a specific role of encourager because encouragement was inherent in the context of physical activity. Dyson (2001, 2002) similarly suggested that the significance of the role of the encourager is easy to overlook, especially for neophytes. The practicum experience, however, showed that the role of encourager, through using positive verbal and nonverbal encouragement, was helpful for pupils' high level of engagement. Consistent with previous studies on CL (Dyson, 2002; Johnson & Johnson, 1989; S. Kagan & Kagan, 2009), the PETE students eventually accepted that the role of encourager facilitated the group's work as a team. The changed perspectives on group roles indicated that real-world teaching experiences enabled the PETE students to gain a more nuanced understanding of CL.

Reconsideration of the Purpose of Physical Education as a Subject. At the end of the practicum, the PETE students reported some changes in their beliefs about the purpose of PE as a subject, as noted in Chapter 4. Clarke and Hollingsworth (2002) suggested

individuals' reflection on the constituted outcomes of their implementation could lead to changes in their knowledge and beliefs.

Figure 17

The Growth Network Signifying PETE Students' Changed Beliefs About the Purpose of PE



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

In the present study, through CL, the eight PETE students reconsidered whether PE should be more than learning specific sport skills and include pupils' development of social skills and enjoyment of fun (see Figure 17, Arrow 1). Philpot and Smith (2011) made a similar observation of PETE students in the fourth year of the PETE programme. Their initial concept of PE as sport changed to PE beyond sports, that is, that learning of PE includes the learning of personal responsibility, relationships, and cooperation.

These results are consistent with previous findings and contribute additional evidence to suggest CL has the potential for PE teachers to place a focus on pupils' improvement on motor skills alongside their interpersonal development (Casey et al., 2009; Casey & MacPhail, 2018; Dyson & Casey, 2012). More importantly, the empirical findings of the present study provide a new understanding of teachers' change in goal orientation while implementing the CL model. Observing the learning outcomes that resulted from pupils'

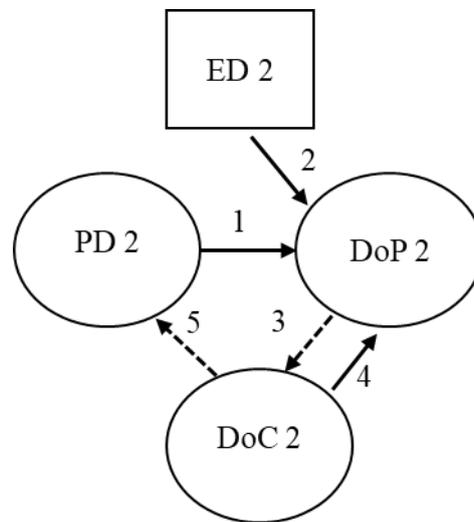
involvement in CL lessons prompted a change in the PETE students' beliefs about the purpose of PE.

Previous literature has demonstrated that changing the beliefs of ITE students through ITE is difficult (Richardson, 2003; Tillema, 1998). It is somewhat surprising, therefore, that the PETE students in this study, after implementing a CL model during their school placement, reported a change in their beliefs as to what constitutes good teaching in PE. As Richardson (2003, p. 16) stated, it may be that changes in student teachers' beliefs "may best be accomplished with attention paid to real life." However, reflexively, I am cognisant of Feiman-Nemser's (2008) reminder that changes in student teachers' beliefs may be neither truly profound nor permanent. As some studies are more than 40 years old, it is recommended that further studies as to whether PETE students' newly developed beliefs about PE become "washed out" (Zeichner & Tabachnick, 1981), or are reinforced when they enter into their professional field, be initiated.

Shifting From Directors to Facilitators. As discussed above, the PETE students who used CL during practicum appeared to revise their understanding of teaching from being a director to becoming a facilitator. Clarke and Hollingsworth (2002) argued that changes in the domain of practice are not by chance but closely tied to the changes in other domains, such as the external domain and domain of consequence. The findings of this study identify that the lecturer's and PETE student peers' support (external domain), as well as reflections on the pupils' learning outcomes (domain of consequence), strongly influenced the PETE students' adjustment to being teacher-facilitators.

Figure 18

The Growth Network Signifying PETE Students' Shift From Directors to Facilitators



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

At the start of practicum, the PETE students did not believe that pupils could acquire knowledge and skills by themselves. This belief led them to control the learning pace through direct instruction in their first CL lesson (see Figure 18, Arrow 1). In the following weeks, during the postobservation communications, the lecturer provided comprehensive feedback and suggestions for facilitative strategies. The PETE students also shared personal experiences and exchanged knowledge of facilitation with each other in the weekly meetings. Based on the feedback given by the lecturer and peers, the PETE students modified their practices and relinquished some control to pupils (see Figure 18, Arrow 2). The PETE students then observed that pupils were able to learn and perform movements on their own following discussion and cooperation with peers (see Figure 18, Arrow 3). Success in learning physical skills led the PETE students to make further changes, thus empowering pupils with more ownership and the capability for their learning (see Figure 18, Arrow 4). Meanwhile, reflections on the pupils' success in learning prompted the PETE students to change their beliefs about pupils' problem-solving abilities (see Figure 18, Arrow 5).

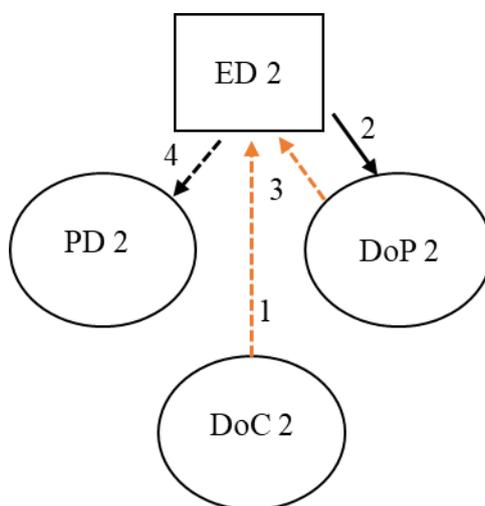
CL requires a conceptual shift by a teacher to accept the role of teaching as facilitation. This shift is thought to be critical, complex, and difficult (Casey & Dyson, 2009; Dyson et al., 2010). Dyson (2005) claimed that a shift to becoming a quality facilitator takes time and effort to develop and implement. Although the PETE students at the end of the CL course knew about the importance of the teacher-facilitator in CL classes, they knew little about how to apply it. Nevertheless, observation-based feedback regarding PETE students' questioning approaches, given by the lecturer, helped the PETE students improve their ability to scaffold. Peers' sharing and mutual support also equipped the PETE students with confidence in facilitation. It appears that the sustained external support evident during the practicum can make a difference for student teachers' understanding and use of facilitation. It is suggested that to better prepare student teachers to adopt a "pedagogy of facilitation," ITE programmes need to support their practices during practicum experiences, and not just teach them about its importance (see Darling-Hammond, 2006; Feiman-Nemser, 2001; Korthagen et al., 2006).

The practicum experience foregrounded the key role of the domain of consequence (Clarke & Hollingsworth, 2002) as impacting PETE students' beliefs. The evidence of PETE students' growing appreciation of, yet surprise with, the pupils' ability to develop motor skills through CL and the need to delegate the teacher's authority to elicit pupils' thinking and interaction, is described in Chapter 4. In line with E. G. Cohen and Lotan (2014), the PETE students expressed surprise in discovering that pupils could work effectively on their own in CL lessons. The response of the pupils prompted the PETE students to reflect on their beliefs about pupils' problem-solving abilities. Guskey (1986, 2002) also argued that significant changes in beliefs are likely to occur once teachers, including the PETE students as in the present study, have observed, and experienced directly, the change in student learning outcomes.

Appeal for a Community of Practice. The PETE students who practised CL in their practicum stated they would continue to use CL in their future teaching. Meanwhile, they were interested in sharing experiences and learning from each other. PETE students' call for a CL CoP could be attributed to their reflections on the coaching facilitation from the lecturer, associate teachers, and peers (see Chapter 6).

Figure 19

The Growth Network Signifying PETE Students' Appeal for a Community of Practice



Note. PD (personal domain), ED (external domain), DoP (domain of practice), DoC (domain of consequence).

Based on their observations of pupils' performance in the classroom, the lecturer and associate teachers provided the PETE students with constructive feedback and suggestions for improving classroom learning (see Figure 19, Arrow 1). PETE students then optimised their use of CL, such as Wei's employment of Pair-Check-Perform (see Figure 19, Arrow 2). The PETE students' sharing of personal teaching experience with CL also appeared to be a part of the external stimulus (Clarke & Hollingsworth, 2002) by facilitating the development of each other's use of CL (see Figure 19, Arrow 3), as evident in the fourth weekly meeting (see Chapter 6). Jie shared her experience as teacher-as-facilitator and then encouraged Juan to adopt Socratic scheme guidance in teaching pupils' complex and challenging movements. Throughout the practicum, the emergence and establishment of the CoP seemed to arouse

PETE students' sense of community and prompt their appeal for a CL CoP to implement CL further (see Figure 19, Arrow 4).

