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Lars Bjørke

PhD Dissertation

The messiness and complexity of pedagogical change

Teachers' and students' experiences from implementing cooperative learning in physical education

PhD Dissertation in Teaching and Teacher Education
2020

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PhD Dissertation in Teaching and Teacher Education

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Sammendrag

Læreres bruk av pedagogiske modeller har blitt foreslått som en mulig løsning for bedre å legge til rette for elevers læring i kroppsøving. I denne avhandlingen undersøker jeg derfor hvordan lærere og elever i barneskolen i Norge erfarer implementeringen av en pedagogisk modell, nærmere bestemt samarbeidslæring. Selv om forskning på samarbeidslæring i kroppsøving er tiltagende internasjonalt, rapporterer de fleste studier fra korte intervensjoner. I denne studien har jeg derfor gjennomført et deltagende aksjonsforskningsprosjekt som strekker seg over to år, hvilket gir kunnskap om hvordan modellen erfares over tid.

I prosjektet deltok tre lærere, deres klasser og jeg gjennom min doble rolle som forsker og fasilitator. Funn fra studien viser hvordan implementeringen av samarbeidslæring ble oppfattet som problematisk og krevende for både for lærere og elever. Samtidig viser studien at det er mulig å imøtekomme disse utfordringene gjennom langsiktig og systematisk arbeid. For lærerne var spesielt muligheten til å systematisk reflektere sammen over tid avgjørende for å forbedre sin forståelse av, og undervisning gjennom samarbeidslæring. Refleksjon ga lærerne mulighet til å sammen identifisere og finne løsninger på de problemene som oppstod underveis. Elevene rapporterte at det å ha læringsmål var spesielt viktig, og at tydeliggjorte læringsmål gav grobunn for at de gradvis begynte å erfare samarbeidslæring som en relevant og meningsfull måte å lære på. Funn fra studien viser samlet sett at samarbeidslæring er en velegnet pedagogisk modell i arbeidet med å møte noen av ambisjonene i den norske læreplanen for kroppsøving.

I lys av studiens teoretiske rammeverk, argumenterer jeg for at lærere kontinuerlig må bevege seg mellom å gjøre praktiske erfaringer, og det å reflektere over hvordan ulike måter å implementere samarbeidslæring kan føre til ulike resultater. Ved hjelp av slike prosesser blir læreres bruk av samarbeidslæring pedagogisk, og samarbeidslæring blir noe mer enn en oppskrift eller teknikker for å strukturere klasserommet. Studien understreker til slutt hvordan prosjekter som har til hensikt å legge til rette for læreres profesjonelle utvikling ikke fungerer mekanisk, men kan ha ulik påvirkning på ulike lærere. Det er dermed et behov for fleksible og individualiserte design som tar høyde for at lærere har ulike behov som lærende, dersom prosjekter skal klare å bidra til varig pedagogisk bruk av pedagogiske modeller.

Abstract

In developing future physical education practices, it has been suggested that pedagogical models might help teachers improve conditions for students learning. In this thesis, I therefore explore how primary school teachers and students in Norway experience the implementation of one pedagogical model, namely cooperative learning. Although the research on cooperative learning has increased internationally, most studies report from short interventions. In contrast, this study reports from a two-year participatory action research project which adds knowledge about how teachers and students experience the model over time.

Three teachers, their students and myself through my role as a researcher-facilitator, participated in the study. Findings from the study show how the implementation of cooperative learning was experienced as problematic and challenging for both teachers and students. At the same time, the study shows how these challenges can be solved through systematic work over time. Enabling teachers to reflect was particularly found to be key in enhancing their understanding of and teaching through cooperative learning. Reflection enabled the teachers to collectively identify, and then find solutions to the problems that emerged during the project. The students' report that having clearly defined learning objectives was important for them to gradually begin experiencing cooperative learning as a relevant and meaningful approach. The findings overall show that cooperative learning is a suitable pedagogical model in order to realise some of the ambitions of the Norwegian curriculum for physical education.

In light of my theoretical framework, I argue that teachers must continuously move between having practical experiences and being engaged with reflections about how different ways of implementing cooperative learning might lead to different outcomes. Such processes enable the teachers' use of the model to be truly pedagogical, and cooperative learning represents something more than a recipe or certain techniques for how to structure the classroom. Finally, the study shows how projects that aim at developing teachers' pedagogical practices do not work mechanically but might have different impacts on teachers. Hence, there is a need for projects with flexible and individualised designs that take teachers different needs as learners into consideration, to facilitate teachers' sustained use of pedagogical models.

Preface

Klovner i kamp – a long walk [translated version of 'Langt å Gå']
Oh, it's a long way to go, and who knows if I'll ever reach the finish line?
It takes more than one log to make a fire – so come and walk with me.

Tell me, how do you eat a whale? One piece at a time
How to eat an elephant? One piece at a time
How do you walk to Nepal? One step at a time.
It can't go wrong, just believe that everything will be all right.

After being a PhD candidate for four years, I am left with several new questions. However, I am sure about one thing: just like it takes more than one log to make a fire, it takes more than one person to write a PhD! I, therefore, dedicate this section to all the people that, in various ways, have enabled me to complete my four-year long walk step by step, word by word. In different ways, you have enabled me to keep believing that everything would be all right and that I would one day reach the finish line.

'David', 'Erik' and 'Ole' (the teachers at 'Forest School'): Without you and your students, this project would not have been doable. I am deeply grateful for your willingness to take part in this study. I know that it was not always enjoyable, but I am impressed with the way you handled all of the 'messiness'.

My two supervisors, Kjersti Mordal Moen and Øyvind Førland Standal: Without a doubt, you are the two biggest reasons for why I was able to complete and submit this work. Thank you for all of your insightful comments, honesty, critique and patience over the last four years.

Ashley Casey: I am forever grateful for the multiple ways you have helped me over the last four years. You are an incredible scholar, but I am equally impressed by who you are as a human being.

All current and former members of the research group teaching and learning in physical education (TLPE): Thanks for your enthusiasm, questions and feedback on my work. You have definitely brightened up my days.

All my fellow PhD candidates: Thanks for all of our academic and non-academic conversations. It has been great, and I have learned a lot from you.

Lise Iversen Kulbrandstad, Tim Fletcher, Kari Smith and Siw Skrøvset: Thanks for your contributions as opponents at various seminars and master classes. They were all very helpful to keep my momentum up.

All colleagues at Inland Norway University of Applied Sciences and the wider academic community: Thanks for listening to me and for all your support, guidance, comments and questions. Thanks to all of you who have reviewed my work (whoever you might be). You have helped me improve as an academic.

To everyone involved in the Norwegian National Research School in Teacher Education (NAFOL): Thanks for all of the incredible experiences we have had together. A special thanks to all the organizers who have done a tremendous job.

My family and friends: Thanks for all the things we have done that has had absolutely nothing to do with my PhD. Hopefully, we can do more of that in the future.

Inga, my fiancée: I promise that we can finally start to plan our wedding next summer! I love you and look forward to our future together.

Finally, this thesis would not have been possible without Inland Norway University of Applied Sciences financing my work. A special thanks to everyone involved with the PhD programme in Teaching and Teacher Education.

Lars Bjørke

Hamar, 28.08.2020

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List of Abbreviations

CL	Cooperative Learning
PE	Physical Education
AR	Action Research
PAR	Participatory Action Research
MBP	Models-Based Practice

List of articles

Article 1

Bjørke, L., Standal. Ø. F., & Moen K. M. (submitted, 05.02.2020). 'Damn – why did we join this project?': Investigating physical education teachers' reflections on teaching and learning over a one-year participatory action research project.

Article 2

Bjørke, L., & Moen, K. M. (2020). Cooperative learning in physical education: a study of students' learning journey over 24 lessons. *Physical Education and Sport Pedagogy*. doi: 10.1080/17408989.2020.1761955

Article 3

Bjørke, L., Standal, Ø. F., & Moen, K. M. (2020). 'While we may lead a horse to water we cannot make him drink': three physical education teachers' professional growth through and beyond a prolonged participatory action research project. *Sport, Education and Society*. doi: 10.1080/13573322.2020.1799781

1 Introduction

This thesis explores teachers' and students' experiences from implementing cooperative learning (CL) through a longitudinal participatory action research (PAR) project in physical education (PE). Consequently, the research question guiding the thesis is as follows: *How do primary school teachers and students experience a longitudinal implementation of cooperative learning in physical education?*

I applied for a PhD position to conduct this particular project for two reasons. First, after working in academia for four years, my brief involvement with different research projects and reading research literature had provided me with a provisional picture of PE in Norway. This picture informed me that although much of what is being done in the name of PE is good, the literature particularly highlighted challenges related to how the subject is being taught and what the students actually learn from taking part in these practices. Having worked for six years as a primary school PE teacher, these were challenges that corresponded with my own and my former colleagues' practices. Second, while working as a primary school PE teacher, I struggled to find the relevance and usefulness of research. A few years later, after becoming a teacher educator, I came across the work of Kurt Lewin (1946). His descriptions of action research (AR), and particularly the emphasis on researching *with* practitioners instead of *on* practitioners, immediately appealed to me and my practitioner background. The idea for this PhD emerged in the intersection of these two reasons. More precisely, given that there are some challenges related to how PE is being practiced, I considered AR to be an appropriate way to address and find solutions to these challenges together with teachers.

After getting the PhD position, I reached out to the chief municipal education officer in an average-sized Norwegian municipality. We discussed possible PE departments that fit my criteria for participating in the project – namely, a wish to explore new pedagogical practices in PE. Our conversations eventually lead me to Forest School (pseudonym) – in which David, Erik and Ole (pseudonyms) constituted the PE department for grades 5–7 (ages 10–13). Based on their wish to explore a more student-centred approach to teaching PE, and my knowledge about CL as a student-centred pedagogical model, we agreed to implement CL as the pedagogical intervention for the project. Hence, the practical purpose of the project was to enable the teachers to explore a more student-centred approach to teaching PE through implementing CL.

Since the project is also a research project, the project needs to be relevant from a policy perspective and add new and relevant knowledge to the existing research literature. Hence, the first chapter of the thesis outlines policy documents and previous pedagogical research in PE and positions the project within these contexts.

2 Rationale for intervening through PAR using CL

By exploring policy documents and pedagogical research, I seek to outline a) the rationale behind choosing to intervene and b) why CL was chosen as the pedagogical intervention. In section 2.1, I present current policy documents to present the ideas and intentions about PE in Norway from a policy perspective. Next, section 2.2 investigates PE teachers' practices by considering pedagogical research that has investigated this issue. From an educational perspective, I argue that there is a need to develop and move beyond the dominating way of practicing PE as sports and the emphasis on merely keeping levels of physical activity high. Then, in section 2.3, I present models-based practice (MBP) as a possible way forward to address the concerns raised in the previous section by putting the educational dimension (i.e. the 'E' in 'PE') at the forefront of teachers' practices. In section 2.4, I present CL as the pedagogical model used in this thesis, followed by a presentation of previous relevant research on CL in PE. Based on the review of the literature on CL, I present the thesis' relevance, purpose and research question in section 2.4.3.

The review of the research literature outlined in this chapter has been an ongoing, iterative process, using different strategies for searching for literature at different stages of the project. First, a systematic search using keywords such as *teaching, learning, primary school, pedagogy, physical education* and *PE* alone and in combination provided a starting point. Then, at a later point, keywords such as *models-based practice, MBP, cooperative learning* and *CL* were used. The search involved various databases (such as ERIC, SPORTDiscus and Google Scholar), using both English and Norwegian keywords. Snowball search (Cohen et al., 2018) was helpful for finding studies that the search did not include.

2.1 The ideas of PE in Norwegian policy documents

By law, PE is a compulsory school subject in Norway (Lovdata, 2006). In addition to the regulations that apply for all school subjects, PE has been uniquely regulated since 'effort' became a part of the assessment criteria in 2012 (Lovdata, 2006, Norwegian Directorate for Education and Training [NDET], 2015a). PE is regulated through two additional educational acts: the core curriculum (Royal Ministry of Education, Research and Church Affairs, 2006)

and the curriculum for PE (NDET, 2015b). The current national curriculum for PE was introduced in 2006 before being revised in 2009, 2012 and 2015.[1]

Under these different laws and policies, primary schools are required to provide students with 478 hours of PE from grades 1–7 (6–13 years old). In practice, students typically have PE once (60–90 minutes) or twice (2 x 45 minutes) a week, usually inclusive of time spent in the changing rooms. The PE curriculum states that the purpose of PE is to facilitate students' *Bildung*[2] and 'inspire students to a physically active lifestyle and lifelong joy of being physically active' (NDET, 2015b, own translation). The purpose statement also suggests students should be able to 'sense, experience, learn and create with their bodies' through PE and highlights how the social dimension of physical activity makes PE an important area for 'promotion of fair-play and respect for each other' (NDET, 2015b, own translation). In other words, the purpose statement states PE is an educational subject in which students are supposed to learn, both individually and alongside their peers. These learning experiences from PE should enable students to maintain a physically active lifestyle beyond their education.

For grades 5–7, the context of this thesis, the subject is structured into two main areas: 'sport-related activities' and *friluftsliv*.[3] Within each of these two main areas, competence aims illustrate the competence students should possess after grade 7 – for example, 'be able to follow simple rules and principles for cooperation and collaboration' (NDET, 2015b, own translation). Most of the competence aims, such as the one above, are general and give the teacher autonomy to decide how he or she wants to teach. For example, there are few directions related to content, activities or teaching methods in the curriculum. At the same time, the purpose statement emphasises how students must 'develop competence through a broad selection of activities' (NDET, 2015b, own translation) and that students are supposed to learn in different ways. Consequently, without providing specific guidelines, the curriculum states teachers must offer

[1] In Norway, we are currently in the middle of renewing all school subjects. Consequently, when this thesis is published, a new core curriculum (Norwegian Directorate for Education and Training [NDET], 2017) and a new curriculum for primary school PE would have already been implemented (NDET, 2020). However, this project was conducted within the framework of the 2015 curriculum (NDET, 2015b).

[2] *Bildung* refers to the German tradition of self-cultivation and a process of both personal and cultural maturation.

[3] *Friluftsliv* is a Norwegian word. It is loosely translated as 'outdoor living' or 'open air life'. *Friluftsliv* characterizes Norwegian culture, with Norwegians embracing nature and enjoying the outdoors as a way of life.

a variety of activities and movement cultures and facilitate student learning using different teaching methods to successfully capture the breadth and depth of the curriculum.

In the guide to the curriculum in PE, the NDET (2015c) states there are four themes that all competence aims in the curriculum are related to 'fair play and cooperation', 'bodily learning', 'self-leadership' and 'competence and understanding'. Drawing on an example relevant to this thesis, the guide explicitly suggests to 'cooperate and contribute to other students learning' (NDET, 2015c, own translation) is key for PE. Furthermore, 'the students must practice their competence to cooperate in different activities and include other students regardless of their qualifications' (NDET, 2015c, own translation). In other words, the NDET (2015c) highlights the need for students to experience cooperation in different tasks and activities while working with different students.

2.2 Pedagogical practices in PE

Over the last few decades, several key scholars worldwide have raised their concerns about PE. Nothing could be more telling than the manner in which Tinning in 2001, Ennis in 2006, Lawson in 2008, Wright in 2014 and Quennerstedt in 2019 all used a part of their Cagigal Scholar Lectures at the International Association for Physical Education in Higher Education (AIESEP)[4] conference to confront 'the continuous worrying signs' for PE (Quennerstedt, 2019, p. 612). PE has been characterised as a subject in a legitimacy crisis (Siedentop, 2002; Tinning, 2002), with reference made particularly to how the content knowledge for PE is unclear and blurry.

Against that backdrop, I will present a selection of studies to paint a picture of what is currently known about PE practices. I explore how different judgements about the why(s), what(s) and how(s) for PE are made (Quennerstedt, 2019). Through my review of literature, I identify five dominating practices: 1) PE as doing sports; 2) PE as fitness training; 3) PE as a multi-activity approach; 4) PE as happy, busy and good; and 5) PE as direct instruction. Through my review of literature, I learned that these five practices, although with some local variations (Larsson & Quennerstedt, 2016), are dominant within both the international[5] and Norwegian contexts. I,

[4] Association Internationale des Écoles Supérieures d'Éducation Physique.
[5] The international context predominantly refers to studies conducted in Anglo-Saxon countries, as these countries dominate the international research literature in physical education (see Marttinen et al., 2019).

therefore, organise the next chapter around these five practices and relate each of them to the international and Norwegian contexts.