PETE students' social and relational learning (Corte, 2010; Lucas & Claxton, 2010) through the external coaching facilitation from the lecturer, associate teachers, and peers, could be considered an authentic CoP. Wenger (1998) defines a CoP as a group of people who have mutual engagement, a joint enterprise, and a shared repertoire. In the present study, each community participant had a unique identity (i.e., teacher educator, associate teacher, or peer) and contributed to PETE students' use of CL through frequent discussions, suggestions, and support (mutual engagement). The purpose of the interaction among the group was to achieve a common and negotiated goal, and to help the PETE students make the use of CL as a pedagogical innovation and benefit pupils' learning in PE classes (joint enterprise). As lessons proceeded during the practicum, the implementation of the orientation lesson, heterogeneous groups, CL structures, five key elements, and teacher-as-facilitator all had the potential to become an integral part of PETE students' practice of CL (shared repertoire). It is evident that the lecturer, associate teachers, and PETE student peers, as a form of CoP, together contributed to PETE students' use of CL in the practicum school.

From the PETE students' perspective, the CL CoP made a difference to their sustained development in understanding and practising of CL. A supportive learning community plays a critical role in teachers' learning about teaching (Korthagen et al., 2006), especially when learning to use innovations (Metzler et al., 2008b). In line with previous research (Casey & MacPhail, 2018; Dyson et al., 2016; Goodyear, 2015; McAlister, 2012; Rolheiser & Anderson, 2004), the present study suggests that developing a CoP would be an effective professional learning strategy to develop student teachers' understandings of and skills in CL. This finding implies that a CoP could be established with the teacher education programmes, practicum schools, and student teachers for the diffusion of CL to overcome

contextual constraints and encourage “ongoing change” in its implementation (Clarke & Hollingsworth, 2002, p. 958). It is expected that the CL model, as a pedagogical innovation, could then make “real-world differences” (Gillies, 2014, p. 128).

Chapter Summary

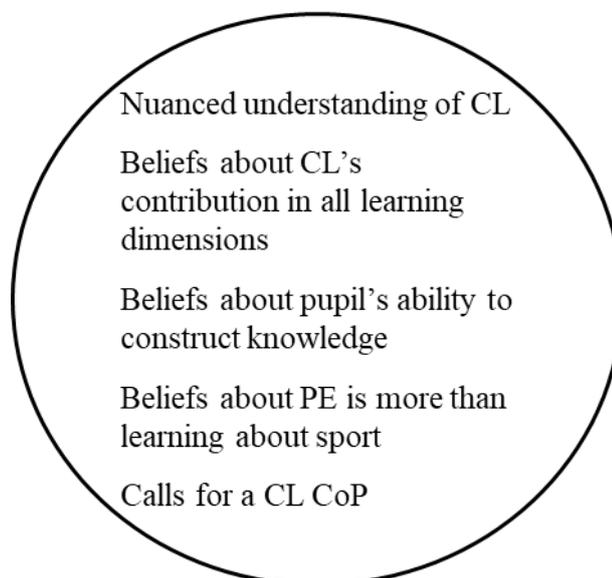
In this chapter, considerable attention has been given to examining PETE students’ development in their understanding and practice of CL through involvement in the CLPL. Attention has been first drawn to 20 PETE students’ growth of knowledge of CL in the course. It has been argued that the microteaching experience in the CL course contributed to PETE students’ increased content knowledge and pedagogical content knowledge of CL. It was, however, insufficient to change their beliefs about teaching and learning, to grasp the full potential of CL, and to reduce their concerns about using CL in their practicum.

The discussion followed the eight PETE students’ ongoing development of understanding and implementation of CL in their school-based practicum. An argument has been presented that although there were some problems in PETE students’ implementation of CL in the practicum school, the real-world teaching experience, with external coaching facilitation, triggered PETE students’ change in beliefs about teaching and learning, the value of CL, and the purpose of PE as a subject. Furthermore, these PETE students have, apparently, developed an awareness of CoP and advocated for a CL community to support their use of CL in the future. It is anticipated that, based on their growth during the practicum (see Figure 20), these PETE students will continue to develop in CL.

Figure 20

An Operationalisation of PETE Students' Personal Domain at the End of Practicum

Personal Domain – PD 3



In the next and final chapter of this thesis, I summarise the conclusions of this study including its contributions to research on the IMoPG, to the field of CL, and to ITE. The implications of the findings for CL practice and teacher professional learning and development are discussed. Limitations of the present study are acknowledged, and areas for further research are identified.

Chapter 8: Drawing Conclusions and Looking to the Future

Introduction

Central to the current investigation has been an understanding of PETE students' perspectives on, and practical realities of, CL as they have engaged in CLPL. This final chapter draws from the discussion of the findings and relevant literature to respond to the research questions. The contributions, practical implications for CL practice and professional learning, as well as future research directions, are identified. Consideration is also given to the limitations of this study.

Conclusions

As was argued in Chapter 1, the poor implementation of the highly celebrated CL model is often attributed to teachers' misunderstandings about and lack of belief in CL. Given this conundrum, CL researchers have advocated for the importance of ITE as the context in which to learn to use the CL model before entering the teaching profession. The present study investigates and interprets the development of the perspectives on and implementation of CL of a cohort of PETE students during CLPL in the Chinese context. In approaching this research topic, I have delved into the PETE students' growth of knowledge of and beliefs about CL over time as well as their pedagogical strategies when implementing CL in school-based practicum classrooms. I have also examined the characteristics of the CLPL that influenced PETE students' professional growth through listening to different participants' voices.

This study provides evidence of the PETE students' incremental and sustained development of their perspectives on and practical competence with CL as a result of their engagement in the CLPL. The PETE students, as well as their teacher educator and associate teachers, provided important voices for rethinking and refining what, how, and why the

activities that had been integrated with the CLPL impacted PETE students' professional growth.

Clarke and Hollingsworth's (2002) IMoPG provided an appropriate framework through which to view PETE students' professional learning of CL. This model acted as a lens to interpret the participants' voices regarding how the CLPL impacted this group of PETE students' perspectives on and practices of CL. At the start of the CLPL, the PETE students had a superficial understanding of and preexisting beliefs about CL which were primarily based on their own school experiences. As they learned CL through experiencing CL in the course using the pedagogy of microteaching, they developed a foundation of content knowledge and pedagogical content knowledge of CL. In addition to the positive learning outcomes in terms of PETE students' increasing knowledge of CL, however, the microteaching experience did not change the PETE students' beliefs about teaching and learning. It appears that many PETE students had no confidence either in their ability to use CL, or the potential of CL in PE, at the completion of CL course.

At the end of the CLPL, the eight PETE students who used CL during their school-based practicum began to believe in CL's effectiveness in achieving the legitimate learning outcomes of PE. More importantly, these PETE students changed their beliefs about the purpose of PE and pupils' agency in constructing knowledge through interactions with others. The PETE students changed their focus from motor skills and fitness development to social skills, knowledge of game strategies, and values and attitudes towards physical activity—at least when delivering PE in a CL format.

These PETE students' continued growth of knowledge and beliefs about CL is attributed to their observation of pupils' ability to learn and pupils' learning outcomes in their CL classes. More importantly, it appears that sustained coaching facilitation from the contextually based CL CoP during their school practicum contributed to their development. I

conclude by arguing that to effectively prepare PETE students to use CL competently, following student-teacher education, PETE programmes should incorporate CL microteaching experiences in university courses as well as coaching facilitation during the real-world practice of CL in practicum schools. I also propose that to sustain CL beyond PETE, a CL CoP should be established.

The Contribution of the Current Research to the Field of Inquiry

The present thesis contributes to the extant literature in at least three aspects: theory in relation to the IMoPG, research on CL, and teacher education, particularly PETE. Each is explored below.

Theoretical Contribution to the Interconnected Model of Professional Growth

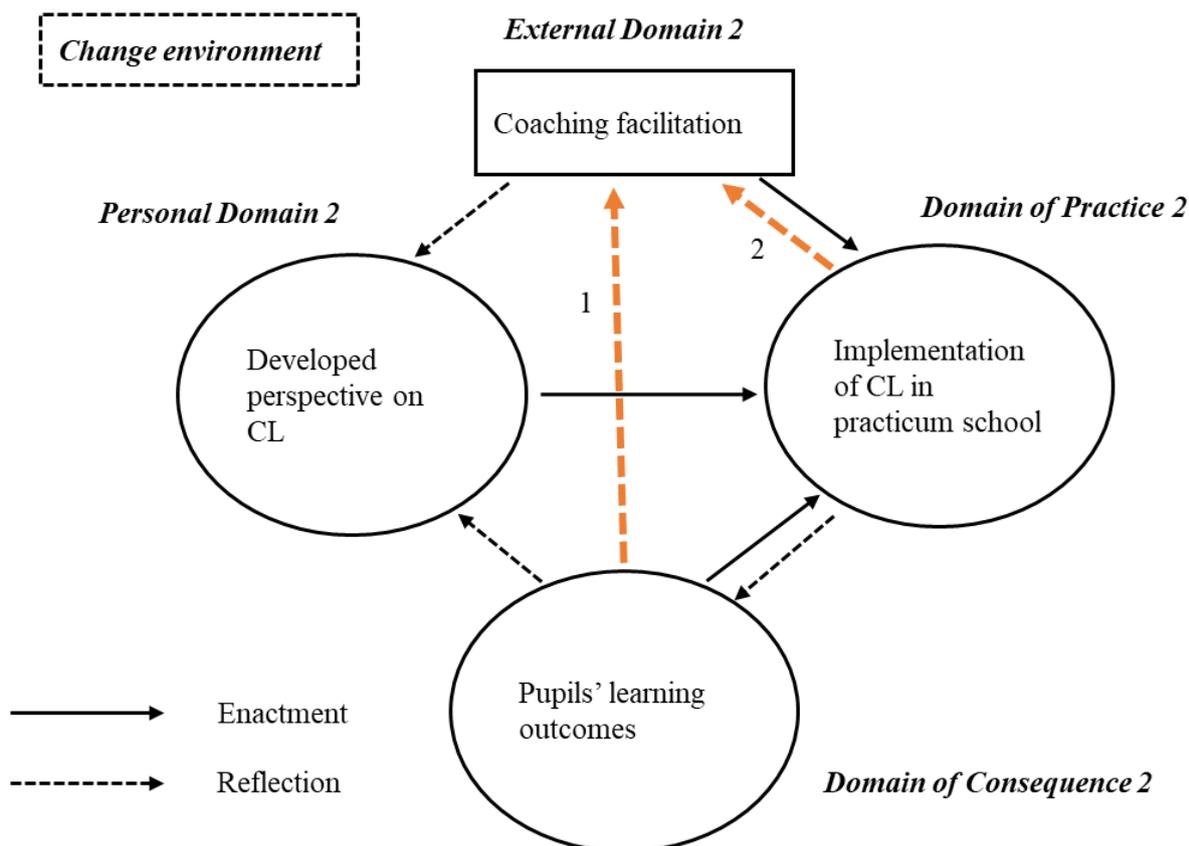
The present study expands the original IMoPG (Clarke & Hollingsworth, 2002) with two additional lines that refer to an interaction between various domains. One of the lines refers to the reflection that occurred from the Domain of Consequence 2 to the External Domain 2 (see Figure 21, Arrow 1). The other interaction took place from the Domain of Practice 2 to the External Domain 2 (see Arrow 2 in Figure 21).

An additional interaction that emerged in this study is attributed to the specific characteristics of the CLPL. Firstly, the university lecturer provided sustained assistance and support for the eight PETE students during their implementation of the CL model in the real-world setting of a school. In contrast to the “idealistic and impractical” suggestions for PETE students to use the Teaching Games for Understanding model reported in L.-J. Wang and Ha (2012a, p. 55), the lecturer in the present study gave feedback throughout the school practicum that appeared to be constructive and practical. The lecturer offered PETE students comments based on her on-site observation of the classroom practices and pupils’ learning performance. She knew the practicum school and the context of the classroom environment. Secondly, as part of the CL CoP that emerged in the school practicum, the PETE students

shared their own teaching experiences with each other. Peer help exposed the PETE students to new ideas and various teaching strategies, which potentially led to meaningful learning for the pupils.

Figure 21

Additional Interaction in Cycle 2 Implementation of Cooperative Learning in the Practicum



Furthermore, the findings of the present study extend our understandings of the change environment in the IMoPG (Clarke & Hollingsworth, 2002). Any processes of teachers' professional growth occur within the affordances and constraints of the enveloping change environment (Hollingsworth, 1999). However, little attention has been paid to these aspects (for exceptions, see Ketelhut et al., 2020; Schipper et al., 2017). The current study makes a valuable contribution to the field in these respects. Firstly, it does this through the identification of enabling conditions such as small class size and supportive associate teachers, and constraints such as an entrenched examination-oriented culture, that may

influence PETE students' intention to use or not use CL in their practicum. Secondly, it draws attention to the impact of Chinese cultural factors, such as Confucianism and the skill-oriented tradition in PE, on PETE students' approach to implementing CL in the practicum school.

Contribution to Cooperative Learning Research

Whereas most research on CL in China focuses on assessing CL's feasibility and validity for teaching students various curriculum contents, this study contributes to the field by providing a rich description of the perspectives of CL and pedagogical considerations of Chinese student teachers, university teacher educators, and school PE teachers. Firstly, the combination of data from multiple stakeholders is a form of triangulation through cross-checking the data, comparing multiple perspectives, and complementing their views (E. G. Cohen et al., 2018). Triangulation has led to a more holistic picture of PETE students' professional growth during the CLPL. Secondly, this thesis demonstrates that CL, as innovative pedagogy, may still have a long way to go to be accommodated by student teachers in the Chinese context. The Chinese PE education context is influenced by Confucianism, an entrenched examination-oriented culture, and a preoccupation with motor skills. The findings also indicate, however, that a CoP developed by multiple stakeholders could create a supportive environment that would encourage the wider use of CL with PE in Chinese schooling.

Further, the current study illuminates some seldom-explored aspects of CL research in PETE programmes. Over the past decades, the use of CL has become commonplace in teacher education in science, geography, education psychology, and English (S. Chan et al., 2021; Gisbert et al., 2017; McAlister, 2012; Veenman et al., 2002). There are very few empirical investigations into PETE students' learning and teaching of CL, even though CL is regarded as a vital pedagogical model in PE (Casey & Kirk, 2021; Metzler, 2011).

Responding to scholars' calls (Fletcher & Casey, 2014; Ovens et al., 2012; Zach & Cohen, 2012) that more research on CL in PETE is needed for the pedagogical development in the subject of PE, I have explored a cohort of PETE students' development in their understandings and practices of CL and carefully examined the essential characteristics of the CLPL that facilitate PETE students' development. As such, this research will serve as a base for future studies on CL in PETE.

Another major contribution of this thesis to the field of CL in ITE is the rich, detailed, and complex picture it paints through classroom observations. This study responds to the calls for research into CL that builds a picture of teachers' actual practice rather than their intention to use or their self-reported use of CL (Karmina, 2019; Veenman et al., 2002). Based on an analysis of 41 observed and recorded lessons of the eight PETE students, this study is an in-depth examination of PETE students' implementation of CL. The study has shown that by learning about CL through experiencing CL in microteaching, with the additional support of a contextually based CoP, the PETE students are becoming competent in integrating some of the key elements (Johnson & Johnson, 2009) and other additional procedures of CL (Dyson & Casey, 2016).

This thesis also contributes research on CL in PE settings in identifying PETE students' combination of CL and direct instruction. While previous research has explored how CL has been used in teaching pupils various sports skills (Y.-H. Zhang, 2007), there is very little literature providing examples of how CL has been used in PE to teach the content of new sports techniques. The findings of my study suggest that PETE students believe they should initially direct and demonstrate pupils' movements in new lessons. In the subsequent review lessons, the PETE students felt they could use CL structures to organise pupils to consolidate these taught techniques. To my knowledge, this is the first known study to examine the merging of CL and the direct-instruction model, thus offering an original insight

into the role of CL in the PE classroom. This combined approach may appeal to PETE students who are challenged to move out of their comfort zone to employ student-centred pedagogies. PE teachers who are looking for alternative ways of using CL to focus on pupils' development of social and emotional learning, as well as pupils' learning of sports techniques in the Chinese context, may also find it a welcome approach.

Contribution to Teacher Education

This thesis also contributes to literature on ITE. PETE students' development in the understanding of CL in the course identifies both the advantages and the disadvantages of microteaching for learning innovative teaching methods. The importance of practice in a real-world setting, with sustained coaching facilitation to support student teachers' changes in their beliefs about CL, is reinforced, especially for educators who are searching for alternative ways to prepare student teachers for innovative pedagogies. The current study provides insights into where, how, and why changes in student PE teachers' beliefs and practices can be made in CLPL in the Chinese context.

Practical Implications

In the following section, I pay attention to some of the more detailed findings of the current study and their practical implications. These implications are discussed first in relation to the practice of CL and then to pre- and in-service teacher professional learning and development.

Implications for Cooperative Learning Practice

This study provides examples of how the PETE students dealt with group composition that embraced both pupils' freedom and the teacher's design for multiple grouping criteria. The results highlight the importance of ensuring that teachers are familiar with pupils' characteristics before grouping as relationships are fundamental for effective CL classroom organisation (Baines et al., 2008). While many scholars suggest that a positive relationship

exists between achievement in CL classrooms and positive peer relationships (Gillies, 2014; Karmina et al., 2021; Kutnick et al., 2005; Silva et al., 2021b), I argue that it is more important for teachers to prepare pupils to work in a socially inclusive manner with all other members of their class, rather than be dominated by friendship-preference groups. The achievement of group goals necessitates interaction among all group members, not exclusive reliance on a couple of friends (Johnson et al., 1989).

The evidence from this study suggests that the five key elements are inherently interconnected and not mutually exclusive. To ensure a positive CL environment, the teacher needs to conceptualise these five elements as being interconnected and carefully design appropriate strategies to achieve that relationship. For example, placing skilled pupils in the role of instructor (i.e., positive interdependence) and asking them to interact through peer tutoring (i.e., promotive interaction) could create unintended consequences for the achievement of individual accountability and may also result in inequality in groups. To tackle the issue of inequality in CL classrooms, teachers could consider multiple strategies for status equality (E. G. Cohen & Lotan, 2014), such as role rotation and public praise for low-status individuals. Alternatively, attention could be paid to designing tasks that require a range of abilities possessed by different group members.