2.2.1 Research on PE practices

In many countries, PE as doing sports is a dominant way of practicing PE (Hastie & Mesquita, 2017; Kirk, 2010; Tinning, 2010; Ward & Griggs, 2018). For example, Gerdin and Pringle (2017) found that competitive sports dominate teachers' practices in New Zealand, while Hunter (2004) reported that Australian students perceived PE and sports as being the same thing. Hastie and Mesquita (2017) highlighted how survey studies from different countries indicate that students show an 'overwhelming preference for time spent on sport activities' (p. 68). They argued that sports and games introduce students to the most playful part of PE, in addition to providing an excellent opportunity for socialisation. At the same time, participating in PE as doing sports is also experienced as 'boring and irrelevant' (Hastie & Mesquita, 2017, p. 68). It is useful, however, to view these experiences in the light of Kirk's (2010) critique of the dominant model for teaching sports within PE, a model he argued is best characterised as PE as sport techniques. In these practices, the focus is on practicing isolated skills in decontextualised drills – for example, practicing chest pass and bounce pass in basketball without putting the students in situations that capture the whole intention of the activity (Kirk, 2010). Siedentop (2002) has previously criticised how the learning in these units rarely goes beyond the introduction phase and that students might end up doing the same introductory lessons 'again, again and again' (p. 372). Students themselves have reported that participating in these practices leads to higher levels of dissatisfaction (Rikard & Banville, 2006) and that they do not believe participating in PE increases their level of skill, fitness or understanding. Hence, participation in PE can be seen as being nonbeneficial for their participation in physical activities inside and outside of school (Dismore & Bailey, 2011; Gard et al., 2013; Rikard & Banville, 2006). Particularly, girls and boys with lower skills do not seem to appreciate PE as doing sports (Casey et al., 2014; Smith et al., 2009). PE as doing sports also seems to be a dominant practice within the Norwegian context. For example, Säfvenbom et al. (2015) found that PE practices follow the logic of competitive youth sport and argued that this logic gives students that are active in organised sports more positive attitudes towards PE compared to those who are not. This was later supported by Moen et al.'s (2018) study, which showed that students involved in organised sports have better experiences of PE than those who are not.

Other studies have problematised the focus on performance in these practices and argued that some students experience low levels of mastery and frustration, as certain skills (ones they might not possess or demonstrate) are valued over others (Elnan & Sando, 2014; Laxdal, 2020; Svendby, 2013).

Another dominant, but controversial, practice is PE as fitness training. Thorburn (2017) argued that in many Anglophone countries, PE programmes have become increasingly significant to policy-makers due to their perceived benefit to physical activity – facilitating an active lifestyle, healthy behaviours and personal well-being. Some researchers (for example, McKenzie, 2009; McKenzie & Lounsbery, 2009) have argued that due to the decreasing levels of physical activity among children and adolescents, PE represents a significant opportunity to enhance students' health. Others have problematised how an emphasis on fitness and the physical has been reduced to performative cultures, energy expenditure metrics, testing of physical abilities and surveillance of students' health within a neoliberalist rationale (Cale et al., 2012; Evans, 2013). In a similar vein, Quennerstedt (2019) argued that an 'exclusive focus on activity levels and heart rate levels puts questions of education into the background' (p. 612). A key challenge is thus to ensure students' learning experiences that do not have a one-sided focus on improving fitness levels but ensure educational and societal relevance (Thorburn, 2017). In Norway, several studies have shown how educational questions and considerations are subordinated to keeping levels of physical activity high and improve students' fitness (Aasland et al., 2017; Aasland & Engelsrud, 2017; Ommundsen, 2013). For example, Aasland et al. (2017) found that teachers' practices were derived from ideas and practices from a military/exercise physiology discourse, rather than from educational discourses. In another study, Walseth et al. (2015) found that using PE as an opportunity for physical training was desirable among the girls. Since the dominating sport emphasis made the girls feel excluded, they instead wanted PE to provide fitness training similar to what they get at the local gym. This value placed on high levels of physical activity is also mirrored in the way teachers interpret 'effort' in PE (Aasland & Engelsrud, 2017). Aasland and Engelsrud (2017) highlighted how effort is determined by observable physical actions – which, in turn, exclude educational processes such as reflection and metacognition, as these were not perceived as a part of students' efforts.

Another dominant way of practicing PE is through using a multi-activity approach (Ennis, 2014; Kirk, 2010; Quennerstedt, 2013). Through the multi-activity approach, students typically

receive about six lessons on one activity (for example, different team sports, dance or swimming) before moving on to the next. The rationale behind the multi-activity curriculum is that a diverse content provides opportunities to address different goals of PE and exposes students to activities they might find meaningful and end up participating in beyond their schooling (Kulinna, 2008). However, the multi-activity programme has received a growing amount of criticism 'for its lack of depth, inability to engage all students, and failure to offer a truly diverse array of activities' (Kulinna, 2008, p. 220). Ball games, gymnastics, fitness training and track and field dominate the subject (Annerstedt, 2008). In Norway, a lack of diversity in content seems to be characteristic of PE. Both Moen et al. (2018) and Säfvenbom et al. (2015) found that different ball games and fitness training dominate teachers' practices. Modern activities (such as parkour, free-running and skateboarding) and dance get little or no space within the curriculum.

Placek's (1983, p. 46) longstanding worry that 'keeping students busy, happy and good' is the only criteria for quality PE still seems to be relevant for some. For example, studies have shown that some teachers judge the quality of their lessons by student behaviour rather than by what students learn (Elliot et al., 2011; Ward, 2012). This was also found in Akuffo and Hodge's (2008) study, in which they revealed teachers value PE lessons free from conflicts and in which students are having fun. Other studies have shown that PE is sometimes perceived as a break from academic subjects to let off steam (Morgan & Hansen, 2008) and that PE is nowhere important in academic terms (Ward & Griggs, 2018). Although some teachers develop learning objectives for PE lessons, these are not always communicated to the students (Redelius et al., 2015). On the one hand, one might argue that many teachers succeed with the aspiration of PE being fun, as most students value PE as a fun way of being physically active (Kinchin et al., 2009; Ní Chróinín et al., 2019). On the other hand, research has shown that students' experiences of PE are enhanced when lessons include challenges and learning relevant for life outside of school (Beni et al., 2017; Kinchin et al., 2009; Smith & Parr, 2007) – for example, through developing motor competence or personally relevant competences (such as social and emotional skills) needed in cooperative activities and tasks (Beni et al., 2017). Similar to what international studies have demonstrated, most students in Norway have been shown to associate PE with play, self-expression and the joy of movement (Moen et al., 2018; Säfvenbom et al., 2015). Students have reported that PE is a recreational subject they value highly as a contrast and break from their academic and performance-oriented school lives (Lyngstad et al., 2019;

Røset et al., 2019). At the same time, not all students experience PE the same way, as 5,4% of girls and 2,8% of boys in grades 5–10 (ages 10–16) say they either do not like the subject or strongly dislike the subject (Moen et al., 2018). Moreover, even students in upper secondary schools (ages 16–19) have trouble viewing PE as something more than a break, which illustrates PE is not considered as a subject for learning (Lyngstad et al., 2019).

According to Ward and Griggs (2018), the emphasis on 'busy, happy, good' is further reinforced by the teacher's choice of teaching style. Due to the high number of students, teacher-centred teaching styles – in particular, direct instruction – are tempting and perceived as necessary for some teachers (Kirk, 2010). Teachers even choose direct instruction despite being aware of other more effective approaches to facilitate students' rich and deep learning experiences (Kirk, 2005). Choosing direct instruction, or the command style, also makes sense within a sport and fitness logic. For example, Griggs (2010) highlighted how sport coaches ensure participation among pupils without having the same educational expectations. Corresponding evidence has been found within the Norwegian context, as teachers seem to decide what to do (content) and how to do it (direct instruction) (Moen et al., 2018; Standal et al., 2020). This is exemplified in a recent observational study of 45 classes (Sæle et al., 2019) that highlighted how teachers mainly used direct instruction in full-class settings. For example, at the beginning of the lessons, the teachers presented the content and instructions (Sæle et al., 2019). Given the narrow content and traditional teaching methods, Standal et al. (2020) questioned what students learn through PE in Norway and, particularly, whether students are allowed to learn in depth.

2.2.2 Summary and moving forward

Although there are some differences between the international and Norwegian literature[6] (especially the emphasis on sport techniques internationally versus the emphasis on keeping levels of physical activity high in Norway), there are several similarities. Particularly relevant to this thesis is the concern about the educational value of current PE practices across various contexts. In Norway, this concern is discussed as the gap between the aspiration of the formal curriculum for PE and actual teaching practice (Aasland et al., 2017; Arnesen et al., 2017; Borgen & Engelsrud, 2015; Moen et al., 2018; Rustad, 2017). Hence, I believe that returning

[6] See Aasland (2019) for a more thorough discussion about the similarities and differences.

to Quennerstedt's (2019) AIESEP scholar lecture offers a way to connect the different points in section 2.2.1 together. Quennerstedt (2019, p. 613) expressed his concern that PE risks becoming

. doing sports without education,
. fitness instruction without education,
. physical activity facilitation without education,
. obesity prevention without education,
. facilitating fun and enjoyment without education or
. theoretical knowledge without movement

Importantly, my intention is not to finger-point nor blame 'those responsible'. Instead, my ambition is to face the reality and present an alternative to make PE more educational and meaningful for all students (Casey & Kirk, 2020). For example, O'Sullivan (2013) argued that 'much has been written about newer and innovative pedagogical approaches that can better assist children and youth experience quality physical education' (p. 1). In Norway, a few studies have shown how alternative practices might facilitate deeper and better learning (Østerlie, 2020) and more meaningful experiences in PE (Næss et al., 2014; Walseth et al., 2018). At the same time, there seems to be a need for more studies that explore how innovative practices might benefit student learning in Norway.

In the next chapter, I present MBP as a way of putting the educational element, the 'E' in PE, at the forefront of teachers' practices. I argue that an MBP offers a way of redirecting teachers' emphasis away from merely making students do sports and creating high levels of physical activity towards an emphasis on student learning in and across different learning domains. In other words, while the previous sections represent the rationale behind choosing to intervene, I now present the rationale behind why CL was chosen as the pedagogical intervention.

2.3 PE as an educational subject through MBP

In developing future PE practices, it has been argued that the focus should be on how to best promote educationally beneficial outcomes for students within the physical, social, cognitive and affective domains (Bailey et al., 2009; Kirk, 2013). These four domains have been positioned as the legitimate learning domains for PE, as learning within these is argued to

facilitate students' engagement with a physically active lifestyle (Bailey et al., 2009; Kirk, 2013). One way of creating pedagogical conditions that facilitate learning across these domains is for teachers to adopt a MBP (Casey, 2017; Casey & Kirk, 2020; Kirk, 2013). Before discussing the rationale behind MBP, an account of the key terminology that underpins MBP is given. It is important to get a grasp of 'the depth and breadth of this field' (Casey, 2017, p. 54). It is also important to acknowledge that these terms are interrelated and, to some extent, overlap, although Table 1 seeks to illustrate the differences.

Table 1. Key terminologies surrounding models-based practice

Term	**Definition**
Model	'A plan to carry out effective instruction with different goals, tasks and students. Each model has been designed and developed to help teachers to achieve different outcomes' (Jewett & Bain, 1985, p. 192).
Curriculum model	A general pattern for designing programmes that is based on a conceptual framework and which identifies learning goals and the programme structure (Jewett & Bain, 1985).
Instructional model	A unique way for a teacher to make and carry out teaching decisions leading to student learning in PE. 'Each model differs in terms of how they are designed, how they work, how learning occurs and when and where they can be used' (Metzler, 2011, p. 22).
Model-based instruction	The use of one model in a curriculum. It is a process by which the teacher purposefully aligns the desired outcomes with one teaching/instructional style (Metzler, 2011).
Multimodel curriculum	A teacher selects a main-themed curriculum approach that 'will most effectively meet their students' needs and their view of physical education' (Lund & Tannehill, 2015, p. 168). This process is repeated with every unit of work, which results in multiple models being used in the curriculum.
Pedagogical model	A term for the use of a model that is focused on the interdependent and irreducible four-way relationship between learning, teaching, subject matter and context. In other words, it does not place the focus solely on curriculum or instruction (Haerens et al., 2011).
Models-based practice	A mechanism or pedagogical approach through which to move away from privileging the PE subject matter (i.e. curriculum) or the teacher (i.e. instructional) and instead aligns outcomes with students, needs and the teaching/instructional style.

Adapted from Casey (2017, p. 55).

Dyson, Kulinna, et al. (2016) highlighted how MBP has been used on two levels – respectively at the curriculum level and the instructional level. At the curriculum level, MBP starts with identifying what students are supposed to learn, for example, for the span of one academic year. Then a teacher can select different models that are specifically designed to promote students learning those preferred learning outcomes. Dyson, Kulinna, et al. (2016) argued, 'MBP at the curriculum level provides a program with its mission, primary content, identity and infrastructure – all for the purpose of allowing more students to achieve its priority long-term learning outcomes' (p. 297). Examples of curriculum models are teaching for personal and social responsibility, CL, adventure education, outdoor education, sport education, among others (Lund & Tannehill, 2015). Models can also be used to guide teaching and learning within content units and/or individual lessons. At the instructional level, MBP promotes short-term

learning objectives. Dyson, Kulinna, et al. (2016) argued that MBP at the instructional level is used by teachers 'to align key instructional practices like class management, learning activities, social learning, pedagogical decisions, and assessment with specific unit and lesson objectives' (p. 297). PE has various recognised instructional models – such as, but not exclusively, tactical games, sport education, teaching for personal and social responsibility and CL (Metzler, 2011). Instructional models place the instruction at the centre of the models-based framework and seek to change the way teachers modify their behaviour and organisation of a programme (Metzler, 2011).

'Pedagogical model' is a term developed due to concerns that the use of the terms 'curriculum' or 'instructional' emphasised a change in terms of either content or the teacher (Haerens et al., 2011). Haerens et al. (2011) suggested the use of 'pedagogical model' and 'models-based practice' (p. 324), as the term 'pedagogical' highlights the interdependence and irreducibility of learning, teaching, subject matter and context (Haerens et al., 2011). That is, a teacher who teaches through pedagogical models does not only emphasise his or her instruction but also emphasise how students respond and the context where this practice is situated (Dyson & Casey, 2016). As this thesis reports on teachers' use of CL as a pedagogical model, I have opted to use the terms 'pedagogical model' and 'models-based practice' (MBP) moving forward.

Each pedagogical model has a main idea that encapsulates the character and focus of the model (Casey & Kirk, 2020). For example, the main idea for CL is for students to learn with, by, from and for each other (Johnson & Johnson, 2009). A pedagogical model has some critical elements that inform its shape and highlight its 'unique and essential features' (Casey & Kirk, 2020, p. 55). For example, a critical element for CL is positive interdependence, which refers to how all members of a group either succeed or fail together (Johnson & Johnson, 2009). Moreover, a pedagogical model 'identifies distinctive student learning outcomes and shows how these might be best achieved through their tight alignment with teaching strategies and curriculum or subject matter' (Kirk, 2013, p. 979). For example, CL might enable students to learn how they can contribute to other students' learning by working together in small groups or pairs (NDET, 2015b). Hence, pedagogical models can be used as an organising principle to build PE programmes around learning aspirations (Casey & Kirk, 2020) instead of using different activities, such as team sports or fitness training (Annerstedt, 2008; Kirk, 2010; Moen et al., 2018).

Contrary to learning objectives in the national or local curricula that focus on outcomes or competences, pedagogical models are developed through a process that begins with theorising about learning, then proceeds to creating a conceptual framework and designing models and concludes with utilising the model in the local curricula (Jewett & Bain, 1985). Thus, pedagogical models allow us to think of 'what should constitute a world of learning and how to go about making this world' (Macdonald, 1977, p. 11). It is not until the model has been used in a practical context and then revisited theoretically that it can then be recognised as a pedagogical model (Casey, 2017). By moving back and forth between the model, the framework and the theory, the idea of a model 'becomes truly pedagogical, as well as being [*sic*] iterative rather than prescriptive' (Casey, 2017, p. 58). In other words, a teacher must continuously experience the model at a theoretical level and at a practical level to make use of the model pedagogically.

The notion of models itself is not a new idea. In fact, almost 50 years ago, Joyce and Weil (1972, p. xiii) argued that there were 'approaches to creating environments for learning' that could be used to reach different educational purposes and ways of thinking. However, as Casey (2014) suggested, the shift towards MBP is still in its infancy:

> Currently, we [politicians, researchers, teachers, etc.] have failed to change what is done in the name of PE, and while MBP has the potential to be more the great white hope so many advocate rather than a white elephant, we need to do more to make this a reality. (p. 31)

Thus, although alternatives to delivering PE exist, and have existed for a while, they occur more frequently in books and research papers than in teachers' actual teaching. At the same time, Casey's (2014) claim is now six years old, and we must acknowledge that MBP has become more widespread, particularly in the in the Anglo-Saxon context. More recently, it has been argued that 'love them or hate them [pedagogical models] they appear to be here to stay' (Casey, 2017, p. 60). The positioning of pedagogical models has also been strengthened by five recent literature reviews exploring more than 180 studies (Casey, 2014; Casey & Goodyear, 2015; Harvey & Jarrett, 2014; Hastie et al., 2011, Pozo et al., 2018) showing how pedagogical models benefit student learning. Within the Norwegian context, however, only a few studies have explored how pedagogical models might work (Hordvik, 2018; Walseth et al., 2018).