Implications for Professional Learning and Development

This research exploring PETE students' trajectory of change in perspectives on CL has suggested that attention should be paid to the order of professional learning activities. Many teacher-education developers recommend that when ITE students learn new teaching approaches, they should acquire more than training in behaviours—they must be exposed to the theoretical framework of any innovative pedagogy (Grossman et al., 2009; Richardson, 2003). Lectures that explore the theory or rationale behind innovative pedagogies, such as CL, are necessary for understanding new concepts (Joyce & Showers, 2002). Previous

research on preparing student teachers for CL has generally started with a presentation of theory (Brody, 2004; Ruys, 2012; Veenman et al., 2002). However, the findings of the current study suggest that the theoretical foundations of CL make more sense to PETE students once they have had the first-hand experience of the model with pupils in a school setting. The introduction of theoretical knowledge alone, at the very start of professional learning, appears to make little difference in PETE students' understandings of, and beliefs about, CL. One implication for ITE might be to consider the order in which new pedagogical approaches are taught. It may be more effective for student teachers to experience the practice first and then relate that to the theoretical framework.

Previous research has recommended that when (student) teachers learn about CL, the PDP should encompass the key elements of CL, the instructional procedures that enable teachers to structure lessons cooperatively, and the delegation of teacher's authority in a CL environment (Brody, 2004; Johnson & Johnson, 2017; Jolliffe, 2005). As this study has confirmed, teacher educators must pay attention to these components. In addition, as PETE students have had limited exposure to CL structures and have little knowledge of CL structures, teacher educators must endeavour to introduce a range of CL structures to the student teachers, and supplement learning by including resources that enable exploration of multiple CL structures, thereby providing further examples of CL in practice. These resources could be used to encourage individual students to use varied structures in their microteaching. Alternatively, if there are time constraints, they could be performed and demonstrated in videos.

To ensure student teachers have an optimum introduction to CL and become familiar with the use of CL, based on the findings of this study I argue that the pedagogy of microteaching is essential. This study, like others before (for example, Jolliffe & Snaith, 2017; Lyman & Davidson, 2004; McAlister, 2012), has highlighted the significance of

modelling. Teacher modelling, either in the form of a video or in person, acts as a powerful facilitator of skill acquisition (Rolheiser & Anderson, 2004), particularly aspects of grouping approach, teacher's role in CL classrooms, and instructional procedures of CL structures.

Teacher educators should pay attention to their modelling behaviours, realising the importance of “congruent teaching” and “teach as you preach” approaches (Loughran, 2006; Murray & Male, 2005; Swennen et al., 2008). Online ITE, however, has limited opportunities to engage student teachers with modelling for CL learning or to provide experiential learning, which have been shown to be pivotal for their understanding of CL in their future classrooms.

In addition, the findings of this study suggest that student teachers should have opportunities to experiment with CL as part of effective teacher training. Peer microteaching that simplifies the complexities of regular teaching–learning processes can be used to enable student teachers to practise discrete skills associated with CL. To foster conscious connections between peer microteaching and student teachers' future classrooms, Darling-Hammond (2006) suggested that teacher educators create an environment that approximates practice (Grossman et al., 2009; S. Zhang & Cheng, 2011), for example through designing learning tasks with topics chosen from the syllabus of the practicum school.

Learning to teach any innovative pedagogy is complicated and troublesome (Fullan, 1999), CL is with no exception. The development of skilled CL practice requires not only opportunities to try out new routines, but also necessitates specific feedback from teacher educators about what is and is not working well. In the current study, the PETE students valued the sustained feedback provided by the lecturer throughout the CLPL. Feedback provided during practice can help student teachers develop ways of seeing and understanding complex teaching practices (Grossman & McDonald, 2008). Hence, in the first instance, teacher educators need to dedicate considerable time and energy to observing and responding to student teachers' CL practices. The most effective form of such support appears when the

teacher educators become supervisors of student teachers during the school-based practicum. Furthermore, to facilitate student teachers' learning and implementation of CL, teacher educators also need to learn how to create and provide skilled feedback (Grossman et al., 2009). They need to realise that when giving feedback they express their values about teaching (see Swennen et al., 2008), and are powerful role models for student teachers.

Associate teachers also play an indispensable role in student teachers' learning to implement innovative pedagogies (E. G. Cohen et al., 2004; Gurvitch, Blankenship, et al., 2008). In the current study, associate teachers' attitudes towards, and development of trust with, PETE students strongly influenced their use of CL in the practicum. However, as this study indicated that most associate teachers' limited experience and knowledge of CL restricted their ability to provide constructive feedback on PETE students' CL practices, it is recommended they have opportunities for cooperative learning professional development before working with student teachers during the practicum. Professional development could be undertaken by teacher education faculties or practicum schools. As associate teachers become familiar with features of CL, they are likely to become experts in CL and would be able to provide effective mentoring for student teachers' use of CL during practicum.

Being part of a CoP has been an increasingly common and popular approach for (student) teachers' professional growth (Darling-Hammond, 2006; Feiman-Nemser, 2001; Hammerness et al., 2005). To support student teachers' implementation of CL in school-based practicum, a CL CoP could include formal activities such as weekly meetings for student teachers to discuss their experiences when using CL in teaching and be encouraged to reflect on their practice. Informal communication could include sharing of instructional resources and pedagogical strategies, such as approaches to the design of a session and making task sheets. Drawing on the PETE students' descriptions of the benefits of digital CoPs (Timperley, 2013), this study suggests that an ITE faculty could use social media

platforms to establish CoPs that include university teacher educators, school associate teachers, and student teacher peers, and other stakeholders. Digital platforms have the potential to overcome financial and time issues while enabling powerful learning opportunities in which to share, extend, and develop teachers' sustained practice of CL (Goodyear et al., 2014).

Furthermore, Clarke and Hollingsworth (2002) propose that student teachers' professional growth occurs within the constraints and affordances of the change environment. Like others before (Bouas, 1996; E. G. Cohen et al., 2004), this study has identified the influence of the context in student teachers' employment and teaching strategies of CL. The openness with which the associate teachers welcomed, and consented to, the use of CL was remarked on by student participants as an important enabling feature of their implementation of CL in their practicum. This provided the PETE students with opportunities to develop CL practices with pupils and to observe learning outcomes related to the use of CL in school classrooms which, in turn, influenced their perspectives on CL.

Finally, the results of this study indicate that CL could be a suitable pedagogical model to realise some of the ambitions for PE in the Chinese curriculum (MoE, 2011, 2017). In the Chinese context, physically educated pupils are expected to develop a healthy personality, a spirit of resilience, strategies for regulating emotions, the ability to cooperate, and sport ethics in PE classes (MoE, 2011). However, Chinese PE teachers are challenged to design appropriate tasks and employ effective pedagogies to achieve these goals (Yan, 2020). An implication is a possibility that a PDP could be developed targeting pupils' social and emotional development through CL that aligns with the goals of the Chinese PE curriculum.

Limitations

It is appropriate to consider several limitations of the present study. First, there is an issue of generalisability associated with the case study research design. The participants of

this study were situated within one particular CLPL in a Chinese university and senior high school. The context-bound findings of this study, therefore, may not generalise to the overall picture of CL in China. Also, the uniqueness of the Chinese context of this study means the results may not be generalisable to other global contexts, even those with similar professional learning. However, it is anticipated that readers who work in ITE could recontextualise the information provided in relation to their own environment (Lincoln & Guba, 1985; Miles et al., 2020). The experiences of CL for this cohort may serve to inform the structures of other ITE or PETE programmes.

Second, as qualitative interpretive research, the current study may be limited in how the data was analysed and interpreted, raising the possibility of bias. My personal experience with and knowledge about CL and my cultural lens may have influenced my interpretation of the findings. Nevertheless, I strove to address the issues of bias and subjectivity by providing evidence in the form of extensive direct quotations (Bassey, 1999; Lincoln & Guba, 1985; Yin, 2011). I also engaged in ongoing reflexivity and self-criticism (Schwandt, 1998) through reflective journals and memos during the process of data collection and data analysis in respect of nonverbal clues in the interviews and observations with the participants.

Furthermore, the triangulation of multiple data that articulate PETE students' perspectives on and practice of CL, alongside different stakeholders' views (i.e., PETE students, the lecturer, and associate teachers), enhances the credibility and dependability of the findings in the current study (Lincoln & Guba, 1985). In addition, my interpretations were challenged by three advisors who regularly questioned my analysis of the data.

Third, this study did not use the voices of pupils as data as it was beyond its scope to explore pupils' perspectives on and reactions to the use of CL in the school environment. Instead, the study set out with the aim of understanding what sense the PETE students made

of CL and how they acted as student teachers to initiate and implement the features of CL in practicum classrooms.

Fourth, the selection of the IMoPG as a heuristic tool has enabled the understandings and conclusions produced in this thesis, yet it has served to limit other possibilities. Future studies that aim to examine student teachers' professional growth in an ITE programme may wish to turn to the theory in Bransford et al.'s (2000) *How People Learn*. The three principles (i.e., preconceptions, competence development, and metacognitions) may offer a theoretical lens that helps to make sense of student teachers' learning in ITE programmes. Alternatively, the theory of conceptual change by Posner et al. (1982) could provide an appropriate framework for student teachers' learning about innovative pedagogies.