2.3.1 Summary and moving forward

Although an argument for adopting an MBP is made in this thesis, I fully support Casey (2017), who suggested, 'that is not to say that excellent pedagogical practices do not occur outside of models-based practice' (p. 54). There are examples of great pedagogical innovation in the form of MBP, as well as other curriculum innovations. Motivated and innovative teachers have always, and will continuously, design their own pedagogical models even though they are rarely published and tested by others. While MBP involves the use of multiple models, prior research on the implementation of pedagogical models has shown how learning to teach through a new single model, as well as students learning to learn in new ways, takes time (Casey, 2014; Dyson et al., 2010; Fletcher & Casey, 2014). Given this evidence, implementing more than one model was considered beyond the scope of this project. The next section addresses how CL, the model chosen for this project, offer a pedagogical alternative to the traditional teacher-led sport and fitness–oriented pedagogy.

2.4 What is CL?

CL emerged in the 1970s due to concerns that students were rarely given the opportunity to use and develop their interpersonal skills, as classrooms were mostly structured in an individual and competitive way (Johnson & Johnson, 1983). In fact, this had been a concern from the turn of the 20th century. For example, Dewey (1972)[7] criticised schools for failing to create a culture of communication and cooperation, which he argued would have given students a stronger motive for learning. Dewey (1972) suggested there was 'no opportunity for each child to work out something specifically on his own, which he may contribute to the common stock, while he [*sic*], in turn, participates in the production of others' (p. 64). Dewey (1972) argued that humans are social creatures and facilitating social interaction and cooperation would make learners flourish and thrive together.

In contrast to individual and competitive learning environments, CL refers to students learning *with, by, from* and *for* each other in small heterogeneous (mixed gender, ability, ethnicity etc.) groups. More specifically, CL recognises that students have to interact *with* each other in positive ways to achieve the learning objectives. At the same time, learning through the model

[7] Dewey (1972) is a collection of his essays that was originally written just before 1900.

emphasises students doing much of the work *by* themselves (such as giving feedback or instructions), meaning they learn *from* each other in peer-based processes. Students must work *for* the group in order to maximise their own and others' learning, although some might learn more than others (Johnson & Johnson, 2009). Hence, while a major dilemma for teachers is how to engage all students in the learning process at the same time, CL presents a variety of classroom practices of how to structure the classroom, with the intention of all students being active learners (Metzler, 2011).The Organisation for Economic Co-operation and Development (2013) suggests CL is one of six innovative pedagogical approaches that should be employed in the 21st century to create effective student-centred learning environments.

> There are robust [positive] measured effects [on student learning] of co-operative forms of learning when is done properly. Additionally, the ability to cooperate and learn together should be fostered as a 21st century competence, quite apart from its demonstrated impact on measured learning outcomes. (OECD, 2013, p. 161)

In that respect, CL could be viewed as both a means to enhance academic achievement, and as an end itself (becoming cooperative humans) within education.

Today, CL is an umbrella term that encapsulates a variety of practices and approaches derived from different traditions. According to Casey and Quennerstedt (2020), the origins of CL should be credited to the works of John Dewey and Kurt Lewin. Dewey and Lewin represented two different epistemological positions, pragmatic and positivist, respectively, which led to a broad variety in early works on CL. Later, when Morton Deutsch's (1949) social interdependence theory become influential, more variations of CL emerged (Casey & Quennerstedt, 2020). The works of Deutsch, Dewey and Lewin represent a mixture of different epistemological positions underpinning CL. While Deutsch was influenced by behaviourism, and Dewey's pragmatic philosophy often took a constructivist perspective on knowledge, Lewin held a more positivist perspective on development psychology (Casey & Quennerstedt, 2020). In addition to starting from three direct junctures, the development of CL has occurred along four separate lines, creating different ways of conceptualising CL: 1) Johnson and Johnson's (2009) conceptual approach, 2) Slavin's (1985) curricular approach, 3) Kagan's (1992) structural approach and 4) Cohen's (1994) and colleagues' complex approach. While it is beyond the scope of this thesis

to explore all of these approaches to CL in detail,[8] Johnson and Johnson's (2009) conceptual approach needs to be outlined as the most influential approach to CL within the field of PE (Dyson & Casey, 2012, 2016; Casey & Quennerstedt, 2020). The use of CL in the PAR project investigated in this thesis also drew predominantly on the conceptual approach.

2.4.1 The conceptual approach to CL

Johnson and Johnson (2009) developed the conceptual approach to CL by drawing on Morton Deutsch's social interdependence theory. Deutsch (1949) studied goal accomplishment and motivation and advocated that how interdependence among goals is structured decides how individuals interact and their interactions determine their achievements. For example, when students are organised in cooperative groups, each individual's goals are closely connected to the other team members' performance and attainment of these goals. Deutsch's (1949) argued that when students in a group share common goals, the members have a membership motive to help other members of their group. This is because this is the only way they can succeed, or put another way, students either 'sink or swim together' (Deutsch, 2006, p. 24). Based on the social interdependence theory, Johnson and Johnson (2009) argued that teachers can learn five key principles (see Table 2) of how to structure a CL environment and then adapt these to fit their context.

Table 2. Key elements of cooperative learning

Element	**Description**
Positive interdependence	Students perceive they only can succeed if the other team members do. Students 'sink or swim together'.
Individual accountability	Each group member must complete their part of the group's total work.
Promotive interaction	Students help each other to reach the group's goals. They support each other, provide feedback, act appropriate, exchange ideas and consider other perspectives.
Social skills	Students learn to use interpersonal and small-group skills such as communication, the ability to accept differences, conflict resolution and the ability to trust each other.
Group processing	The group members reflect on what they have achieved, what they have done well and what they need to change or improve.

Adapted from Dyson and Casey (2016) and Johnson and Johnson (2009).

The first requirement for an effective cooperative lesson is that students realise they are *positively interdependent* (Johnson & Johnson, 2009). For instance, in football, the one who kicks the ball and the one who receives it are positively interdependent, as the kicker do not

[8] For more details about the different approaches to cooperative learning, see, for example, Dyson and Casey (2012) or Goodyear (2013).

succeed unless the receiver succeeds and vice versa. In other words, both have to succeed to gain mutual success, as they either 'sink or swim together'. The second element, *individual accountability*, concerns making every student accountable for finishing their assigned part of the group's total work. Dyson and Casey (2016) claimed, 'we [teachers] often hope that students are individually accountable or answerable to some improvement' (p. 5). However, to move beyond making educated guesses about each individual's contribution, ensuring individual accountability needs to be explicitly planned for. For example, in creating a dance routine, each member of the group might be accountable for creating one part of the final routine. The third element is *promotive interaction* among the group members. CL situations require face-to-face, toe-to-toe or knee-to-knee interactions in which students promote each other's learning (Dyson & Casey, 2016). This could, for example, be done either by expecting all students to encourage and support each other or by providing one or two students within each group to take the role of 'the encourager'. *Interpersonal and small-group skills* highlight the importance of enhancing students' social skills to establish effective groups. To enhance these skills, students must be given tasks in which they listen, share decision-making, take responsibility, give and receive feedback, lead, follow and encourage each other. For example, students could be given the task of discussing how they, as a team, can improve their defence in a basketball game. The final element of CL is *group processing* – which, according to Dyson and Casey (2016), is the most unique and perhaps the most important element of CL. Group processing can be seen as a guided process in which students reflect and discuss their learning process. This process is student-centred, meaning it is guided by the students rather than driven by the teacher. It involves the group members working together to construct meaning from the learning task they have participated in and discussing what they, as a group, did well and what they need to improve in future lessons.

A concern, however, has been that these five elements alone do not provide teachers with sufficient information to facilitate legitimate cooperative experiences with their students (Goodyear, 2013). Since the literature on CL in PE have suggested that three additional features (see Table 3) might support teachers in creating cooperative classrooms, these three were planned for and implemented with the students in this project (Dyson & Casey, 2012, 2016; Goodyear, 2013).

Table 3. Additional features of cooperative learning

Feature	Description
The teacher as a facilitator	Instead of merely getting instructions from the teacher, students learn from each other. At the same time, the teacher needs to interact with the groups to support student learning and help them overcome challenges that arise.
Heterogeneous groups	Students work in mixed groups in terms of ability, gender, ethnicity and social relations.
The selection of a cooperative learning structure	In planning the lesson, the teacher selects a defined structure of how to organise the classroom, such as jigsaw (Aronson et al., 1978) or student team achievement division (Slavin, 1995)

Adapted from Dyson and Casey (2012, 2016).

More details about how CL was implemented in accordance with the five key elements and the additions features in practice will be outlined in the Methods section (section 4.4).

2.4.2 CL in PE

Despite the well-documented positive effects of using CL across different school subjects (Johnson & Johnson, 2009), it was not until the beginning of the 21st century that CL began to gain momentum in PE (Dyson & Casey, 2012, 2016). Based on their experiences, as well as other teachers' and researchers' experiences, Dyson and Casey (2012) tentatively defined CL in PE as follows:

> A pedagogical model that, through its five elements, explores the social-cultural significance of human movement through the use of individual and group learning outcomes to enhance student development, interaction and task-mastery within the physical, cognitive and affective domains. (p. 173)

Since the early 2000s, a growing number of research papers exploring various aspects of the use of CL have secured the model's place within PE (Casey & Goodyear, 2015; Casey & Quennerstedt, 2020). Only in the last five years, two review papers have investigated the implementation of CL (Bores-García et al., 2020; Casey & Goodyear, 2015). In the next section, I explore what we have learned from research on CL in PE. I have chosen to include a few studies that have investigated teachers' experiences from implementing other models. This is relevant for understanding the challenges teachers face as their teaching in PE undergoes a conceptual shift.

2.4.2.1 Research on teachers' experiences of implementing CL in PE

Teachers' role in CL is to facilitate student learning (Dyson & Casey, 2012, 2016; Goodyear & Dudley, 2015) by empowering students to take responsibility for their learning (Bähr & Wibowo, 2012). In other words, the teacher must enable students to explore different learning tasks on their own and adopt the role of the facilitator or the guide on the side (Goodyear & Dudley, 2015). Learning to teach through CL has shown to be a labour-intensive process that requires significant time and energy investments. More specifically, studies have shown how teachers learning to plan lessons in accordance with CL and learning how to solve their new role as facilitators of the lessons requires much hard work and effort over time (Casey, 2014; Casey et al., 2009; Dyson, 2001, 2002; Dyson, Colby et al., 2016; Goodyear, 2017; Ovens et al., 2012). In the process, some teachers experience being like 'beginning teachers again' (Casey, 2014, p. 29), as they have little or no previous experiences to draw on, and others feel their initial expectations for implementation are not fulfilled (Hortigüela-Alcalá et al., 2020). Feelings of 'frustration, vulnerability, and doubt' (Fletcher & Casey, 2014, p. 417) seem more or less inevitable as the teachers step out of their comfort zones. Particularly, it seems adopting the role of a facilitator is challenging, and teachers report they are less confident taking this role compared to being teachers in their traditional teacher-led pedagogy (Casey, 2012; Casey & Dyson, 2009; Cohen & Zach, 2012; Dyson, 2002; Dyson, Colby et al., 2016).

Another issue is the amount of training needed to successfully implement CL (Casey et al., 2009; Ovens et al., 2012). In Dyson, Colby et al.'s (2016) investigation of generalist teachers' implementation of CL, a lack of training in PE and a lack of understanding of CL emerged as two barriers in implementing the model. Although some of the teachers had previously received specific training in CL, teachers' understanding of CL remained a challenge throughout the entire one-year duration. Similar challenges were also found in Hastie and Curtner-Smith's (2006) investigation of the implementation of a hybrid of sport education and the teaching of games for understanding. The findings made the authors suggest that 'a teacher would have to possess superior content and pedagogical content knowledge' to successfully implement models (Hastie & Curtner-Smith, 2006, p. 2). These studies are illustrative of the concern that models are so complex that they are like 'an aeroplane that only a test pilot can fly' (Launder, 2001, p. 13).

Due to the difficulties associated with CL implementation, some have modified CL to fit their purposes (Casey, 2017; Casey & Goodyear, 2015). More specifically, some teachers implement CL in a way that is not consistent with the model's key elements (Casey & Goodyear, 2015). Similar evidence was reported in Curtner-Smith et al.'s (2008) investigation of the implementation of sport education. The study found three ways in which the model was implemented: 'full version, watered-down version and cafeteria style' (p. 97). In other words, teachers' implementation of sport education ranged across a continuum from as originally intended – through selecting a few of the model's characteristics to more or less giving their old practices a new label. Given these various ways of implementing models, Hastie and Casey (2014) highlighted the need for assessing model fidelity. More precisely, model fidelity refers to giving detailed information on how a model (such as CL) has been implemented to get a deeper understanding of the claimed impact on student learning (Hastie & Casey, 2014).

When teachers maintain high model fidelity, a significant challenge is to sustain the change beyond what is referred to as the honeymoon period of pedagogical innovation (Casey, 2017; Goodyear & Casey, 2015). In other words, after the first wave of excitement and enthusiasm about the new pedagogical approach has settled, most respond to the challenges that begin to arise by returning to their traditional approaches (Casey, 2014). At the same time, there are examples of studies that have succeeded in creating change beyond the honeymoon period. For example, Casey et al. (2009) investigated how Casey's engagement with AR enabled him to develop a more student-centred pedagogical practice through CL. Helped by an AR approach, with the coauthors acting as critical friends, Casey was challenged by his own reflections, his critical friends and students' thinking and responses. This supports evidence from several other studies showing how engaging teachers with the reflective processes – for example, through AR – facilitates teachers' learning and delivery of CL (Bodsworth & Goodyear, 2017; Casey, 2010; Dyson, 2002; Goodyear, 2017, Goodyear & Casey, 2015; Velázquez-Callado, 2012; Zach & Cohen, 2012).

At the same time, Casey (2012) highlighted that although insider AR is key for educational change, it needs to be supported by collaboration with others inside or outside of schools. Corresponding evidence can be found in the already mentioned study by Dyson, Colby et al. (2016). Although the generalist elementary school teachers did experience challenges in implementing CL, the study highlights how the ongoing and embedded support teachers

received from a critical friend and the professional learning group at the school enabled the teachers to gradually enhance their delivery of CL over the one-year duration. A long-term university–school collaboration has also been highlighted elsewhere in Dyson's research (Dyson & Rubin, 2003; Dyson & Strachan, 2000, 2004; Ovens et al., 2012) as an enabler to overcome teachers' challenges with implementing CL and move into a phase of continuation. The role of collaboration was also highlighted by Goodyear and Casey (2015). In their study, six secondary school teachers in the UK taught CL over four units of six to eight lessons during one academic year. Goodyear took the role of a boundary spanner to facilitate the teachers' professional development by engaging them with PAR. The study suggests that pedagogical innovation with change is possible through 'sustained support from a boundary spanner who facilitates teacher learning, encourages open dialogue (between members of a department, students and colleagues within the school) and subsequently aids the emergence of a CoP [community of practice]' (Goodyear & Casey, 2015, p. 199). More recently, Goodyear (2017, p. 93) highlighted that '(a) individualized (external) support, (b) departmental (internal) support, and (c) sustained support' is key to help teachers develop their teaching through CL.

Although the studies above have provided some knowledge about how teachers learn to use CL, current investigations have primarily focused on the development of new curricular approaches and student learning (Casey, 2017; Casey & Goodyear, 2015). Hence, more knowledge about how teachers learn to use CL particularly beyond the first unit of implementation is needed. Before discussing how this thesis seeks to address this issue, changing practice does not only involve teachers teaching in a different way but also involves students learning in a new way. Hence, the next section addresses previous research on student experiences of learning through CL.

2.4.2.2 Research on students' experiences of learning through CL

In their review of literature, Casey and Goodyear (2015) concluded that previous research on students learning through CL has shown CL can facilitate learning in all four legitimate learning domains of PE. Students learning through CL was summarised as 'an academic achievement (an ability to apply and understand content), interpersonal skill development and relations (communication skills and/or peer relations), enhanced participation (engagement with learning tasks), and an improvement in young people's psychological health (self-esteem and/or motivation)' (Casey & Goodyear, 2015, p. 57).

More specifically, several studies have shown how CL facilitates students' social learning, for example, through developing listening skills, empathy and respect for their peers, developing the ability to share ideas and being able to collectively construct understanding and meaning (Barrett, 2005; Bodsworth & Goodyear, 2017; Casey et al., 2009; Casey & Goodyear, 2015; Darnis & Lafont, 2015; Dyson, 2001, 2002; Dyson et al., 2010; Dyson et al., 2020; Dyson & Strachan, 2000, 2004; Goudas & Magotsiou, 2009; Grenier & Yeaton, 2012, 2019; Guzmán & Paya, 2020; Sánchez-Hernández et al., 2018; Wallhead & Dyson, 2017). The development of these social skills has been found to act as a catalyst to support students' learning within other domains (Barrett, 2005; Dyson 2001, 2002; Dyson et al., 2010; Lafont, 2012; Goodyear et al., 2014). For example, Lafont (2012) highlighted how students' increased communication skills facilitates improved understanding of their motor skills. Casey and Goodyear (2015, p. 63) acknowledged that 'although there is not definitive timeline for this', learning the social skills needed for constructive learning processes through CL takes time. For example, in Casey et al.'s (2009) study, it took a few weeks before the students were comfortable with learning alongside their peers. Moreover, specific socials skills (i.e. listening or giving feedback), and how students are supposed to learn these skills, must be planned for explicitly, as this does not happen by chance (Casey & Dyson, 2009; Dyson & Rubin, 2003).

Dyson (2001) showed how implementing CL has helped to create a trusting and respecting class atmosphere and that 'students learned to care about and take responsibility for others' skill improvement' (p. 278). The study also shows how students considered the encouragement from their teammates as important for their confidence and enhanced their motivation for participating even when they struggled with completing the tasks. Fernández-Río et al. (2017) later reported similar findings, showing how CL supported the creation of a cooperative environment that fostered motivation, relatedness and enjoyment. In another study, Goudas and Magotsiou (2009) found that students who participated in CL lessons developed positive attitudes towards group work in PE. At the same time, Fernández-Río et al.'s (2017) study shows how CL can be experienced as a disappointment when some of the group members do not contribute to reaching the group's common goals.

Several studies have highlighted how CL is an inclusive approach to teaching PE that promotes positive learning experiences for all students, regardless of their abilities (André et al., 2013; Dowler, 2012, 2014; Dyson, 2001; Dyson et al., 2010; Grenier et al., 2005; Grenier & Yeaton

2012, 2019; Velázquez-Callado, 2012). For example, Velázquez-Callado (2012) found that with support from their peers, students with lower motivation 'achieved goals that they initially doubted they would be able to do' (p. 93). The study shows how using different roles can enable students with special needs to establish a relationship with their peers – which, in turn, leads to increased participation. The inclusion of students with disabilities has been explored by several studies (André et al., 2011; André et al., 2013; Grenier et al., 2005; Grenier & Yeaton, 2012, 2019). For example, Grenier et al. (2005) argued that when teachers are familiar with students' disabilities and select appropriate CL structures, all students can benefit from working in CL groups. More recently, Grenier and Yeaton (2019) argued that CL makes it possible for everyone, regardless of their ability, to succeed in PE. They suggested that by listening and cooperating with their peers, students learn to respect everyone's differences. In a similar vein, André et al. (2013) found that CL impacted cooperative behaviours and acceptance among students through risk-taking activities. Moreover, Dowler's (2012, 2014) works show that sharing responsibilities, contribution and resources enables equal participation among students with and without documented disabilities in reaching the group's common learning objectives.

Another finding in the literature is related to the role of learning objectives in creating a cooperative class environment (Darnis & Lafont, 2015; Dyson, 2001, 2002; Dyson & Strachan, 2000). More specifically, Dyson (2001) found that students began to reflect on learning objectives and how having both psychomotor and social skills make students value 'both content achievements and cooperative success' (p. 270). Darnis and Lafont (2015) showed that group goals enhance the social interactions between students – which, in turn, supports their motor learning. At the same time, Dyson's (2001) study highlights the need for teachers to create a shared understanding of goals with students.

Dyson et al. (2010) identified group processing as an important facilitator for student learning, for example, as students discuss tactics during gameplay. This supports previous research by Lafont et al. (2007), who highlighted the role of group processing to facilitate motor and tactical skills. Moreover, although Sutherland et al. (2014) argued that it might be difficult to find time for and prioritise group processing regularly, group processing needs to be included for CL to reach its full potential. Taking these ideas further, Sutherland et al. (2019) recently suggested that when students are familiar with group processing, 'it fosters an environment in which all

group members are engaged in the conversation, identify what behaviours help or hinder group work, and recognize how to apply their knowledge to life beyond the gymnasium' (p. 25).

Several studies have shown how CL facilitates active, social and creative learning processes (Bodsworth & Goodyear, 2017; Casey & Goodyear, 2015; Dyson et al., 2004; Dyson & Strachan, 2000, 2004; Fernández-Río & Méndez-Gimenéz, 2012; Goodyear, 2013; Gorucu, 2016). CL tasks enable students to actively make decisions, think critically and solve problems together (Dyson et al., 2010; Dyson & Casey, 2012; Fernández-Río & Méndez-Gimenéz, 2012). These tasks are social in nature, as students together construct meaning and understanding in close proximity to one another. In contrast to a teacher-led 'do-as-I-do' pedagogy, creativity is stimulated by students discovering how tasks can be solved themselves and being responsible for creating parts of games and activities (Dyson et al., 2004; Dyson & Casey, 2012; Dyson & Rubin, 2003). Bähr and Wibowo (2012) argued that CL allows students to understand how their experiences are relevant and meaningful and how their experiences are transferable to other contexts (Bähr and Wibowo, 2012).

Through the works of Casey (2010, 2012, 2013; Casey & Goodyear, 2015), Dyson (Dyson, 2001, 2002; Dyson et al., 2020; Dyson & Rubin, 2003; Dyson & Strachan, 2000, 2004) and Goodyear (Goodyear, 2013; Goodyear & Casey, 2015) with colleagues, we begin to understand how students learning can be deepened when CL is implemented sequentially and over longer periods. However, more research is needed to better understand how students can benefit from a sustained implementation of CL (Bores-García et al., 2020; Casey & Goodyear, 2015).

2.4.3 Relevance, purpose and research questions

Although research on the use of CL has increased significantly, more knowledge is still needed to better understand the place of the model within PE (Bores-García, 2020; Casey & Goodyear, 2015). More precisely, one of the conclusions in Goodyear and Casey's (2015) review of literature on the use of CL was that more research is needed on teacher's use of the model, particularly beyond the first few lessons of implementation (Casey & Goodyear, 2015). By following three PE teachers closely over a two-year PAR project and one year beyond the intervention, this thesis aims to add more knowledge about how teachers experience the implementation of CL over a prolonged period.

In a similar vein, although student learning through as CL have been researched to the extent that we might conclude that it 'work' (Bores-García, et al., 2020; Casey & Goodyear, 2015; Dyson & Casey, 2012, 2016), most of these studies are short, standalone empirical studies. These studies typically report on students' learning for four to six weeks (Casey & Goodyear, 2015), and one of the main conclusions of both Bores-García et al.'s (2020) review and Casey and Goodyear's (2015) review of the literature on CL was that more knowledge about students learning that results from a longitudinal use of the model is needed. To address this gap, this study investigates students' experiences of learning through CL over 24 lessons and across four related intervention periods over two academic years.

Altogether, the overarching research question guiding the thesis is as follows:

> *How do primary school teachers and students experience a longitudinal implementation of cooperative learning in physical education?*

The research question guided the planning and implementation of CL through the PAR approach. It also guided the data analyses – which, in turn, enabled me to write three individual articles. More details about the articles can be found in Table 8.

In the next chapter, I present John Dewey's educational theory, which enabled me to investigate teachers' and students' experiences from the project. Within the field of PE, using Dewey's approach as a theoretical framework has been proposed as a constructive way forward for investigating students' experiences from CL (see Casey & Quennerstedt, 2020) and exploring teachers' experiences from professional development activities, such as PAR (see Armour et al., 2017).

3 A Deweyan framework

In this chapter, I explore three key concepts in Dewey's educational theory. First and foremost, I explore the concept of experience as the key theoretical concept for this thesis. After that, I discuss his concept of reflection – which, according to Dewey (1916), is key for learners to create meaning and learn from experiences. Finally, I address his concept of growth as the overall purpose of educational activities. Although Dewey predominantly used the word *child* in his writings, I use *the learner* in this chapter to relate his theories to both students and teachers in this study. The theory influenced this thesis in several ways: 1) in making methodological choices throughout the project, 2) in the analytical procedures and 3) in connecting methods to the findings of the thesis.

3.1 Experience

Dewey (1916) argued that education should be seen as a reconstruction of experiences that 'increases [the learners'] ability to direct the course of subsequent experience' (Dewey, 1916, p. lvi). However, although Dewey (1938) believed that all genuine education takes place through experiences, not all experiences are equally educative. For Dewey (1938), an educative experience is the kind of experience that lives on in subsequent fruitful and creative experiences. Educative experiences, therefore, might create curiosity, open up for new perspectives, expand our boundaries and create conditions for further growth. As an example, educative experiences might promote a wish for, and ability to, continuously learn and grow as a teacher. Alternatively, other experiences are mis-educative as they might delimit, arrest or distort possibilities for further growth. For example, a teacher who experiences how direct instruction is comfortable, and maybe even effective under certain criteria, might end up using the same approach in all situations. Although the teacher might develop his skills in using direct instruction, the teacher might have become slack and developed the attitude of not seeking to develop alternative pedagogies (Dewey, 1938).

Dewey (1938) argued that the quality of the experience, or the educative value of the experience, is determined by the principle of interaction and the principle of continuity. These principles were seen as 'the longitudinal and lateral aspects of experience' (Dewey, 1938, p. 44), and the educative significance was determined by their active union with each other.

The principle of interaction highlights how there is always an interaction between the person having the experience and the environment. Dewey (1938) suggested, 'experience does not happen in a vacuum' and 'there are sources outside an individual which give rise to experience' (p. 40). The conditions in which an experience takes place is shaped by the previous experiences of the environment.[9] For example, how students experience CL are shaped by how they have previously experienced tasks in PE – for example, whether they have been cooperative or competitive in nature. At the same time, different learners have different prior experiences as they enter the same situation. Some learners have positive experiences from cooperating, while others do not – which in turn, influences the individuals' experience of cooperating. Dewey (1938) also reminds us how each individual that enters the same situation holds certain 'ends-in-views'. For example, some might enter a task with an ambition of beating others, while others might wish to experience how a team can support each other. Dewey (1938, p. 27) suggested there is always an element of 'agreeableness or disagreeableness' between the environment and the learner having the experience. To have an educative value, he suggested experiences should not frighten the learner but, at the same time, be more than just enjoyable.

The other principle for determining the quality of the experience is the principle of continuity of experiences, which highlights how all experiences live on in future experiences (Dewey, 1938). Dewey (1938) suggested, 'the principle of continuity of experience means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after' (p. 35). For Dewey (1916), experiencing is a continuous and cumulative process that is a fundamental condition for development and growth. Although the principle of continuity highlights how experiences are always connected to prior and future experiences, his concept of habit and plasticity is key to understanding how learners actually learn from subsequent experiences. Essentially, the learners' plasticity is seen as 'the ability to learn from experience: the power to retain from one experience something which is of avail in coping with the difficulties of a later situation' (Dewey, 1916, p. xxxiii). More precisely, plasticity refers to that

[9] Dewey (1938) held a broad perspective on the environment, defining it as 'whatever conditions interact with personal needs, desires, purposes, and capacities to create the experience which is had' (p. 44). The environment could thus be other people, a topic of discussion, tools, materials or books that provide the external conditions of the situation.

> what he [or she] has learned in the way of knowledge and skill in one situation becomes an instrument of understanding and dealing effectively with the situations which follow. The process goes on as long as life and learning continue. (Dewey, 1938, p. 44)

For example, to enable students to learn from a cooperative situation, a teacher could challenge students to identify which actions and behaviours that promoted or constrained their group work and how they could enhance their cooperation in future lessons. Dewey (1916) considered plasticity as a prerequisite for learners to acquire new habits. According to Dewey (1938), habits can be seen as something that guides what we do and who we are. Habits are composed of acts that unfold in time, and to form a habit, a learner must go through gradual and cumulative change via a series of acts. As a relevant example for this thesis, through experiencing a broad variety of cooperative situations and according to a change in circumstances (such as working with different peers on different tasks and in different group sizes), learners might develop cooperative actions, which eventually manifests into habits. These habits can never become routines, as situations and acts will always vary and never repeat themselves. Consequently, old habits can be modified, adjusted and developed, or new habits can be acquired. For Dewey, these processes are expressions of growth.

Importantly, the active element of experiencing alone (the act of doing) is not enough if learners are supposed to construct meaning and learn from experiences (Dewey, 1916). As an important clarification, Dewey argued that experiences need to be understood through the peculiar combination of an active element and a passive element. While the active element of an experience is trying or experimenting (the act of doing), the passive element is seen as undergoing or suffering the consequences of the actions. In saying this, Dewey underpinned how merely doing something will not result in an experience that creates learning. Instead, Dewey (1916) claimed that 'mere activity does not constitute experience […] Experience as trying involves change, but change is meaningless transition unless it is consciously connected with the return wave of consequences which flow from it' (p. ci). By transferring these ideas to teachers' professional development, a teacher that merely 'does' a lesson or unit with CL with his students does not automatically learn from it. For Dewey (1916), no experience has meaning without some reflective considerations, and reflections are a way of thinking about the experience to learn from it. To learn, the teacher must reflect about the actions taken in lessons and why these actions led to a certain outcome since when we do something with a thing, the

thing does something with us in return as ‘we suffer or undergo the consequences’ (Dewey, 1916, p. ci). The value of the experience, therefore, resides in the connections made between the two phases of the experience. Through a process of reflection, teachers might, for example, develop their own theory on how to facilitate students’ development and growth through CL. This theory is dynamic and incomplete, and when teachers face new situations in which the theory is no longer sufficient, new reflections might enable teachers to refine existing theories or create new ones. Since reflection is key for learners to construct meaning and learn from experiences, the next section investigates how Dewey (1916) conceptualised reflection more precisely.

3.2 Reflection

The purpose of reflection, according to Dewey (1916), is to help learners move from a situation of perplexity to a state of clearness and harmony. For this to happen, he suggested that reflection is a particular way of thinking and something more than just ‘puzzling’ over something. In other words, a teacher reflecting on a CL lesson in a Deweyan sense needs to do more than just remember the events that occurred. This is mirrored in Dewey’s (1910) definition of reflection as an ‘active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and further conclusions to which it leads’ (p. 6). It is also important to acknowledge that a premise for reflection is that the learner actually reveals the potential significance of an experience. For example, a PE teacher might help their students reveal the value of a cooperative experience by asking reflective questions about how their group work led to a certain outcome. The process of reflection itself can be understood through six phases.

1. **Experiencing:** Since the person reflecting is always involved in an incomplete situation, perplexity, confusion and doubt is always present.
2. **Interpreting spontaneously:** There is always a tentative and spontaneous interpretation of the present experience.
3. **Defining the problem:** Defining problems and questions that arise out of the experience had.
4. **Generating explanations:** Possible explanations and answers to the defined problems and questions.

5. **Generating a full-blown hypothesis:** A careful consideration of all available data to make the initial problem more accurate and consistent.
6. **Experimenting:** Take a stance upon the projected hypothesis in order to plan actions in the situation, doing and consequently testing the hypothesis.

(Adapted from Dewey, 1916, p. cix; Rodgers, 2002, p. 851).

The first phase, experiencing (as outlined in the section above), refers to everything that happens when humans interact with their environment. As soon as a learner is in an experience, a spontaneous interpretation of the experience occurs (phase two). In this phase, suggestions based on previous experiences (continuity of experience) flow to mind. Dewey (1910) argued that to stop the reflective process at this phase would be irresponsible, as reflections lead to actions and actions based on spontaneous and tentative interpretations are often suboptimal and might even do harm. Instead, Dewey (1910) highlighted the role of time between thinking and actions, especially for inexperienced learners. In phase three, the learner must distance himself or herself from the experience to get a better overview of the whole (Dewey, 1910; Rodgers, 2002). Dewey also highlighted how the visible facts of the experience become objects for thinking as 'one moves from an impressionistic "sense" of things to an articulated idea' (Rodgers, 2002, p. 853). Then, in the fourth phase, the learner moves into generating possible explanations by revisiting the suggestions made in phase two and rejecting, adjusting or making them more accurate. At this point, the meaning of the experience is connected to meaning constructed from other experiences. The learner draws on other sources of information outside of himself or herself – such as colleagues, books or other materials that help to broaden and deepen the understanding of the experience in question. Connections are made, which broadens and deepens the learners' meaning of the experience. The fourth and fifth phases overlap, and they can be hard to distinguish. However, the fifth phase is more focused and intense (Rodgers, 2002). These two phases together particularly separate reflection from other modes of thought and are consequently essential to distinguish the pedagogical value of a reflection. Through a process of careful thought of considerations, Dewey (1916) argued that these reflections can produce controlled guessing, instead of incidental actions based on immediate interpretations. At the same time, he acknowledged that no reflections are ever capable to predict consequences with complete accuracy. The final phase, experimentation, is vital to fully grasp Dewey's perception of reflection as an approach that involves action. In contrast to routine action, actions based on a process of careful assessment and thought are intelligent actions. This final phase

makes it possible for the learner to reach the state of clearness and harmony, as he or she finally feels that the meaning constructed actually makes sense and can be useful in future experiences. However, Dewey (1916) warned that in practice, new questions, more problems and new ideas often emerge out of testing the personal theories. Reflection could thus be seen as a cyclical process in which reflection is a full circle; the experimental phase is the new experience, which marks the beginning of a new circle.

At the same time, Dewey (1916) held that just thinking without having to express ones' thoughts to others should be seen as an incomplete act. Thus, just taking a CL lesson and then reflecting on it individually is, at best, suboptimal, according to Dewey. Instead, he argued that the meaning constructed from a lesson needs to be articulated and shared with a broader audience. Since learners have different internal conditions upon entering an experience, different meanings are constructed out of the 'same' experience by different learners. For example, two students in the same CL group might experience the same task differently depending on their previous experiences of cooperation. In articulating or formulating an experience, the learner needs to see the experience from different angles. When done successfully, learners communicate their experience to others in a way that helps other learners to construct and appreciate new meaning with regards to the experience in question. Thus, by sharing reflections in communities, the individual learner's horizon of experience is broadened and deepened. For example, when learners share their experiences from a CL lesson, different, and maybe even conflicting, perspectives could then create a deepened understanding and meaning of the experience had.