Future Research Directions

A way forward from this study and its limitations is to offer recommendations for future research. Longitudinal research that follows the PETE students when they graduate and start their initial teaching stage in schools would offer a more nuanced understanding of teachers' professional development in understanding and implementing CL. The professional training effect might be washed out (Zeichner & Tabachnick, 1981) because of the occupational socialisation on entering the teaching profession (Adamakis & Zounhia, 2016; Curtner-Smith et al., 2008). Thus, there is a need to explore how PETE students develop their practice of CL after their graduation. Future research may explore whether graduates retain all the additional procedures of CL (Dyson & Casey, 2016) and deliver it in the full version, or, alternatively, whether they employ a "watered-down version" or "a cafeteria approach" (Curtner-Smith et al., 2008), or fail to move beyond the honeymoon period of implementation (Goodyear, 2015) and turn back to the teacher-centred approach.

Reflective practice has been an integral part of the educational discourse generally as well as in the field of PE and PETE (Dewey, 1910; Schön, 1983; Tsangaridou & O'Sullivan,

1994). In the current study, several reflective pedagogical strategies were used to promote PETE students' professional growth, such as reflective lessons, reflective journals, and weekly meetings. However, it was beyond the scope of this thesis to delve into PETE students' reflective practice in any depth by comparing the effects of different reflective strategies or exploring how the PETE students developed their reflective capabilities. Future studies that look specifically at these particular aspects would significantly contribute to the field of ITE.

The current qualitative, interpretative case study provides a rich description of CL in professional learning from the participants' perspectives. However, as acknowledged above, a limitation of this thesis is related to transferability. It is suggested that utilising a quantitative approach would provide complementary information to the outcomes of this study to gain a more comprehensive picture of CL in PETE programmes in China. The survey questionnaire developed by Veenman et al. (2002) could be administered to a large sample of PETE students across China to extend the scope and breadth of the current understandings and to enable generalisations to a wider, cross-section of the population.

Concluding Remarks

As the evidence generated by this research has shown, the CLPL helped the PETE students acquire a sophisticated understanding of CL, accept that CL might make a difference, and develop confidence in implementing CL. The chance for PETE students to engage in several different contexts including university courses and real-context school classrooms with real pupils, to teach multiple lessons, and reflect on these lessons allowed for continual improvement. At the same time, the coaching facilitation by the CL CoP through the context of schooling appeared to be of considerable importance. In teacher education or professional learning of innovative pedagogical models, teacher educators may need to think about providing student teachers with more chances to implement specific aspects of CL, to

reflect on their practice, and to observe and discuss with others. In short, aside from university course work, school-based practice together with ongoing scaffolding from a CoP would benefit student teachers' professional growth.

I was fortunate to conduct this study and witness the changes in PETE students' beliefs about the purpose of PE teaching and the role of the teacher. However, the early years of socialisation in the school PE teaching context could threaten their new-found beliefs that PE teacher is "more than sports techniques and fitness development." The question that remains is whether the PETE students will continue to facilitate pupils' learning through CL as they embark on their future teaching careers. Nevertheless, I believe that, with the support of a CoP that includes educators, administrators, mentors, and their colleagues, the PETE students have the potential to persist with facilitation strategies, such as asking thought-provoking questions, for the betterment of their student learning in a holistic manner with emphasis on cognitive, physical, social and emotional learning intentions.

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Appendices

Appendix 1: Cooperative Learning Structures

Pair-Check-Perform

The structure of Pair-Check-Perform requires individuals to stay on-task and help others learn (Dyson & Grineski, 2001). It is useful when learning locomotor, manipulative, sport, gymnastics, or aquatic skills. It is suggested to implement this structure in five steps. First, the teacher explains and demonstrates the skill to be learned and then checks for student understanding. Second, the teacher places students in groups of four, divided into pairs. Third, in each pair, student #1 practices the skill, while student #2 provides encouragement and specific feedback. Fourth, once student #1 has performed the skill correctly, he/she becomes the encourager/helper, and student #2 becomes the performer. Finally, when both students in each pair have performed the skill correctly, they join the other pair in their group, and each student performs the skill again. If all group members agree that the performances were correct, the group begins learning and performing the next skill. If there is disagreement, students continue working on the performances until all agree.

Learning Teams

The structure of Learning Teams gives students the opportunity to share leadership and responsibility roles and to use collaborative skills to achieve group goals (Dyson & Grineski, 2001). This structure is most useful for teaching sports skills. The structure of Learning Teams closely aligns with Johnson and Johnson's (2009) five key elements (i.e., positive interdependence, individual accountability, promotive interaction, social skills, and group processing). There are five instructional suggestions. First, the teacher explains and demonstrates the selected skill or tactic and checks for students' understanding before forming small groups. Second, task sheets are prepared by the teacher to inform students the learning objectives as well as the physical, social, and cognitive skills necessary to achieve the goal. Task sheets can also be used for individual and/or peer assessment. Third, the design of roles, such as encourager, coach, recorder, and equipment manager, is suggested to facilitate group activity. Roles can be shifted for the next task so that all students can attempt each role. Fourth, students carry out their assigned roles during the task. Fifth, it is suggested that time is allotted for group processing at the end of class, wherein the students' experiences in group learning are discussed and the teacher encourages them to set goals for the next lesson.

Appendix 2: Focus Groups Schedule With PETE Students

Interview 1—beginning of the CL course:

Introductions. Please tell me your name, hometown and explain why you enrolled in the cooperative learning course?

1. What do you expect to learn from this course?
2. What were your physical education experiences before you came to the PETE programme? Could you share how you learned in PE classes?
3. What are the most memorable experiences that you have in physical education? What are the best physical education experiences you have had so far (e.g., favourite teachers, class structures, peers, specific sports, etc.)?
4. Have you ever had an experience of working in groups in physical education classes? If yes, please tell me what experiences you have had learning as a group. Did you enjoy working in groups? Why or why not?
5. Have you ever had groupwork in other subjects other than physical education class? If so, is there any difference in nature between groupwork in PE and in learning other subjects?
6. Have you ever heard the term “cooperative learning”?
 What does it mean to you?
 What cooperative learning experiences do you think you have had?
 Could you tell me more about that/those experiences?
 What were your thoughts and feelings with regard to the experience/s?

Interview 2—after the CL course and before practicum experience:

1. What was your first impression of the cooperative learning course?
 What have you learned about cooperative learning in this course?
 What areas of the course so far have been most useful for you?
 Could you explain why?
2. What would you have liked to have been included in the course so far?
 Why would this benefit you?
 Are there any areas that you feel are lacking in the course?
 What would you like to see/experience more of?
 What could be included in the course to support you more in the class?

3. What does cooperative learning mean to you?
4. In what way, if any, have you changed your beliefs about cooperative learning during the course?
How have this course's experiences increased your theoretical understandings of cooperative learning?
How has this course improved your understanding and use of cooperative learning implementation and strategies?
What aspects of the course do you think relate to your development of cooperative learning?
5. How well prepared do you feel for practising cooperative learning in the practicum experience? Please give details of the ways you do or do not feel prepared.
How confident do you feel about using cooperative learning in the classroom?
Are there any concerns about using cooperative learning? If so, what are your thoughts and feelings regarding these concerns?
What are you expecting to learn about cooperative learning during your practicum experience?
6. Do you have anything else you would like to share about your beliefs, understandings, and practices of cooperative learning? If so, please explain.

Appendix 3: Semistructured Interview Schedule With PETE Students

1. Could you describe any positive experiences you may have had implementing cooperative learning in your class? Could you give reasons for/or explain what worked well?
2. Could you describe any negative experiences you may have had implementing cooperative learning in your class? Could you give reasons for/or explain what didn't work as well as you had hoped?
3. When you were teaching using cooperative learning, how did you form groups? What have you learned about forming groups?
4. How do you promote participation of pupils?
5. What do you think are the skills that students require to work successfully in groups? How can these be promoted?
6. How did you assess pupils' learning during and after their involvement in a cooperative learning? How did you assess the contribution of individual students?
7. Did you ask pupils to reflect on their group process and success in doing the tasks? If so, how do you encourage them to be more reflective?
8. How have this school practicum experiences increased your theoretical understandings of cooperative learning?
9. How have this school practicum experiences improved your understandings and use of cooperative learning practices and strategies?
10. In what ways, if any, have you changed your beliefs about cooperative learning during the ten weeks practicum experiences?
11. In what ways, if any, did the professional learning have supported your learning and practice of cooperative learning?
12. Was practicum school supportive of cooperative learning? Please give details.
13. Do you think that you will practice cooperative learning for your teaching in your future career? Why?
14. Do you have anything else you would like to share about your beliefs, understandings, and practices of cooperative learning? If so, please explain.

Appendix 4: Semistructured Interview Schedule With the Lecturer

Semistructured interview 1—before the CL course:

1. Please define cooperative learning.
2. Please provide some specific examples of cooperative learning in your teaching.
3. What does ‘cooperative learning’ mean to you? Why is it important or of use to you?
4. What is the theory framework you use to guide your cooperative learning in your practice?
5. Please describe examples of theory of cooperative learning in your practice.
6. What are the most important theoretical understandings of cooperative learning you want PETE students to gain from this course?
7. What changes in the PETE student’s professional learning do you hope for during the course?

Semistructured interview 2—after the practicum experience:

1. Could you share some information about the coaching support provided by you and associate teachers for the PETE students’ practices of cooperative learning in their practicum experience?
2. What connections do you find PETE students are able to make between their theoretical understandings of cooperative learning and their practice experience of this model?
3. What are the conditions and constraints that support PETE students’ implementation of cooperative learning? Could you provide some examples?
4. What are the conditions and constraints that negatively impact on PETE students’ implementation of cooperative learning? Could you provide some examples?
5. Do you have any suggestions for a more integrated approach between the university and school towards teaching PETE students about cooperative learning? If so, please explain.
6. Is there anything else you would like to share about cooperative learning and how to develop PETE students’ perspective and practical skills of cooperative learning? If so, please explain.

Appendix 5: Semistructured Interview Schedule With Associate Teachers

1. What does 'cooperative learning' mean to you?
2. Have you used any cooperative learning structures in your class? If yes, please explain.
3. Do you think cooperative learning is applicable and useful for physical education?
4. What influence do you think compulsory educational policies have on your practice of Cooperative Learning (in Physical education)? Can you give any examples?
5. How do you model and discuss practice of cooperative learning for PETE students on practicum in your class?
6. What do you see as your role in teaching PETE students how to implement cooperative learning?
7. Have you received professional development on using cooperative learning in physical education?
8. What knowledge and understandings of cooperative learning do you expect PETE students to have before they carry out their practicum experience?
9. What connections do you find PETE students are able to make between their theoretical understandings of cooperative learning and their practice of this model?
10. Do you have any suggestions for a more integrated approach between the university and school towards teaching PETE students about cooperative learning? If so, please explain.
11. Is there anything else you would like to share about cooperative learning and how to develop PETE students' perspectives on and practical skills of cooperative learning? If yes, please explain.

Appendix 6: Postlesson Interview Schedule With the Lecturer

1. What were your goals for this workshop?
2. What did you see in your lesson that met your goals? Please provide an example.
3. What aspects of the workshop did you feel not go well, if any? Please provide an example.
4. What learning do you believe occurred in this workshop? Please provide an example.
5. What are your main aims/ goals/ objective for your PETE students specifically related to Cooperative Learning?
6. What are your specific goals for the next workshop?
7. Have you found PETE students' perspectives on cooperative learning tend to change or remain the same during this course? If yes, please explain in detail.

Appendix 7: Cooperative Learning Verification Tool Guided Classroom Observations

Observer: _____ Content: _____ School: _____

Teacher: _____ Student Year/Grade: _____ Date: _____

	Observed	Not Observed	
1. Were the goals of the lesson clearly stated during the lesson?			
a) Social and/or Emotional goals [Define this in field notes]			
b) Physical/ skill and tactics goals			
c) Cognitive goals			
2. Are there heterogeneous groups (i.e., equitable)?			
3. Was the instruction student centred? [Define this in field notes]			
4. Did the teacher facilitate student activity? Did the teacher monitor and interact with students?			
5. Was a specific cooperative learning structure used?			
6. Did student groups have shared ownership? Groups assign students to specific roles; groups record/ chart contribution of each group member; and groups use peer teaching to help teammates.			
7. Did students work closely together? Was there face-to-face promotive interaction?			
8. Did the task/s enhance students' Positive Interdependence?			
9. Did students demonstrate small group skills and interpersonal skills (social skills)?			
10. Individual accountability: Was there a performance assessment strategy Were students assessed? [Elaborate in field notes]			
11. Did the teacher design assessments of performance for			
a) <u>physical</u>			
b) <u>cognitive</u>			
c) <u>social or emotional learning?</u> [Elaborate in field notes]			
12. Was there student improvement?			
a) physical?			
b) cognitive?			
c) social or emotional learning? [elaborate in field notes]			
13. Did student self-assess Were students involved in assessment (peer, group, task sheet)? (peer assessment)			
14. Was their problem solving?			
15. Did students encourage one another?			
16. Did the teacher facilitate group processing to draw out:			
a) What Happened? Description			
b) So What? Interpretation			
c) Now What? Transfer			
Summary Items	Low	Moderate	High

High academically (appropriate subject content) focused class time			
High level of student attention/interest/engagement			

Field Notes:

Define the goals of the lesson:

Define the student-centred instruction:

Heterogeneous teams:

Teacher Facilitate:

CL Structure:

Degree of CL elements in lesson:

Designed for promotive (encouraging) face-to –face interaction:

Individual Accountability:

Positive Interdependence:

Interpersonal skills:

Group Processing:

Describe the teacher assessments

- a) Physical
- b) Cognitive
- c) Social

Improvement

- a) Physical
- b) Cognitive
- c) Social/ emotional

Appendix 8: Reflective Journal Template in Practicum Experience

Teacher: _____ Content: _____ Date: _____

Instructional objectives: _____

Physical goal: _____

Cognitive goal: _____

Social and emotional goal: _____

How did I implement Cooperative Learning today? Use ✓ or my own words to recall my instructional behaviours.

Behaviours	Yes or No	Example
I defined and informed pupils the group learning goal(s)		
I used Cooperative Learning structures		
I ensured equitable heterogeneous groups		
I ensured student-centred instruction		
I acted as a teacher-facilitator		
I ensured Positive Interdependence		
I ensured Individual Accountability		
I ensured Promotive Face-to-Face Interaction		
I ensured Interpersonal Skills		
I ensured Group Processing		
The students were improved	Physical domain	
	Cognitive domain	
	Social & emotional domain	

- What were the most positive aspects of the class? Why it worked well?
- What the most negative aspects of the class? Why it not worked well?
- What are the questions, issues, and or concerns about using Cooperative Learning I encountered today? Or where do I need help and support?

Appendix 9: Parallel Translation Audit Trail

Original transcripts	Translation by researcher	Translation by peer 1	Translation by peer 2	Actions(s) taken
我感觉要增加他们的自主性，让他们自己动手，去自我提升	I think we need to promote their autonomy, allowing them to practise on their own and achieve self-improvement.	I think that it is necessary to enhance students' autonomy. They should be empowered to practise by themselves and encourage to self-improve.	The teacher should foster students' initiatives and allow them to do things at their own, helping them to achieve self-improvement.	The sentence was translated in line with the translation by peer 1.
我们班刚好有两个调皮学生，他不配合的话，那这个我们要怎么处理	There are two naughty pupils in my class. What can I do if they are not willing to cooperate?	There are two less self-disciplined students in my class. If they don't want to cooperate, what can I do?	I have two self- disciplined students . What shall I do if they do not cooperative with others?	Naughty changed to self-disciplined. Pupils remained unchanged to students.
他们很少与来自不同行政班级的组员交流	They seldom talked to other groupmates those who were from the different administrative classes .	Groupmates who were from different fix classes talked to each other very little.	They rarely interacted with groupmates who were from other classes .	<i>Xing zheng ban</i> that directedly translated from Chinese Pinyin was used. A footnote was provided to explain the meaning of <i>xing zheng ban</i> in Chinese education system.
这个课程提高了我学习合作学习模式的积极性	The course [referring to the learning course about CL] promoted my motivation to learn about the Cooperative Learning model.	The course facilitated my proactiveness to learn about Cooperative Learning model.	The course increased my proactiveness to learn about Cooperative Learning model.	Motivation changed to proactiveness.

Appendix 10: Node Coding Frequency Regarding PETE Students' Perspective on Cooperative Learning

Themes	Larger categories	Categories	Ref. No.	FG	CM	SSI
CL is equivalent to group work	Content knowledge of CL	Definition of CL	36	16	20	-
		Key elements of CL	39	17	22	-
	Experience of CL	Experience of CL	86	86	0	-
Know what, know how, but don't believe in it	Content knowledge of CL	Definition of CL	45	30	15	-
		Key elements of CL	45	20	25	-
	Pedagogical content knowledge of CL	Teaching plan	39	37	2	-
		Group composition	11	11	0	-
		Orientation lesson	10	8	2	-
	Beliefs about CL	Concerns about using CL	68	67	1	-
		Intentions to use CL	48	48	0	-
		Teacher's role and student-centred	28	23	5	-
		Merge CL with direct instruction	20	15	5	-
Strength of CL		128	91	37	-	
Continually developed, but "still a lot to improve"	Content knowledge of CL	Definition of CL	8	-	5	3
		Key elements of CL	39	-	28	11
	Pedagogical content knowledge of CL	Knowledge of pupils	13	-	1	12
		Group composition	22	-	4	18
	Beliefs about CL	Beliefs about PE teaching	14	-	4	10
		Beliefs about pupil agency	15	-	2	13
		Strength of CL	30	-	21	9
		Advocacy for CoP	12	-	2	10
Total references			756	469	201	86

Note: "FG" refers to focus groups data. "CM" refers to concept maps data. "SSI" refers to semistructured interviews data. "-" means not relevant.