According to Dewey (1916), the larger purpose of education as a reconstruction of experiences is growth on the individual and societal levels. In the last section, I, therefore, outline his concept of growth, which challenges the view of education as being equal to reaching predetermined objectives and instead suggests education should be viewed as an ongoing process without any particular end.

3.3 Growth

Dewey (1916) challenged the perception that development has an end point by viewing education as growth. Dewey (1916) defined growth as a 'cumulative movement of actions toward a later result' (p. xxx) and argued that 'the criterion of the value of school education is

the extent in which it creates a desire for continued growth and supplies means for making the desire effective in fact' (p. xxxix). He was critical of how goals were perceived as some kind of completion and perfection and how the journey towards reaching these goals was not considered to have an educational value in itself. In other words, Dewey (1916) criticised how growth within education was considered to have an end – 'instead of being an end' (p. xxxviii). As an example relevant to this thesis, Dewey would probably be critical towards PAR projects that view learning to teach through CL a specific objective for teachers to reach. Instead, he might have suggested that emphasis should be on creating a wish for continued development and growth, in and beyond the duration of the project.

Dewey (1916) suggested that when development is measured against predefined standards, once you have reached the end point, no more development is needed – or even possible. In contrast, Dewey (1916) held that no learner is ever finished, matured or complete. He suggested that every adult would reject, or even be hurt by, the claim that they have no more chance of growing. Instead, he viewed growth as a continuous and ongoing process without any end station or something that can ever be fully achieved since the world is always changing. For example, a teacher is never complete but always in a process of becoming since the school context is always changing (i.e. new students or a new curriculum). Dewey (1916) held that both children and adults are always engaged in growing, as life is growth, but acknowledged that the ways in which children and adults were growing differed according to prevailing conditions.

Although growth is an end in itself, growth per se is not enough in an educational sense. To consider growth through a pedagogical lens, the direction of the growth must be taken into consideration. To illustrate this point, Dewey (1938) drew on the example of a burglar. Even though a burglar might grow into an expert burglar, it should be questioned to what extent this growth creates growth in an educational sense, as the opposite could rather be argued to be true. Hence, Dewey (1938) held that 'only when development in a particular line conduces to continuing growth does it answer to the criterion of education as growing' (p. 36). Thus, within education, the development of students needs to be in the direction of the overall aim and values of the education. According to Dewey, education will always be about going somewhere, and since growth is an end outside and beyond growing, external agents (such as teachers) must guide learners towards it. The role of the teacher is to determine whether the students' process

of growing is in line with the purpose of the education and modify or adjust the direction of future experiences. For example, a teacher using CL must determine whether students' experiences in working alongside their peers enable students to grow as cooperative human beings.

4 Methodology and methods

The purpose of this chapter is twofold. First, it seeks to justify the use of PAR to facilitate teachers' implementation and sustained use of CL (methodology). Second, it presents and discusses the methods employed to answer the research question of this thesis (methods).[10] The chapter begins by outlining pragmatism as the scientific orientation for this project – drawing especially on the work of Morgan (2014), who proposed pragmatism as a research paradigm for social research by leaning on the work of John Dewey.

4.1 Pragmatism as a research paradigm

While social research has been traditionally understood through questions around ontology, epistemology and methodology, pragmatism treats research as 'a human experience that is based on the beliefs and actions of actual researchers' (Morgan, 2014, p. 1051). Beliefs and actions, therefore, exist in a cyclical interdependent relationship, one in which we reflect on our beliefs to choose actions and reflect on actions to choose beliefs. In this relationship, experience represents the interaction between belief and action. Consequently, pragmatists argue that researchers from different research traditions (i.e. quantitative or qualitative) have different experiences of the world of research, giving them different beliefs about research (which, in turn, leads to different actions; Morgan, 2014). For example, my own experiences of research from working as a primary school teacher, as highlighted in the Introduction, has given me a belief that educational research needs to be closely connected to practice and directly involves teachers to create change. Based on these beliefs, my action was to conduct my research through a PAR approach.

From a pragmatist perspective, research is like all other forms of experience, always located within a particular context. Hence, different research traditions could be seen as social communities or contexts in which there is a set of more or less commonly held beliefs and actions that are considered 'acceptable' (Morgan, 2014, p. 1049). In that respect, the research context will always influence the individual's beliefs and actions about what good research is. Through being a part of the AR community for four years, my own beliefs and actions as a researcher have been shaped and impacted by the standards and perspectives shared within the

[10] Kaplan (1964) defined methodology as the study and justification of methods, while 'methods' was considered as the practical activities carried out in the research.

AR community. As an example, Casey (2018) recently suggested that explicitly showing how AR cycles have informed future actions in projects is one criterion for distinguishing between exemplary AR and less good AR. In other words, the methodological actions made throughout the project has been done according to what I believe has been good or bad at different times throughout my PhD journey (Morgan, 2014).

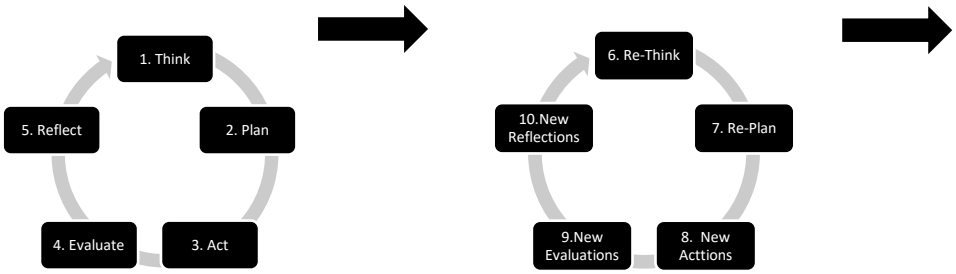
Pragmatism stresses that researchers should be self-reflective and ask questions about why they choose to do research one way over another and how they interpret the results of making these choices. The next sections will therefore highlight why PAR was chosen and how PAR has been operationalised to serve both a practical and a research purpose (Mattsson & Kemmis, 2007). More precisely, how and why the project was designed to a) enable the teachers to explore a more student-centred approach to teaching PE through implementing CL, while b) simultaneously enabling me to investigate how teachers and students experienced this implementation over time. I start by exploring AR before moving on to the participatory tradition of AR.

4.2 AR

According to Kurt Lewin (1946) – who, alongside John Collier, is considered by many as the founding father of AR (Elliott, 1991; Kemmis & McTaggart, 1988; Noffke, 1997; Reason & Bradbury, 2001) – AR emerged as a response to a growing realisation that 'mere diagnosis does not suffice' (p. 37). In Lewin's (1946) opinion, descriptive research (diagnosis) has to be complemented by experimental studies exploring different ways of changing the status quo. Although both Collier's and Lewin's works can be perceived as the origins of AR, some argue that AR was actually born and shaped by the work of progressive educators at the turn of the 20th century, and by John Dewey in particular (Hodgkinson, 1957; Noffke, 1997). In Hodgkinson's (1957) opinion, Dewey's scientific orientation should be viewed as a foundation-stone of AR, and that Lewin developed his work based on Dewey's works. More recently, Helskog (2014) acknowledged the impact Dewey had on AR and suggested that 'maybe the experimentalism of John Dewey can be viewed metaphorically as its [AR] *embryo*' while Kurt Lewin's problem-solving model of research 'can be viewed as its *birth* and *early childhood*' (p. 8).

Dewey (1922/2008) considered research to be a careful and self-conscious form of inquiry of formulating responses to problems that humans experience in their daily life through, for example, research on how CL can be implemented to help teachers move from a teacher-centred approach to a student-centred approach to teaching PE. In other words, Dewey wanted educational research to be a method that allows teachers to gain insight into problems they experience and helps to find solutions to these problems. This inquiry process evolved through five steps:[11] a) recognising a situation as problematic, b) considering the difference it makes to define the problem one way rather than another, c) developing a possible line of action as a response to the problem, d) evaluating potential actions in terms of their likely consequences and e) taking actions that are felt to be likely to address the problematic situation (Biesta & Burbules, 2003). Although these steps might appear linear, the inquiry process is like any other experience – a continuous process that may involve several subsequent cycles that might eventually help practitioners to find a solution to their problem (Morgan, 2014). Later, Lewin (1946) conceptualised AR similar to Dewey's ideas of inquiry and presented AR as a cyclical research process that evolves through 'a spiral of steps that includes planning, action and fact-finding about the result of the action' (p. 38). In Lewin's (1946) model of AR, the practitioner moves through a cyclical process that involves five sequential steps, as illustrated in Figure 1: thinking, planning, acting, evaluating and reflecting.

Figure 1. The action research cycle



Lewin's (1946) model of AR begins with *thinking* and developing a general idea. For example, a PE teacher might come to realise that his or her pedagogy fails to create student-centred learning processes and begin to consider how a pedagogical change might be beneficial for the

[11] Throughout his career, Dewey presented slightly different descriptions of the steps or stages (Biesta & Burbules, 2003).

students. The teacher decides upon an objective, such as exploring a more student-centred approach to teaching PE. Then the teacher *plans* a possible way to achieve this objective. For example, the teacher might decide to incorporate CL into his or her teaching and explicitly plan how the key elements of CL can be operationalised into practice in a forthcoming unit. After that, the teacher *acts*. More specifically, the teacher completes the planned unit with the students and engages in fact-finding about the effectiveness of the change. The information gained is used to *evaluate* to what extent the actions helped the teacher to reach the objective of becoming more student-centred. The evidence enables the teacher to identify the strengths and weaknesses of the actions taken and *reflect* on possible improvements in future planning processes and actions. The teacher also reflects on whether the initial objective and overall plan should be modified in light of the experiences had. For example, a teacher might decide to implement one of the five key elements of CL at a time, instead of implementing all five. Then the teacher moves into new sequences of rethinking and re-planning followed by new actions, new evaluations and new reflections, with the ambition to eventually find a solution to the initial problem (Lewin, 1946).

Since Lewin's (1946) first conceptualisation of AR, the model has gone through a series of rebirths and interpretations through different AR traditions. Although the similarities are more than the differences between the various traditions (Hiim, 2010), Reason and Bradbury (2001) have expressed misgivings about the weight given to the term 'action research'. Even though AR, at its heart, 'is about improving by learning and changing from within' (Casey, 2018, p. 13), different traditions emphasise different approaches to AR in order to improve practice. Eikeland (2012) argued that 'the differences between the approaches need to be clarified, better defined, and emphasised […] for us all to better understand what is being done and the different ramifications of action research' (p. 17). While it is beyond the scope of this thesis to investigate all the different approaches to AR (see Hiim, 2010, or Zeichner, 2001, for such investigations), attention will now be directed towards the PAR tradition, which was the most influential tradition in designing and implementing this research project. This is important to address my beliefs about what constitutes a good PAR research project and the actions taken over the two-year duration (Carr & Kemmis, 1986; Kemmis & McTaggart, 2008; Morgan, 2014).

4.2.1 PAR

Even though the origins of PAR are hard to exactly define (Kapoor & Jordan, 2009), Carr and Kemmis (1986) are positioned as being instrumental in the development of PAR through their critique of how AR had developed. While Dewey, Lewin and Collier all argued for AR to be a participatory and collaborative endeavour within a social context, dialogue had become limited between teachers and researchers who were involved with AR. According to Kemmis (2006), it was assumed that dialogue would occur by itself when people engaged in AR. However, without explicitly planning when and how this dialogue took place, interaction did not occur. By the time Carr and Kemmis wrote about PAR in the mid-1980s, AR had grown into an individual technique, rather than the participatory, collaborative social process the founding fathers had intended it to be (Kemmis & McTaggart, 2008). Within education, PAR was, therefore, positioned as a collective movement of teachers aiming to critically understand their practices and address challenges they identified through action (Kemmis & McTaggart, 2008). This means that although the individual teacher changes his or her context, the construction of knowledge about the change is shaped and informed by colleagues' experiences from a similar change (Kemmis & McTaggart, 2008). For example, although implementing CL is done by each teacher individually in their classes, teachers in a PAR project benefit from a collective sharing of experiences (Dewey, 1916). Establishing a reflective community through PAR in which a heterogeneous group of teachers (e.g. age, educational background, experience, learning stance) share ideas, perspectives and thoughts could be mutually beneficial. External researchers working at a University can facilitate even more productive discussions by offering complimentary, different or even conflicting perspectives to reflect on (Dewey, 1916), and help teachers 'break down the wall' between theory and practice (Postholm, 2020b, p. 336).

Being involved with PAR involves collective discussions, analysis and negotiations (Ax et al., 2008). A key is, thus, to open up communicative spaces (i.e. workshops in this project) for these discussions to take place. As the chapter now progresses, I move on to outlining how PAR was operationalised. First, I present the school setting and participants.

4.3 The school setting and participants

Since the recruitment process was covered in the Introduction, this section moves directly into exploring the school setting and participants.

4.3.1 The school setting

Forest School (grades 1–7, ages 6–13) is located in a medium-sized Norwegian city. At the time of the project, there were 225 students on roll, 113 girls and 112 boys. Out of these, 99 (55 girls and 44 boys) were in upper primary school (grades 5–7). During my two-year engagement with Forest School, I learned that the students represent a broad group of cultural diversity, with different ethnicities and abilities.[12] In a typical PE lesson, one or two assistants were present to take care of students that needed extra attention and help. Although the majority of students come from white middle-class backgrounds, a relatively high proportion of the students, when compared with other schools in the area, come from a minority background. Although not all students counted Norwegian as their primary language, most students spoke and understood Norwegian. However, a few students did not speak nor understand Norwegian, as they had recently arrived in Norway from other countries.

The students at Forest School typically had PE once a week, and each lesson lasted for approximately 60–75 minutes. Based on my conversations with the teachers, it was obvious that prior to the intervention, PE emphasised doing sports through a multi-activity approach. Three annual tournaments in floorball, volleyball and soccer, in addition to a day of doing track and field activities, influenced the teaching in the weeks prior to these events. Asides this, there was a strong emphasis on different forms of play and games, most typically ball games.[13]

4.3.2 The teachers

In recruiting teachers for the project, I used a purposive sampling strategy (Schreier, 2018) and handpicked the participants that met the criteria of wanting to develop their PE practices while teaching grades 5–7 (Cohen et al., 2018). Choosing teachers who teach grades 5–7 was prompted due to the lack of PE research in primary schools in Norway (Suominen et al., 2018) and the chance to be able to engage a full department to collectively change the practices (Kemmis & McTaggart, 2008). The underlying idea of purposive, or purposeful, sampling is to

[12] This is based on my observations from the school and multiple conversations with Forest School staff members over the two-year duration.
[13] This is based on conversations with the teachers and students.

select cases that are information-rich and, thus, helpful to answer the research question and 'is especially useful for exploring a phenomenon in depth' (Schreier, 2018, p. 93).

All members of the upper primary PE department at Forest School agreed to participate in the study: Ole, Erik and David (pseudonyms). As Table 4 shows, Ole and David were newly qualified, while Erik had over 25 years of teaching experience. Erik was the homeroom teacher (form tutor) for a sixth-grade class, while Ole and David only met their classes for PE. In addition, while this was Erik's second year with this class, Ole and David did not teach the class the year prior to the project. These two aspects imply Erik spent significantly more time with these students and knew each individual better than both Ole and David. None of the teachers had prior experience with CL in PE – although Erik had, in his own words, 'touched upon it' in some other school subjects.

Table 4. Participating teachers

Pseudonym	**Gender**	**Experience**	**Education**	**Class (age)**	**Prior experience with CL**	**Completed workshops/intervention periods**
Ole	Male	2 years	Three-year BA PE	Two fifth-grade classes (10–11 yrs)	None	5/2
Erik	Male	> 25 years	Four-year general teacher, including 60 ECT PE	One sixth-grade class (11–12 yrs)	'Touched upon it' in other subjects	9/4
David	Male	1 year	Three-year BA PE	Fifth-grade teacher, two seventh-grade classes (12–13 yrs)	None	9/4

As the intervention lasted for two academic years, changes occurred in the school during the project. In the second year, Ole was given new responsibilities within the school, which meant that he no longer taught PE. Consequently, Ole did not participate in the second year of the project. David, who had already been a part of the fifth-grade team as an extra teacher, took over his responsibilities. Erik, the sixth-grade teacher, taught his class throughout the entire project.

4.3.3 The students

Through the recruitment of the three teachers, the classes they taught in PE were also included in the study. However, since the seventh-grade classes finished primary school after the first

year, their voices were not included.[14] The study, therefore, drew on a sample of 41 fifth-grade students (10–11 years) and 23 sixth-grade students (11–12 years). The demographic of the classes included in this study mirrored the students at Forest School in general. More specifically, they were heterogeneous in terms of ethnicity and gender, and the students had different abilities and challenges within the physical, social, affective and cognitive domains.[15] Although the students progressed one grade over the project, they are consistently referred to as fifth- or sixth-grade students, respectively, to avoid confusion. The students had no experience with CL prior to the project.

4.3.4 The researcher-facilitator

My role as the facilitator was aided by my position as a former primary school teacher and a teacher educator. I have worked for six years in primary schools at all grade levels – teaching mainly PE, maths, Norwegian and English. For three years, I was also a homeroom teacher. In retrospect, I would characterise my teaching in PE as the 'typical PE style' – that is, using direct instruction and emphasising sport-related content. From 2014, I worked as a teacher educator at Inland Norway University of Applied Sciences. The year before the project started, I spent my time developing my knowledge about AR and CL. As a part of this training, I stayed at Loughborough University in the UK for three months and worked with Dr Ashley Casey, who is an expert in both AR and CL in PE.

My role in the project was inspired by the work of Kemmis and McTaggart (2008), who criticised the ways in which external facilitators have adopted a neutral and technical role. My role in the project is best considered as a co-participant with particular knowledge that was useful to the teachers in developing their practice. This knowledge included knowledge of CL and knowledge about how to involve the teachers in PAR to support their journey. Through the facilitator role, I sought to 'support disruption in participants' thinking and perspectives but, at the same time, 'enable them to maintain sufficient confidence in themselves as knowledgeable practitioners' (Cook, 2009, p. 285). To achieve this, I took an active part in the dialogue (i.e. workshops) to challenge their reflections, but I also tried to help teachers to transform CL from theory into actual teaching practices (Postholm, 2019).

[14] I reflect on this choice in the section 'Ethical Considerations'.
[15] This is based on my observations and conversations with the teachers.

My role as the facilitator changed over the course of the project. To establish a trusting relationship with the teachers, I needed to be in particularly close proximity and 'convince' the teachers that my interest in doing the project was not only centred on collecting data to answer my research question but involved facilitating and contributing to the teachers' professional development. At the same time, and as the project progressed, my position became more distant as I moved into the phase of analysing and writing the articles and thesis. Although this illustrates a pattern, my positioning did not change linearly but went back and forth to answer shifting challenges and needs throughout the project. However, I was conscious of being neither too close nor too distant, especially for longer periods (Skrøvset, 2008).

4.3.5 Division of labour and responsibilities in the project

To avoid confusion and create boundaries between teachers' and researchers' roles and responsibilities in the project, Tiller's (2018) distinction between action learning and AR was helpful. More specifically, Tiller (2018) argued,

> within an educational context, it will be reasonable to use the concept of action learning [when referring to] what teachers and school leaders do in their everyday lives and action research on what researchers do when researching with teachers and school leaders. (Tiller, 2018, p. 44, own translation)

Following Tiller's (2018) distinction, the participating teachers' responsibility in the project was, to the best of their ability, to enhance their practice in an effort to improve conditions for student learning. At the same time, claiming that the teachers' involvement was entirely similar to what they would normally have done in their everyday lives would be untrue as the research project provided them with structures that did not exist outside of the project (see section 4.4). Nevertheless, although the means were somewhat different, their mission as teachers (i.e. making their teaching as good as possible) remained the same in the project as it would have been normally.

The researcher-facilitator role served both the practical and the research purpose. To facilitate teachers' professional development, I worked in close collaboration with the teachers, and together, we designed a project that aimed at supporting their pedagogical change. For example, through establishing a collaborative community with the aim of equal engagement between

teachers and researcher (Kemmis & McTaggart, 2008). This is further explored in section 4.4.1. For the purpose of this research, my role also included collecting, interpreting and analysing data. At the same time, there was also an interplay between the two purposes, as my ongoing data collection from the project and the analyses formed a starting point for new analysis, dialogue and negotiations with the participating teachers (Kemmis & McTaggart, 2008). This cycle of collection and analysis mirrored the cycles of AR depicted in Lewin's (1946) model (see Figure 1).

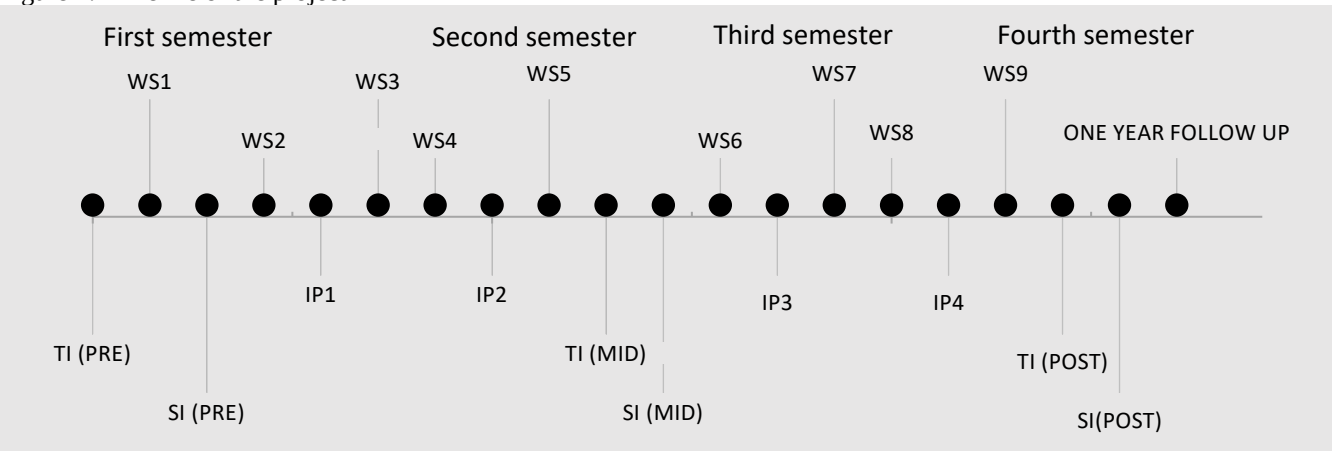
4.4 The pedagogical intervention

The pedagogical intervention was designed in close collaboration with the teachers to make sure the project fit the teachers' schedules and desires. To provide clarity in my writing, sections 4.4.1 and 4.4.2 outline how the project was designed to facilitate the teachers' professional development (practical purpose), while data collection and analysis will be addressed separately in sections 4.5 and 4.6, respectively (research purpose).

4.4.1 Project design

To make a complex and 'messy' two-year journey more accessible to the reader, I provide a linear timeline of the project, although this linearity does not mirror the true and convoluted nature of the project (see Figure 2).

Figure 2. Timeline of the project



*TI = Teacher interviews, WS = Workshop, SI = Student interviews, IP = Intervention period

Teachers were interviewed before (pre), during (mid), right after (post) and one year after (follow-up) the pedagogical intervention. The first interview aimed to explore what the teachers wanted to get out of the project and how we could design the pedagogical intervention to best fit their needs. The mid-interview was used to explore how the teachers experienced the project and consider how the second year should be organised to improve conditions for their professional development. The two latter interviews were mainly conducted for research purposes.

Students were interviewed before (pre), during (mid) and after (post) the pedagogical intervention. Students' voices were an important source of information for developing future units and lessons, as we continuously sought to adapt the teacher's delivery of CL to better fit the needs of the students.

As Figure 2 shows, nine collective workshops involving the teachers were arranged. These professional development workshops were, first and foremost, used to *think* and discuss CL theoretically (all workshops), *plan* units in accordance with CL (workshops 2, 4, 6 and 8) and *evaluate* and *reflect* the completed units (workshops 3, 5, 7 and 9). We also used the workshops to develop teacher unit objectives (Table 5). These objectives were based on our ongoing experiences from the intervention periods to address particular aspects of the teachers' delivery of CL.

Table 5. Teacher unit objectives

Workshop	**Teacher unit objectives**
2	Experiment with cooperative learning structures. Move from the sage on the stage to the guide on the side. Learn from experience.
4	Create clear interdependence among students. Be the guide on the side. Facilitate constructive group processing. Learn from experience.
6	Emphasise student goals rather than activities. Teach social and small-group skills explicitly. Be the guide on the side. Learn from experience.
8	Experience how new activities can be used to work with cooperation. Enhance conditions for group processing. Communicate objectives and expectations more clearly. Develop cooperative learning structures. Learn from experience.

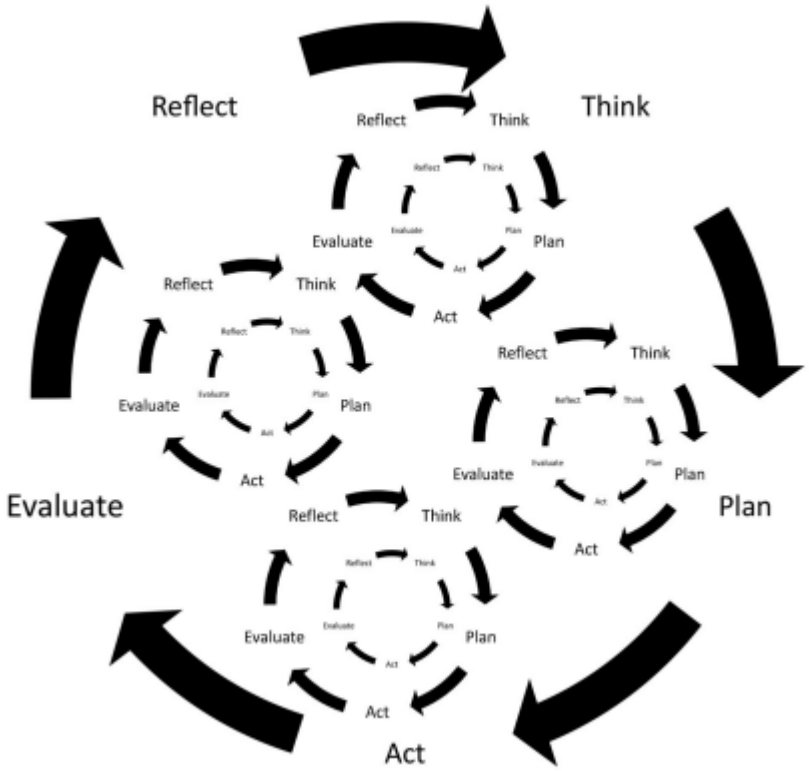
The four intervention periods of implementing CL in the classroom, each lasting for six weeks/lessons, were spread out over the two academic years to best fit with the teachers teaching schedules. These units enabled the teachers to *act* on what they had planned for. Small ongoing changes were made by each teacher in an effort to adapt the collectively planned

lessons to their particular classes and students. Immediately following each lesson, I interviewed the teacher using the post-lesson reflection analysis tool (Dyson, 1994). More specifically, I asked the teachers questions such as the following: a) What was good about today's lesson? b) What did not work out as planned? c) What did you learn from today's lesson that informs the next? and d) Did you observe any learning occurring among students? These conversations were helpful in adapting future lessons based on our ongoing experiences. For step-by-step details about the project, see appendix 1.

In addition to these formal meeting points, other informal contexts supported our ongoing dialogue, analysis and negotiation (Ax et al., 2008) over the two-year duration. One example was that we a few days before each intervention period met during lunch to make sure that the teachers were ready for the next period. Another was the use of a closed Facebook group for planning and sharing resources.

Throughout the project, the teachers were introduced to the reflective cycle of AR (see Figure 1) as a means to support their journey. We discussed the five sequential steps (think–plan–act–evaluate–reflect), which were operationalised through the project design (i.e. how workshop 1 was used for thinking, workshop 2 for planning, intervention period 1 for acting and workshop 3 for evaluating and reflecting). At the same time, each of the five steps has been taken on different levels throughout the project (i.e. lesson-by-lesson level and unit-by-unit level). As Casey (2018, p. 17) suggested, each of these cycles has been 'unrestrained by depth or time', and the lifetime of this PAR project needs to be understood through multiple cycles, not as a standalone event – in other words, 'as cycles within cycles'. Inspired by this notion of the multiplicity and differing longevity of the cycles in AR, the following model (Figure 3) illustrates the different levels of the PAR project in this study.

Figure 3. Levels of the participatory action research project as cycles within cycles



Inspired by Casey (2018) and Lewin (1946)

Figure 3 acknowledges that the pedagogical intervention needs to be understood through multiple cycles within cycles over the two academic years. In other words, cycles of think–plan–act–evaluate–reflect might, for example, occur within or between single lessons or units. As an explicit example, article 1 examines three critical cycles that have been important to understanding the teachers' changing reflections in the first year.

4.4.2 CL model fidelity

Due to the concern related to various ways of implementing pedagogical models (see section 2.4.2), Hastie and Casey (2014) provided a guide for reporting research on MBP. It is important to add that model fidelity is not about getting it right but showing what you have really done to identify your own model (Hastie & Casey, 2014). The authors identified three key elements that should be included in every method. One of these, programme context, and teachers' and students' previous experiences of CL have already been addressed in sections 4.3.2 and 4.3.3. Another factor the authors mentioned as important is providing a rich

description of the curricular elements of the units. The teachers, in dialogue with me, decided on themes, objectives and CL structures (Table 6) for each of the four six-lesson units.

Table 6. Curricular elements for each unit

Unit	Theme	Student unit objectives	CL structures
1	**Floorball**	Master basic skills in floorball (passing, dribbling and shooting). Help other students learn. Give and receive feedback. Contribute to cooperation and team play. Know basic rules for floorball. Know key moments for passing, dribbling and shooting in floorball.	Jigsaw, think pair-share, numbered heads together, learning pairs
2	**Athletics**	We will together as a team practice different forms of athletics. We will do our best each time. We will respect each other's roles. We will help each other learn. We will learn key points for executing six different athletic activities.	Student team achievement division
3	**Cooperation** (orienteering, parkour/free-running, dance, acrobatics)	We will give and receive feedback that promote other students' learning. We will show positive attitude towards other group members. We know how our group works well together.	Learning pairs, learning teams
4	**Cooperation** (skates, play, snow cave, skiing)	We will work together as a group to learn. We will do our best each lesson so the group achieves the goals. We will learn about how group work supports our learning.	Learning teams, learning pairs

The teachers purposefully divided the students into heterogeneous groups. Students spent most of their time in groups of four or five, in jigsaw groups or learning teams, but some pair works were also included in units 1 and 3 through think–pair–share, reciprocal teaching and learning pairs (Dyson & Casey, 2016). Worksheets or team folders (including aims, description of roles, tasks and reflective questions) developed by teachers and researcher collaboratively were used in all units.

The third concern mentioned by Hastie and Casey (2014) is giving a detailed validation of model implementation. Prior to each unit, we explicitly discussed how to implement the five key features of CL (see Table 2). We also discussed the additional features of CL (see Table 3) and, more specifically, how the teacher could act as a facilitator, how to create heterogeneous groups and how to implement our chosen CL structure(s). For example, in planning the second unit, we explicitly discussed what being a facilitator might look like when using student team achievement division (Slavin, 1995) as the CL structure. This included discussions about what kinds of questions to ask, how to respond to different student behaviours, how to teach social skills and how to scaffold different student roles. We also discussed the CL structure(s) to enhance teachers' understanding and avoid teachers just 'blueprinting' the structure(s) (Dyson,

Colby et al., 2016). 'Lesson Zero' (Dyson & Casey, 2016, p. 48) was used as the first lesson in units 1 and 2 to prepare the students for learning through the model.

My observations of all of the lessons enabled me to assess and maintain model fidelity by recording how the five elements and the additional features were present (Casey et al., 2015). While fidelity, in general, was high throughout the project, there were a few examples of the opposite. For example, the teachers did not always find time for group processing and did not always take on the role of a facilitator but instead gave the students direct instructions. When examples of lower fidelity were observed, I used my observations as a topic for reflection right after the lesson or in the following workshop.

4.5 Data collection

Data were collected from multiple sources (Table 7) to get a broader and in-depth understanding of teachers' and students' experiences from the project (Smith & Sparkes, 2017). The various sources were selected to complement each other – for example, interviews were chosen in combination with observations, as 'interviews provide leads for the researcher's observations, while observations suggest probes for interviews' (Tjora, 2006, p. 125).

Table 7. Data collection methods

Method	**Detail**
Teacher interviews (pre, mid and post)	Semi-structured individual interviews with teachers, typically lasting 25–35 minutes.
Follow-up interview with teachers (one year after the pedagogical intervention)	Semi-structured interview with participating teachers, one year after the final workshop, lasting 15–20 minutes.
Student interviews (pre, mid and post)	Semi-structured group interviews (four to five students), typically lasting 15–25 minutes.
Workshops with teachers	Nine recorded professional development workshops, two to three hours each.
Post-lesson teaching analysis	A modified version of Dyson's (1994) post-lesson teaching analysis was used after each lesson.
Observation notes	I wrote down observation notes after all 96 lessons (about 120 computer-written pages).
Researcher's reflective diary	The researcher's reflective diary on the entire project (about 100 pages).

The interviews of both the teachers and the students were semi-structured for the sake of flexibility, so I could ask questions that I had not planned but which occurred to me as the conversation unfolded (Smith & Sparkes, 2017). All teachers, 20 fifth-grade students and 17 sixth-grade students (and their parents) signed the declaration of consent (see section 4.8.1) in order to be interviewed.

The teachers' interviews were conducted as a means of understanding the teachers' experiences of the project (Smith & Sparkes, 2017). However, since the interviews were conducted at different times, the respective interview guides were slightly different (see appendices 5, 6 and 7). The first interview was used to establish the project's 'point zero', similar to 'baseline' in quantitative research, to explore the teachers' experiences and perceptions of PE when they joined the project. Then, in the two later interviews, investigating the teachers' experiences from the pedagogical intervention were the main focus. To explore the teachers' experiences beyond the pedagogical intervention, I conducted a follow-up interview one year after the final workshop (appendix 8). All the interviews were recorded and transcribed verbatim by me.