Appendix 11: Node Coding Frequency Regarding PETE Students' Implementation of Cooperative Learning

Themes	Larger categories	Categories	Ref. No.	CO	SSI	FN	RJ	IM
Establishing positive CL environment	Orientation lesson	Introducing learning materials	18	8	0	5	0	5
		Informing norms and rules	14	5	1	3	1	4
	Group composition	Preparing grouping sheet	29	8	8	2	3	8
		Setting grouping criteria	29	8	8	2	3	8
		Asking pupils to form groups	27	8	9	2	2	6
	CL structures	Learning Teams	123	34	6	34	19	30
Pair-Check-Perform		26	7	1	7	5	6	
Putting key elements into practice	Positive interdependence	Role interdependence	122	32	6	32	20	32
		Resource interdependence	204	86	8	41	34	35
		Task interdependence	147	47	6	36	32	26
	Individual accountability	Verbal instructions	151	65	7	40	34	5
		Written directions	84	30	3	12	9	30
	Promotive interaction	Verbal instructions	171	92	7	41	29	2
		Teacher modelling	92	40	2	20	12	18
	Social skills	Oral reinforcement	63	21	3	18	7	14
		Teacher modelling	79	36	5	20	18	0
	Group processing	Omitting group processing	52	17	2	8	11	14
		Verbal questions	50	27	2	12	9	0
		Use of task sheets	109	30	4	27	18	30
Becoming a skilful teacher-facilitator	Teacher-director	Direct demonstration	134	88	2	20	15	9
		Correcting on the spot	68	54	0	14	0	0
		Teacher control of learning pace and progress	55	40	0	15	0	0

	Switch between director and facilitator	Open-ended questions but little time for pupil's response	36	24	0	12	0	0
		Facilitating one group but directing another one	53	35	0	18	0	0
	Teacher-facilitator	Redirecting groups to their resources and groupmates	15	7	0	6	2	0
		Empowering pupils to make mistakes and to explore	30	12	5	8	5	0
		Consistent use of thought-provoking questions	45	13	9	11	12	0
	Total references			2026	874	104	466	300

Note: "CO" refers to classroom observations data. "SSI" refers to semi-structured interviews data. "FN" refers to field notes data. "RJ" refers to reflective journals data. "IM" refers to instructional materials data, such as task sheets, teaching plans.

Appendix 12: Node Coding Frequency Regarding the Characteristics of the Cooperative Learning Professional Learning

Themes	Larger categories	Categories	Ref. No.	FG	SSI	PLI	FN
Microteaching experience: learning by doing with CL	Microteaching	Theory lesson	12	10	0	2	0
		Video-modelling	24	20	0	3	1
		Lecturer modelling	23	18	2	2	1
		Peer microteaching	51	32	3	10	6
		Teacher feedback	33	22	3	6	2
Reflection on learning and implementation of CL	Reflection	Group processing	31	20	0	8	3
		Reflection workshop	25	16	2	5	2
		Reflective practice in practicum	21	-	11	-	10
Coaching facilitation in practicum experience	Sustained support from the lecturer	Weekly meeting	23	-	15	-	8
		Observation and conversation	18	-	13	-	5
		Feedback towards teaching plan	7	-	7	-	0
	Acceptance and trust by associate teachers	Acceptance and encouragement	14	-	12	-	2
		Feedback towards general issues	6	-	6	-	0
		Beliefs about implementing CL	13	-	9	-	4
	Peer assistance	Mutual comments on teaching plan	14	-	11	-	3
Group discussion in weekly meeting		16	-	9	-	7	
Total comments			331	138	103	36	54

Note: "FG" refers to focus groups data. "SSI" refers to semistructured interviews data. "PLI" refers to postlesson interviews data. "FN" refers to field notes data. "-" means not relevant.

Appendix 13: Participant Information Sheet (PETE Students)



**EDUCATION AND
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AND PEDAGOGY**
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Auckland, New Zealand

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The University of Auckland

Private Bag 92019

Symonds Street

Auckland 1135

New Zealand

Project Title: Chinese Physical Education Teacher Education Students' Professional

Growth: Cooperative Learning within Professional Learning

Researcher: Wen Xiong

Degree: Doctor of Philosophy

Dear students,

My name is Wen Xiong, a PhD candidate in the School of Curriculum and Pedagogy, Faculty of Education and Social Work, The University of Auckland. I am conducting research on exploring physical education teacher education (PETE) students' development of cooperative learning (CL) in professional learning. The specific research questions ask:

1. What are PETE students' perspectives on cooperative learning throughout the cooperative learning Professional Learning?
2. How do PETE students implement cooperative learning during their practicum experience?
3. What characteristics of the cooperative learning professional learning influence PETE students' perspectives on and practices of cooperative learning?

This empirical study will last five months, from September 2018 to January 2019. It will be conducted in two settings, the University and a practicum school. You are cordially invited to join the interpretive qualitative case study of my PhD research. I have contacted your school and gained the Dean's permission to ask your involvement.

Student Involvement

In the first phase within the setting of university, you will participate in

- Focus group interviews. The initial focus group interview will take place in the week before the first lesson of the course, while the second one will occur in the following day of the final lesson. Each interview may take approximately 1 hour.
- Concept maps. You will be asked to draw two concept maps. The first one will be completed in the beginning of the first lesson, while the second one will be drawn at the end of the final lesson of the course.

In the second phase within the setting of practicum school, you will be invited to participate in

- Classroom observations. The class you teach in the practicum school will be observed every second week, five times in total (40 minutes for each). The observations will be video-recorded. The recorder will be placed at the back of the classroom and avoid those who do not want to be recorded.
- Semistructured interviews. You will attend a one-on-one face-to-face semistructured interview after your practicum experience. The interview may last 1 hour and will be audio-recorded. The audio will be transcribed and translated by the researcher. Once the transcription is done, you will receive a copy of the transcript to check and will be invited to make any amendments and/or delete any statements.
- Concept map. You will be asked to draw a concept map at the end of your practicum.
- Reflective journals. You will be asked to write a reflective journal after each of your observed CL lesson. A template of the reflective journal will be provided.
- Document review. Copies of your instructional materials will be collected. All the photocopies will be at the researcher's expense.

All interviews will be held on the Qishan Campus at the Fujian Normal University in a classroom. A convenient time that suits you and other participants will be arranged. Interviews will be recorded. Even if you agree to be recorded, you may choose to have the recorder turned off at any time. Interview will be transcribed and translated by the researcher. Interview transcripts will be emailed to you for checking. You may edit or erase any information on your transcript and return it with corrections and additions within 3 weeks.

Data Storage/Retention/Destruction/Future Use

The data collected from the whole process will be electronically saved in password-protected files stored in the server of the University of Auckland for the period of 6 years. At the end of this time all paper data will be shredded, and audio files deleted. Use will be restricted to the research thesis and publications relating to the project to further study by myself. The findings of this study will be published in a PhD thesis, academic journals, and research conferences.

Right to withdraw from participation

Your involvement in the study is completely voluntary. You are entitled to withdraw yourself at any time without giving any reasons. And you have the right to withdraw any data provided by yourself without giving any reasons within up to three weeks after the data collection is completed. However, please note that you cannot withdraw any information provided within a focus group, since its removal will affect the contextual meaning of the remaining data. You have the right not to answer any specific question and have the recorder switched off at any stage. The Dean and the lecturer have given the assurance that your participation, nonparticipation, or withdrawal in the research will not affect your assessment or relationship with the School.

Confidentiality

The school dean will be invited to choose a pseudonym to represent the university's name. You will be asked to write a unique identification code, which can be recognised by yourself and used to link different data sources. This information will be kept separately from the data and will only be known to the researcher and her supervisors. Your participation will be known to

the lecturer. While your name will not be disclosed, the small sample of students may allow speculation as to the source. Every effort will be made to ensure that your identity will remain anonymous including the following:

- Your name will not be identified in front of your peers, nor will your name be used in the thesis.
- You will be asked to not discuss the focus group interviews with others.
- Transcripts will be coded to prevent your name, and information that may identify you, from being used in any written report/research document.
- All data will be stored using pseudonyms on a single computer for six years (within a password-protected file) and accessible only to the research team. Any hard copies will be retained in a locked cabinet.

If you agree to participate in this research, I will ask you to sign a consent form. You will be offered a RMB 100 (NZD 20) shopping voucher at the conclusion of your practicum as a small token of my appreciation.

If you have concerns at any point please do not hesitate to contact me. At any time if you have concerns about the research project you can contact Dr. Ben Dyson or Dr. Rod Philpot (supervisors), Professor Helen Hedges (Head of the School of Curriculum and Pedagogy) or the University of Auckland counselling service (+64 09 923 7681).

If you are willing to put yourself forward as a *possible* participant in this research, please contact the principal researcher using the contact details below.

If you have any further questions, please feel free to contact to me.

Thank you.

Wen Xiong

School of Curriculum and Pedagogy,
Faculty of Education and Social Work,
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New Zealand address: The University of Auckland, Faculty of Education; Office: A 238 (Doctoral Space) Epsom Campus; Phone Number: + 64 09-373-7599 (Ext) 48779.

Chinese Address (Private residence): No. 1 Keji Street, Shangjie, Minhou District, Fuzhou, Fujian, China; Phone Number: +86 13506753874.

If you have any queries, please contact:

Dr Ben Dyson, Curriculum and Pedagogy, +64 9 623 8899, ext. 48337, email:
b.dyson@auckland.ac.nz

Dr Rod Philpot, Curriculum and Pedagogy, +64 6238899, ext. 48147, email:
r.philpot@auckland.ac.nz

or Dr Helen Hedges, Head of School of Curriculum and Pedagogy, +64 9 373 7999, ext. 48606, email: h.hedges@auckland.ac.nz

For any queries regarding ethical concerns you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92019, Auckland 1142, New Zealand. Telephone 09 373-7999 ext. 83711. Email: ro-ethics@auckland.ac.nz.

Approved by the University of Auckland Human Participants Ethics Committee on for 25 July 2018 for three years, Reference Number 021744.