The students' interviews (see appendices 9, 10 and 11) also served a similar purpose. The pre-interview sought to explore the students' view of the purpose of PE and what they learnt in PE class, while the mid- and the post-interview investigated the students' experiences during the intervention. The students were randomly organised into two groups of four students in each class. However, dialogue with their teacher ensured that the individual group characteristics were similar to those of the group as a whole in respect of gender, background and ability (Cohen et al., 2018). All the interviews were recorded and transcribed by me.

A tape recorder was used to record all the nine professional development workshops, and the 96 post-lesson teaching analyses (PLTAs). Due to the large amount of data (approximately 25 hours workshop and 96 PLTAs), neither of the interviews were fully transcribed. Instead, key aspects of the events (such as teachers sharing particular experiences) were noted. These notes made it possible for me to return to specific parts of the recordings for further investigation. In addition, I wrote down a summary immediately after each event. The observation notes included relevant comments, actions and conversations that occurred during the lessons that I felt were relevant to my research. This was important, as it allowed me to investigate not only what the teachers and students said (interviews) but also what they did (Thorpe & Olive, 2017).

Finally, my reflective diary was frequently used over the project. This diary included informal conversations and events or incidents that occurred over the project that were not captured by the other data sources. The reflective diary was also key in keeping my ongoing reflections, thoughts, ideas and analysis visible (Ortlipp, 2008).

4.6 The analysis process

Instead of giving a detailed description of the different analytical procedures in this thesis under this section, more information is found under each of the individual articles. I will, however, give a more general explanation of how PAR ensured that the analysis was cyclical and, therefore, occurred at different times, in different forms and served different purposes over the project.

To facilitate the teachers' professional development, data (observation notes, PLTA and the researchers' reflective diary) were analysed and interpreted continuously throughout the project. Although these analyses were less structured, they helped to identify challenges in the implementation of CL and also made me very familiar with the collected data. To be able to address the research questions for the individual articles, as well as the overall thesis, I distanced myself from and reinvestigated all the data sources (see Table 7) more systematically at the end of the project. For papers 1 and 2, the analysis moved into an abductive approach (Alvesson & Sköldberg, 2018), as my prior familiarisation with the data had already allowed me to start the theorising process. This theorising was also supported by a comprehensive reading of similar studies where the implementation of CL and other pedagogical interventions were done (Casey & Goodyear, 2015). For paper 3, the analyses were more inductive. The idea for this paper emerged after the pedagogical intervention was completed, inspired by Armour et al.'s (2017) paper on how a Deweyan framework enables a different perspective on what 'effective' learning for teachers is really about. Hence, although analyses are never value-free, I entered these analyses without having started theorising.

4.7 Thesis overview

Table 8 shows the overall research question and details about the individual articles that constitute the thesis.

Table 8. Thesis overview

Research question: *How do primary school teachers and students experience a longitudinal implementation of cooperative learning in physical education?*			
	Article 1	**Article 2**	**Article 3**
Article Title	'Damn – why did we join this project?': Investigating physical education teachers' reflections on teaching and learning over a one-year participatory action research project	Cooperative Learning in physical education: a study of students' learning journey over 24 lessons	'While we may lead a horse to water we cannot make him drink': three physical education teachers' professional growth through and beyond a prolonged participatory action research project
Research questions or purpose	'How do teachers reflect on teaching and learning in PE over a one-year participatory action research project?	To explore students' learning journey through 24 lessons of CL over two academic years. More precisely, the paper explore a) teachers' perceptions of students' learning journey through CL, and b) students' experiences of their learning journey through CL	'How do three PE teachers experience their engagement with a prolonged CPD[16] initiative using PAR?' and 'how do their experiences facilitate and/or obstruct development and growth?'
Analytical framework/lens	Wackerhausen (2015): the anatomical structure of reflection	Four legitimate learning domains for PE	Dewey (1916, 1938) – education as growth
Methodology	One-year PAR project	Two-year PAR project	Two-year PAR project
Participants	Ole, Erik and David, researcher-facilitator (me)	41 5th grade students, 23 6th grade students, two PE teachers (Erik and David), researcher-facilitator (me)	Ole, Erik, David, researcher-facilitator (me)
Sampling method	Criterion sampling	Criterion sampling	Criterion sampling
Data sources	Teacher interviews (before, during), five workshops, observation notes, post lesson reflective analysis, researcher reflective diary	Teacher interviews (before, during, after), student interviews (before, during, after), observation notes, post lesson- and unit reflective analysis, researcher reflective diary	Teacher interviews (before, during, after, one-year follow up), nine workshops, researcher reflective diary
Analysis	Abductive approach, critical cycles	Abductive approach, constant comparison	Inductive thematic analysis
Trustworthiness	Prolonged engagement, triangulation, critical friends, member checks	Prolonged engagement, triangulation, member checks, rich descriptions	Prolonged engagement, triangulation, member checks, critical friend
Journal	Educational Action Research	Physical Education and Sport Pedagogy	Sport, Education and Society

*PE: Physical education, CL: Cooperative learning, PAR: Participatory action research, CPD: Continuing professional development

[16] Continuing Professional Development (CPD): an umbrella term for different formal and informal educational activities (i.e. PAR) that seek to develop teachers' practices and students' learning (see for example Kennedy, 2005, 2014). In the third article, I position my project within CPD and discuss how PAR might facilitate development and growth in a Deweyan sense.

4.8 Ethical considerations

Conducting a school-based AR project in close collaboration with teachers and students require an ethical consciousness from beginning to end (Steen-Olsen & Postholm, 2009). Ethical considerations in AR projects are beyond questions on research ethics but also involves ethics of practice: questions about how to help teachers develop their practices without doing any harm (Mockler, 2014). Since the previous chapter has explored how I, to the best of my ability, have sought to facilitate teachers' change and development, I now focus on formal research ethics (such as getting approvals) and ethical considerations in writing up my findings for publication to the academic community.

4.8.1 Research ethics

The project was approved by the Norwegian Centre for Research Data (see appendix 2) and followed the ethical guidelines provided by the Norwegian National Research Ethics Committees (2014). Mockler (2014, p. 153) argued that in practitioner research such as AR, participants need to be 'fully apprised of the purpose of the process of the research in which they are to participate'. To ensure that all students were familiar with the project, they were informed about the purpose of the project before the first unit. This also included information about my presence for the two years that the study was implemented and that the students were free to ask questions about what they could expect from my role. I also attended parental meetings for all the classes and explained the purpose of the project. Each parent, which was the vast majority of the total group of parents, were invited to ask questions or comment about the project at the site or later. Information letters were also sent out to all the teachers and the students (see appendices 3 and 4). According to the Norwegian Centre for Research Data, informed consent was only needed for participants who were interviewed, as the project did not collect personal data.

4.8.2 Confidentiality and anonymity

Keeping all the participants anonymous is a key principle for research (Norwegian National Research Ethics Committees, 2014). At the same time, Banegas and Villacañas de Castro (2015) have argued that the nature of AR, and more specifically the need for providing rich descriptions of the context and the participants in AR projects, might make individual schools

and/or participants traceable. Although all the teachers opined that this was unproblematic due to the nature of the project, I have tried to balance the thickness of the descriptions to maintain anonymity for all the participants while still giving enough information about the context. I have also deliberately left out data that could potentially identify individuals, such as students with particular characteristics. According to Campbell and McNamara (2007), confidentiality includes participants being able to openly tell us what they want while also choosing if they want to be quoted or not. To ensure this, all the participants were informed that they could withdraw their comments or actions from the data at any point.

4.8.3 Representation and voice

While conducting and reporting a PAR project, all the participants (teachers and students) should be given a voice (Kemmis & McTaggart, 2008; Mockler, 2014). In practice, this has been particularly challenging, especially reporting the experiences from the project, given the messiness of the project. As mentioned in section 4.3, the seventh-grade class and Ole had to withdraw from the project after the first year. While Ole's voice was included in this report, the data from the seventh-grade class were excluded. The choice of including Ole and hence giving him a voice was first and foremost to maintain transparency, as Ole's presence was considered too significant to be excluded. However, Ole's voice was removed from article 2 in accordance with the response from the reviewers. I excluded the seventh-grade class because of my ambition of investigating students' experiences from the full two years and since including the seventh-grade classes would not have changed the results of the thesis. However, the data collected from the seventh-grade classes were important for Ole to enhance his teaching and better meet the needs of his students over the first year.

5 Findings

In this chapter, I present the findings from the three articles. More details about the research questions, theoretical frameworks and the methods for each article can be found in Table 8. Since the articles were written in collaboration with my supervisors, I deliberately used the 'we-form' and referred to myself as 'Lars'.

5.1 Article 1

'Damn – why did we join this project?': Investigating physical education teachers' reflections on teaching and learning over a one-year participatory action research project.

The purpose of this article was to investigate how the teachers that participated in this study reflected on teaching and learning in PE over the first year of the pedagogical intervention. Our analysis showed that the PE teachers found it hard to talk about their PE practice and what PE is about before the pedagogical intervention. During the first interviews, they did, however, suggest that learning sport and sport techniques using direct instruction was typical in their practice. The teachers valued that students experienced happiness and joy during their lessons and emphasised the need to ensure high levels of physical activity to improve the students' health.

After being part of the project for one year, the teachers' reflections had been developed. More precisely, all of them had become more aware that students are supposed to learn something in PE. In addition, they had expanded their understanding of what students should learn in PE to include social learning. Similarly, the teachers expressed that they have a greater understanding of PE and have gained new skills for teaching PE using CL as a more student-centred approach. Although these findings show how being engaged with PAR and exposed to the use CL had developed the teachers' reflections, we argue that their journeys can be understood through three critical cycles that shed light on how the teachers go in and out of 'messiness' as their traditional pedagogical practice is being challenged.

The first cycle is best understood as a critical incident that evolved into several critical cycles – namely, the teachers joining the project. As the teachers joined the project, the PAR design

provided them with time and space to reflect on teaching and learning in PE, both at an individual and a collective level. In addition to making PE an explicit topic to reflect on, the reflective communities enabled the teachers to develop a critical attitude towards their habits and traditional practices.

The second critical cycle, 'new spaces of experiences', highlights how thinking, planning, acting, reflecting and evaluating in accordance with CL was experienced as something new and different. We argue that although new experiences are important for professional development, the teachers' experiences with using CL were so problematic that, contrary to expectations, they emerged as a barrier to the teachers' pedagogical development. In retrospect, the teachers explained that they, at the time, were thinking 'damn – why did we join this project?'

The third cycle, 'the tipping point', highlights the point at which a series of small changes becomes significant enough to cause a larger and more important change. Before this point, Lars had been worried that the project might collapse because the teachers' experiences with CL not producing the desired results, despite all the hard work that the teachers had put in. Lars began to analyse what had been done so far in the project and came to realise that he, through his role as the researcher-facilitator, had taken too much space within the PAR design. He, therefore, decided to step back and tried to empower the teachers to share their views, ideas and thoughts about how the problems they had experienced could be addressed. For example, one of the main challenges we had identified from intervention period 1 was that the students did not feel that they were positively interdependent. In the following workshop, the teachers themselves decided to return to 'Lesson Zero' (Dyson & Casey, 2016) as the first lesson of unit 2 and planned for how this lesson could be implemented. In retrospect, this lesson acted as a catalyst for the rest of the unit as teachers finally began experience successful teaching through CL. Hence, Lars' choice of stepping back in many ways restarted the project and gave finally gave the project some momentum.

5.2 Article 2

Cooperative learning in physical education: a study of students' learning journey over 24 lessons.

The purpose of this article was to investigate students learning journey over 24 lessons of CL from the perspective of the students and their teachers. We identified three themes: 'Shifting attitudes toward CL', 'the influence of having learning objectives' and 'the development of social and emotional skills'.

The first theme highlights how the change from the students being a participant in a PE programme that emphasised high levels of activity, play and having fun to becoming a learner in cooperative groups was significant and problematic. Initially, the teachers' viewed the students' experience of CL as 'irrelevant, unsafe, demanding and even boring', and students themselves reported that they did not get fit by learning through CL. However, helped by the PAR design, the teachers identified and addressed several improvement points that gradually facilitated more and more meaningful experiences of learning through CL (for example adding more emphasis on social goals and replacing 'I' with 'we' in these goals). Towards the end of the project, the students' attitude towards CL changed from being reluctant and negative to being appreciative and showing they value the experience.

The second theme, 'the influence of having learning objectives', showed how having learning objectives was appreciated by many of the students, as these objectives made them aware of what they were supposed to learn. The students further stated that having learning objectives, like in other subjects, made some of the students change their view of PE as a subject where they merely have fun to a subject where they learn. The students particularly considered having the same objective for several consecutive lessons as meaningful. This gave them time to improve and enabled them to connect their learning between the lessons. Group processing was found to be particularly efficient in enabling students to learn from their experiences to face future challenges that may arise from working together in groups.

The third theme, 'the development of social and emotional skills', showed how different students needed different amounts of time to develop the skills needed to function within their groups. Some students were comfortable working together after only a few lessons, while others

needed as much as 17 lessons. We highlighted some aspects related to students' development of social and emotional skills in this paper. First, the study shows how the students developed the ability to treat each other respectfully, take care of each other and support each other. The teachers also noted how CL had created a change from an individual-oriented to a cooperative-oriented class environment over the course of the project. Second, the students' reported that they learnt to cooperate with other students, and not only with their best friend. This led to a positive spiral in which the students believed they could succeed regardless of whom they were grouped with. Third, the study showed that CL might be an inclusive pedagogy. Through CL, students can get differentiated tasks that fit their needs and will, in turn, enable all the students to 'shine' simultaneously.

5.3 Article 3

'While we may lead a horse to water we cannot make him drink': three physical education teachers 'professional growth through and beyond a prolonged participatory action research project.

This article examines the teachers' journey, from the time they joined the project until a year after the pedagogical intervention was completed. Aided by our Deweyan framework, we identified four themes that shed light on the teachers' journeys: 'PAR as an educative CPD experience', 'experiencing CL as something that "works" and "costs"', 'reconstruction of mis-educative experiences' and 'further development and growth'.

The first theme showed how the teachers' experiences of PAR was influenced by prior experiences with other comparable CPD initiatives. Because of their prior experiences of CPD initiatives being too short, shallow and decontextualised to impact their practices, the teachers did not believe that CPD was worth engaging in. Moreover, while PAR emphasised a transformative approach to CPD, their previous experiences of CPD had left the teachers with the belief that CPD was a form of transmission in which they were passive receivers of knowledge from an external expert. It could also be questioned whether the teachers wanted a transmission approach in which they would be given fixed lessons from an external expert, ready to be implemented in their classes. Even though their previous experiences became a barrier, particularly at the beginning of the project, the teachers gradually began to experience PAR as a more meaningful and transformative approach. They recalled how PAR facilitated

time and space to transfer theoretical knowledge into actual teaching, as well as how I participated (and helped) in all the phases of the project.

The study also showed how experiencing a successful implementation of a pedagogical intervention such as CL might be problematic. In this project, experiencing CL as a teaching method that the teachers themselves considered as effective limited their desire for further development and growth. For example, the teachers believed they had reached a state of completion and had attained their objective of becoming more student-centred. The reduced interest for further development and growth was reinforced by their experiences regarding the costs of pedagogical change – namely, that such change is time- and energy-consuming and that it is uncomfortable to teach using a new approach. Hence, halfway into the project, none of the teachers believed that the project would impact their practices beyond using the lessons that had already developed and worked on.

Over the second year of the project, however, David and Erik found that CL could work in numerous ways to reach different objectives. Put another way, while they had previously felt that CL could only work in one way, units 3 and 4 helped the teachers see how CL could work in different ways. Moreover, the costs had been reduced over the second year as they gained more experience using CL. In turn, the second year challenged the teachers' experiences from the first year and enabled David and Erik to change their view from seeing (mostly) challenges to seeing (more) possibilities in terms of how CL could be implemented.

Despite sharing many similar experiences, our analysis showed that the teachers' journey evolved along different paths, particularly after the pedagogical intervention was completed. Erik explained how he had used CL to develop new lessons in PE beyond the project and how he had begun to experiment with CL in other school subjects. Erik had also challenged himself to draw on his experiences from the project to adjust the lessons that did not work in the first unit. He revealed that, in planning new lessons, he now always reflect on whether CL would be a useful approach and estimated that 30% of his teaching beyond the intervention was delivered through CL. In contrast, David noted that, although his beliefs about teaching had changed, his actions after the project mainly reflected his practice prior to the project.

6 Discussion

The overarching research question for the thesis is as follows: *How do primary school teachers and students experience a longitudinal implementation of cooperative learning in physical education?* Our findings from the three articles revealed how the experiences of the teachers and the students who participated in the project could be understood as a messy and complex. Aided by my theoretical framework, I identified four themes across the articles that allows me to discuss these experiences: 'challenges and unmet expectations', 'continuous, systematic and collective reflections', 'becoming a cooperative learner' and 'CL as a pedagogical model in PE'. I drew on previous research to relate my findings with current evidence and discuss these experiences with the aid of the Deweyan framework.