Appendix 14: Consent Forms (PETE Students)



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New Zealand

Project Title: Chinese Physical Education Teacher Education Students' Professional Growth: Cooperative Learning within Professional Learning

Researcher: Wen Xiong

Degree: Doctor of Philosophy

I have read the Participant Information Sheet and have understood the nature of the research undertaken by Wen Xiong. I have had the opportunity to ask questions and have them answered to my satisfaction.

- I agree to my taking part in research on Chinese PETE students' perspectives on and practice of cooperative learning.
- I **agree/don't agree** (circle one) to provide the researcher with the two concept maps I draw during course about cooperative learning.
- I **agree/don't agree** (circle one) to attend the two focus group interviews that will take place before and after the course about cooperative learning. I understand that the time commitment for the two focus group interviews will be approximately 2.5 hours. I understand the interviews will be digitally recorded, transcribed, and translated.
- I **agree/don't agree** to be observed during the practicum experience. I understand that the classroom observations will occur every second week during the practicum experience. I understand that the class observations will be digitally recorded, transcribed, and translated.
- I **agreed/don't agree** to attend the semistructured interview. I understand that the interview will take place at the end of practicum experience within approximately one hour. I understand that the interview will be digitally recorded, transcribed, and translated with my permission.
- I **agreed/don't agree** to provide the researcher with the copies of concept map, reflective journals, and instructional materials in the practicum experience.
- I understand that my involvement in the study is completely voluntary and that choosing to participate or not participate in this study will in no way affect my grades, degree progress or professional relationships at the university.

- I understand that I am free to withdraw my participation at any time without explanation.
- I understand that I will have opportunity to review and edit the transcriptions and translations when they are finished.
- I understand that the researcher will make every effort to obscure my identity in research reports, including using a pseudonym and not disclosing any personal information about me.
- I understand that copies of the information I give will be stored securely at the University of Auckland and then destroyed after 6 years.
- I understand that the data from this research will be used in a PhD thesis, and could also be used in academic articles and conference presentations. In none of these will my name be used.
- I understand that I can contact Wen Xiong, Dr. Ben Dyson, Dr. Rod Philpot or Dr. Helen Hedges if I have any questions.
- I **wish/don't wish** (circle one) to receive a summary of findings. The summary of findings can be emailed to me at the email address presented below.

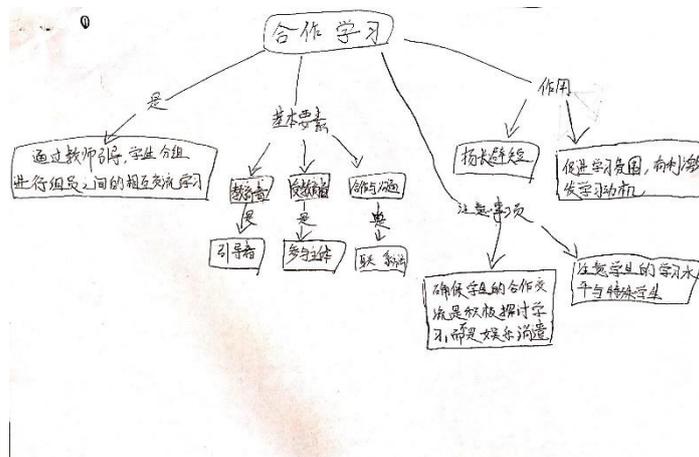
I agree to be part of this research project

Name Email

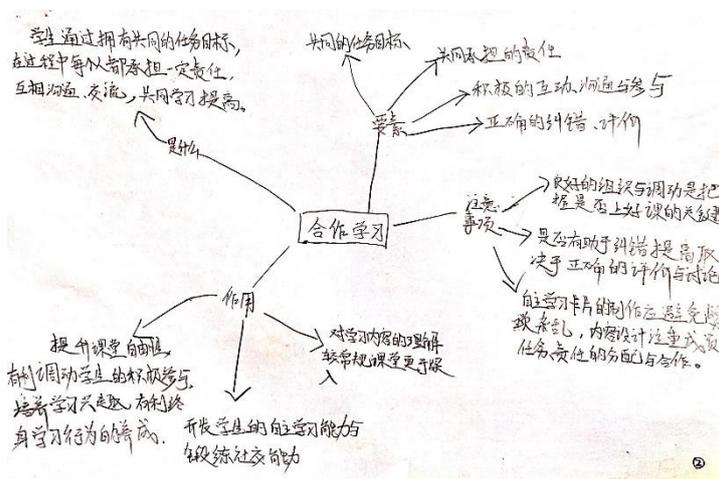
Signed Date

Appendix 15: Concept Maps of Cooperative Learning Drawn by Wei

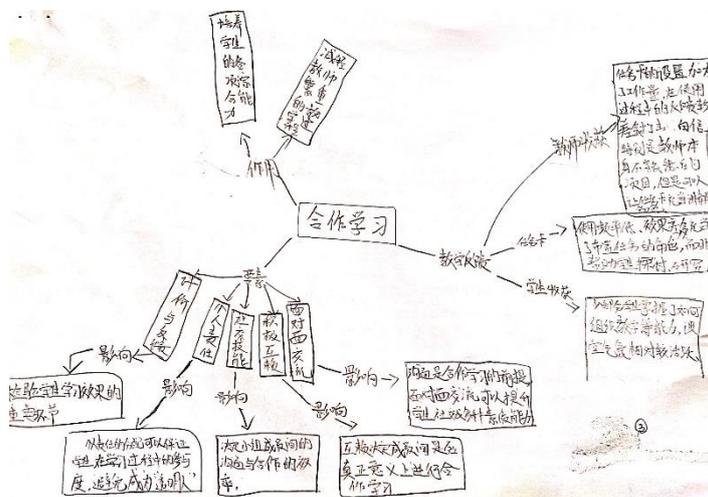
Wei's first concept map created prior to the CL course:



Wei's second concept map created after the CL course:



Wei's third concept map created after school-based practicum:



Appendix 16: Pedagogical Strategies of Cooperative Learning Used by Each of the Eight PETE Students in Their Practicum

Pedagogical strategies		Qian	Juan	Jie	Hang	Yi	Wei	Bao	Biao
Orientation lesson		•	•	•	•		•		
Heterogenous groups		•	•	•	•	•	•	•	•
CL structure	Learning Teams	•	•	•	•	•	•	•	•
	Pair-Check-Perform	•		•		•	•		
Positive interdependence	Complementary roles	•	•	•	•	•	•	•	•
	Shared materials	•	•	•	•	•	•	•	•
	Divided task	•	•	•	•	•	•	•	•
Individual accountability	Reiteration of role responsibility	•	•	•	•	•	•	•	•
	Questions about fulfilment of role responsibility	•	•	•	•				•
	Written directions in task sheets		•	•	•	•		•	•
Promotive interaction	Verbal instructions	•	•	•	•	•	•	•	•
	Teacher modelling	•	•	•	•	•	•	•	•
Social skills	Explicit reinforcement				•		•		
	Teacher modelling	•	•	•	•	•	•	•	•
Group processing	Verbal questions	•				•			
	The use of evaluation sheet		•		•		•	•	
Teacher-facilitator	Direct demonstration	•	•	•	•	•	•	•	•
	Mistake corrections on the spot			•			•	•	•
	Teacher control of pace and progress	•	•	•				•	
	Open-ended questions but little time for pupils response	•				•		•	
	Facilitating one group but demonstrating another one		•	•	•		•		•
	Redirecting groups to their resources and groupmates					•			
	Empowering pupils to make mistakes and to explore			•					
Consistent use of thought-provoking questions				•					

Appendix 17: A Sample of Grouping Sheet Created by PETE Students

GROUPING SHEET	
Group Information	
Group Members:	_____
Team Name:	_____
Role Allocation	
Instructor's name: _____	Manager's name: _____
Recorder's name: _____	Coach's name: _____
Encourager's name: _____	Timer's name: _____
<p>We promise that we will work together to tolerate each other, respect each other, help each other, support each other, carry out our own responsibilities, and jointly complete the team learning task!</p>	
Role Responsibility	
<ul style="list-style-type: none"> • Instructor: responsible for learning activities other than physical exercises, including read out the cues of warm-up sheet, organize warm-up activities, read out the cues of learning task sheet, and organize group learning. • Manager: responsible for receiving and getting equipment, checking equipment, arranging the practice place and group position while practicing. • Recorder: write down main ideas during the group discussion, record the group practice (e.g., number of physical exercises). • Coach: responsible for reading out the tasks in the fitness training sheet, organizing group members to make decision of and conduct the fitness training exercises. • Encourager: encourage each group role to carry out individual responsibility, encourage group members to highly engage in group learning, and provide the group with positive feedback. • Timer: control the practice time, remind the group members practice times, and remind group members when the teacher announces to stop. 	
Signature	

Appendix 18: A Sample of Group Processing Sheet Created by PETE Students

Group name: _____

Date: _____

Group members	Ready stance	Pass	Catch	Stability of passing and catching on the run
The instructor				
The recorder				
The encourager				
The coach				
The manager				

- “+” refers to he/she performed very good with smooth action, demonstrated offensive and defensive characteristics.
- “—” refers to he/she acquired the basic skill but performed not smoothly.
- “H” refers to he/she needed support from one other to perform.

Group Discussion

- How did our group learn the motor skill? Which movement did we perform the best?
- How have we helped and assisted each other as a group?
- What do we need to work on regarding motor skill learning and group cooperation?