Throughout the chapter, I deliberately use the 'we-form' when referring to findings from the papers but use the 'I-form' when discussing the findings. This is to highlight me and my supervisors' collective efforts to produce the findings in this paper while maintaining independence as the only author of the summary.

6.1 Challenges and unmet expectations

In this section, I discuss how the challenges associated with implementing CL made the teachers view the project as a disappointment that did not meet their expectations. In article 1, we drew on Wackerhausen's (2015) theory of reflection to suggest that the 'new spaces of experience' (such as reflecting from and with CL) was highly problematic. To elaborate on this discussion, I draw particularly on Dewey's (1938) concept of continuity and interaction to further understand why these experiences were so challenging and disappointing that the teachers at one point thought 'damn – why did we join this project'.

The principle of continuity (Dewey, 1938) shed light on how the teachers' first experiences of implementing CL in this project was influenced by their previous experiences of teaching PE using direct instruction. For example, the teachers experienced that learning to plan and teach using what for them was a new pedagogical approach demanded a significant investment in time and energy compared to using their traditional approach. For an experience to be educative, Dewey (1938) argued that the experience should provide a certain amount of disagreeableness and tension with the learners' previous experiences, to open up for new and richer experiences

in the future. Our findings in articles 1 and 3, however, suggest that the level of disagreeableness at the beginning of the project was too high to make the teachers' experiences of CL educative. For example, we found that the experience of moving from using direct instruction, which the teachers were comfortable with, to using CL to teach was very problematic and radical. Hence, the teachers first experiences of teaching through CL could even be regarded as mis-educative (Dewey, 1938) as they reduced the teachers' curiosity and wish for exploring new ideas about how CL could be implemented. It should been questioned whether the transition from using direct instruction to CL would been experienced as less radical and more meaningful if, for example, only a few of the key features of CL were implemented at a time, or by selecting less complex tasks in smaller groups or pairs (Dyson & Casey, 2016). Another relevant question is also whether CL was considered a relevant approach at this point, given that the teachers' ends-in-views for PE was related to keeping physical activity levels high and teaching students to perform sports techniques. Although article 1 showed how these views developed and changed over the course of the project (e.g. to include social learning), it is reasonable to believe that this change did not take place overnight.

Our findings in articles 1 and 3 support robust evidence-based findings showing how teachers experience the implementation of CL as a labour-intensive process (Casey, 2014; Casey et al., 2009; Dyson, 2001; Dyson, Colby et al., 2016; Goodyear, 2017; Velázquez-Callado, 2012) that often seems to cause frustration and discomfort (Casey, 2012, Casey et al., 2009; Casey & Dyson, 2009; Cohen & Zach, 2012; Dyson, 2002; Dyson, Colby et al., 2016; Fletcher & Casey, 2014). However, in contrast to other studies that showed that these problems typically arise after an initial honeymoon period when everything is new and exciting (Casey & Goodyear, 2015), less evidence of such a 'honeymoon period' was found in this project. Instead, the commitment to implementing CL (metaphorically getting married) was more or less immediately followed by postnuptial depressive symptoms (Stafford & Scott, 2016). More specifically, similar to what some brides and grooms might experience after getting married, the teachers experienced uncertainty and frustration, as their commitment to implementing CL was 'followed by unmet expectations' (Stafford & Scott, 2016, p. 2213). The findings in article 3 suggest that these expectations were especially related to how the teachers might have expected the PAR project to have more of a transmission approach in which they would be passive receivers of knowledge. Through a transmission approach, the teachers could be given fixed lessons developed by an outsider expert, ready to be implemented. Hence, the teachers

might have expected that the implementation would be more of a quick fix since I, who was considered an external expert on CL, was there to support the translation from theory to practice. After all, lack of help with translating theory into classroom practice was what the teachers had been missing from their previous CPD experiences, and is the reason why these initiatives, according to the teachers themselves, had failed to impact their pedagogical practices. In strong contrast to these expectations, all our articles showed how the teachers quickly came to realise how implementing CL through PAR required them to step out of their comfort zones and work hard over time without having any guarantee for success with their students. Similar evidence of teachers not having their expectations for implementing CL met was also found in Hortigüela-Alcalá et al's. (2020) study. Future projects should, therefore, consider how expectations for implementation could be explicitly discussed at an early stage of the process of implementing CL. Given the robust evidence on how implementing CL often is associated with several challenges, researchers have an important role to play in preparing teachers for the challenges they are likely to face. Through such discussions, teachers might choose to adjust their expectations, which in turn might reduce having the experience of failure and not having their expectations met.

6.2 Continuous, systematic and collective reflections

Although the teachers found the implementation of CL challenging, all the articles showed how the teachers gradually experienced more successful teaching through CL. In this theme, I discuss how this growing success could be seen in the light of the PAR design that enabled the teachers to reflect. I draw on a practical example to give an illustration of how the project enabled reflections that were continuous and systematic (Dewey, 1916) and how our reflective community was found to be particularly beneficial. At the same time, I also discuss potential challenges that may arise when teachers and researcher-facilitators reflect together.

Intervention period one (unit 1) represents an example of the first phase in Dewey's (1916) conceptualisation of reflection – namely, experiencing. As Dewey (1916) suggested, experiencing is always followed by an immediate interpretation of such experience. Findings across all our articles showed that the teachers' first interpretation of teaching through CL was that it did not particularly work well and that learning to teach through CL required too much time and energy. Dewey (1910) warns about stopping the reflective process at this point since reflections always lead to actions and actions based on spontaneous interpretations are rarely

optimal. Rushed actions might restrict or even destroy the possibility of having fruitful experiences in the future. As an example, from our findings, if the reflective process stopped after the teachers' first interpretations of unit 1, the teachers' actions might have been to reject exploring CL further, and instead, leave the project to avoid all the challenges and trouble associated with its implementation. As shown in article 1, I was worried that the project would collapse at this point after the teachers' reported negative experiences of teaching through CL.

Taking actions based on immediate interpretations might also shed light on our findings from article 3, suggesting that previous CPD initiatives had failed to influence the teachers' pedagogical practices. Because of the teachers' immediate interpretation of their CPD experiences as irrelevant (e.g. being too short, decontextualised and theory-driven), they had repeatedly chosen to reject exploring the content of the CPD experience further. However, an important question is whether all of these initiatives were irrelevant or whether their true potential was never revealed. Rodgers (2002, p. 850) exemplified the latter by raising the question 'how many apples had fallen on heads before Newton perceived the inherent significance of the event?' Put another way, although there might have been a potential value inherent in at least some of their previous CPD experiences (such as a pedagogical suggestion), this potential might not have been revealed as the baby was thrown out with the bathwater.

In this project, the PAR design ensured that the reflective process continued beyond taking spontaneous actions. In the next phase, problems and challenges from the first unit were identified and discussed. As shown in article 1, one key challenge was the lack of positive interdependence among the students. This problem was then collectively addressed in the workshop that followed. More precisely, we drew upon various resources such as the underpinning theory of CL, books, YouTube-clips, my training in CL and our experiences from unit 1 to generate a new hypothesis for how positive interdependence could be enhanced in the next unit. Dewey (1910) argued that one of the reasons why reflection needs to happen in a social community is to enable each member of the group to construct the individual meaning of an experience. When this individual meaning is shared within a reflective community, the understanding of each member of the community about the experience will be broadened and deepened, as different and perhaps conflicting perspectives will be presented. In other words, Ole, David and Erik all constructed their explanations as to why students did not believe that they were positively interdependent and how this issue could be addressed. Then, through

sharing and discussing these different perspectives and ideas, the teachers were better equipped to generate a more accurate hypothesis on how the problem could be resolved.

The six planned lessons developed for unit 2 was the outcome of addressing the problems, as we had collectively generated a hypothesis on how CL could be implemented to, among other things, enhance positive interdependence. These lessons were equivalent to what Dewey (1910) referred to as controlled guessing, which in turn enabled the teachers to take intelligent actions as teachers using CL. Although controlled guessing does not guarantee certain outcomes, the findings from article 2 showed that both the teachers and the students experienced that the actions taken were successful. For example, that choosing to attach more emphasis to social goals and replace 'I' with 'we' in the learning objectives were important actions to make the students feel that they 'swim or sink together' (Dyson & Casey, 2016; Johnson & Johnson, 2009).

Reflections that were continuous, systematic and collective, like in the example above, were found to be a key enabler that helped the teachers to move beyond what we identified in article 1 as the 'the tipping point' in their journey. Hence, our findings support several other studies that have highlighted how being engaged with reflective processes might help teachers overcome challenges of implementing CL and sustain their use of CL beyond the first unit (Bodsworth & Goodyear, 2017; Casey, 2010; Dyson, 2002; Goodyear, 2017, Goodyear & Casey, 2015; Velázquez-Callado, 2012; Zach & Cohen, 2012). In a Deweyan (1938) sense, the experience of being engaged with reflection could therefore be seen as an educative experience in itself. More precisely, we found that the experiences of reflection enabled teachers to overcome the challenges they experienced, which in turn opened up for new and richer experiences of teaching through CL (Dewey, 1938).

While several studies have highlighted how collaboration between teachers and university staff can enable teachers to overcome the challenges of implementing CL (Casey, 2012; Dyson, Colby et al., 2016; Dyson & Rubin, 2003; Dyson & Strachan, 2000, 2004; Goodyear, 2017; Goodyear & Casey, 2015), our findings in articles 1 and 3 showed how the positive outcomes of such a relationship do not happen by chance. As we reported earlier, the role of the researcher-facilitator was found to be particularly difficult, and like balancing on the edge of a knife. Although our findings in article 1 showed that researchers should not take too much space when they collaborate and reflect with teachers, I still support Kemmis and McTaggart (2008),

who argued that the researcher-facilitator needs to do more than merely adopting a neutral role. The external researcher, such as myself in this project, represents an important voice in a reflective community by presenting perspectives, ideas or theories that might challenge the practitioners' thinking or help the teachers to overcome the challenges they might face while implementing new pedagogies. Another question is also whether my dominating presence in the first part of the project to some extent was necessary. According to Skrøvset (2008), the role of the researcher might be different throughout the lifetime of AR projects. In retrospect, the first part of this PAR project did perhaps require more involvement from me, as the emphasis was on introducing the teachers to CL theoretically and the AR cycle. Hence, an external researcher is a person who has particular knowledge and should not be afraid of sharing his or her knowledge. However, our findings also show how the researcher simultaneously must acknowledge and trust the teachers' knowledge, practical skills and wisdom. In that respect, PAR becomes a tool for exchanging different forms of complementarity knowledge (i.e. theoretical and practical), which is mutually beneficial for researchers and teachers to develop theory and practice respectively (Postholm, 2007, 2020b). Based on our findings, it seems critical that the external researcher maintains a self-reflective attitude and consciously determine his or her level of involvement at different stages of the project. Being a researcher-facilitator does therefore not only require specific content knowledge but also significant pedagogical competence and awareness to support teachers' development at different stages of a PAR project.

6.3 Becoming a cooperative learner

In this theme, I discuss how the students experienced the change from what I would characterise as being a 'do-er' in their old PE programme to being a cooperative learner. Although my project showed that such a change was problematic, I discuss how and why more and more students began to consider the experience of learning from, by, with and for each other (Dyson & Casey, 2016) as relevant and meaningful over the duration of the project.

Article 2 showed that before the pedagogical intervention, the students at Forest School mainly viewed PE lessons as a time to have fun and get in shape. This is consistent with the findings of several other studies that have investigated students' perceptions of PE (Lyngstad et al., 2019; Moen et al., 2018; Morgan & Hansen, 2008; Røset et al., 2019; Walseth et al., 2015; Ward & Griggs, 2018). These views need to be understood in light of the findings in article 1,

which showed how students participated in what seems to be a typical PE programme; more precisely, a programme that emphasised keeping levels of physical activity high and learning different sports through direct instruction (Aasland et al., 2017; Akuffo & Hodge, 2008; Annerstedt, 2008; Hastie & Mesquita, 2017; Kirk, 2010; Moen et al., 2018; Placek, 1983; Säfvenbom et al., 2015; Ward & Griggs, 2018). Dewey (1938) argued that each student that enters a situation or encounters a task has a different ends-in-views that shapes the course of the event. In other words, the students' first experience of CL and the emphasis on learning from, by, with and for each other (Dyson & Casey, 2016) occurred while they still had the mindset of attending PE lessons to have fun and keep fit. Hence, and perhaps even unsurprisingly, the change from being a 'do-er' as in their previous PE programme to becoming a cooperative learner was considered by most students as problematic and even meaningless for some. According to Dewey (1938), learners connect their active side of experience (the doing/action) with the consequences of the action. In other words, for students who considered PE as a subject for getting fit and having fun, the experience of learning through CL might have been connected with the consequence of being less physically active and having less fun as their groups struggled to work together. Our findings from article 2 suggests that the first step to making CL more meaningful and relevant was through the students' experiences of having learning objectives. Similar to the findings of other studies (Darnis & Lafont, 2015; Dyson, 2001, 2002; Dyson & Strachan, 2000), our findings showed the importance of introducing the learning objectives to the students, as it made them aware of what they were going to learn in the lessons. Perhaps equally important in making this claim is that the students acknowledged what they were supposed to learn per se. More precisely, the students began to make connections between being students (or learners) in PE and other school subjects that in their opinion were more academic and involved learning (such as maths and English). These connections gradually enabled some of the students to develop their ends in view of PE to include learning and, more specifically, learning together in small heterogeneous groups (Dyson & Casey, 2016). In that respect, our findings support Casey and Quennerstedt's (2020) argument that for CL to work, learning from and with each other (Dyson & Casey, 2016) needs to be developed into a common ambition among students.

In article 2, the students reported that having the same learning objective for several consecutive lessons was something they appreciated and valued. In the Deweyan language, having the same learning objective enabled the students to develop their plasticity as cooperative learners

(Dewey, 1938). More precisely, it allowed the students to use what they learnt in one cooperative situation as a tool for solving future cooperative situations, even though the tasks or group composition were slightly different. The ability to learn from their experiences was particularly enhanced through group processing. Group processing facilitated collective reflections on the group's actions in the lessons, and how these actions influenced the groups learning process. Group processing also allowed the students to make suggestions about how they, individually and as one group, could improve in future lessons. Hence, as several other studies have argued, our findings highlight the need for prioritising group processing as a key feature of CL (Dyson et al., 2010; Dyson & Casey, 2016; Lafont et al., 2007; Sutherland et al., 2014; Sutherland et al., 2019), to enable students to learn from their experiences of cooperating, and not merely do cooperative tasks.

Although learning objectives were found to be key in making students experiences of learning through CL meaningful, our findings also highlight the need for the learning objectives to be carefully developed and communicated (Dyson, 2001; Redelius et al., 2015). For example, as shown through articles 1 and 2, the teacher must consciously determine the learning objective or domain that should be in the foreground (Bailey et al., 2009) and question whether the learning objective and the overarching idea of the model chosen (i.e. CL) truly correspond. For example, if a teacher exclusively wants students to individually learn how to pass a floorball efficiently (see objectives for unit 1), choosing CL might not be the best choice. However, if the learning aspiration is for students to explore how they as a group can collectively support each other's learning (see objectives for unit 4), choosing CL might be a good option (Casey & Quennerstedt, 2020). This also highlights what I would argue was a limitation in this project – namely, that how the lessons would be taught (i.e. CL), had been selected before the teachers identified what (the learning aspiration) the students were supposed to learn and why it is important to learn in light of the Norwegian policy documents (Quennerstedt, 2019).

That said, our findings, particularly from article 2, showed how CL may facilitate learning experiences that align with some of the aspirations of the Norwegian PE curriculum (NDET, 2015b). For example, CL enabled students to get differentiated tasks, which in turn made it possible for all the students to experience mastery regardless of their ability (André, et al., 2013; Dowler, 2012, 2014; Dyson, 2001; Dyson et al., 2010; Grenier et al., 2005; Grenier & Yeaton 2012, 2019; Velázquez-Callado, 2012). Hence, the implementation of CL enabled PE at Forest

School to become fairer (Dyson et al., 2020). By working in small heterogeneous groups, we found that many students learned to respect each other's differences and explored how they could help their peers to learn and develop (NDET, 2015b). Hence, while several studies in Norway have problematised the gap between the formal curriculum and practice (Aasland et al., 2017; Arnesen et al., 2017; Borgen & Engelsrud, 2015; Moen et al., 2018; Rustad, 2017), our findings showed how implementing CL offers one pedagogical alternative to close a part of this gap.

A key question for teachers is, however, regarding what cooperation is and how cooperation could be taught (Casey & Quennerstedt, 2020). According to Dewey (1938), growth has a normative element and teachers must carefully determine how they interpret cooperation. One the one hand, cooperation can be seen as one or several skills that students are supposed to learn, such as certain behaviours. On the other hand, cooperation can be seen as a dynamic concept that is individually experienced and interpreted in different settings. In light of Norwegian policy documents (NDET, 2015b, 2015c; Royal Ministry of Education, Research and Church Affairs, 2006) and this thesis' Deweyan framework, I would suggest that teachers should not reduce cooperation to being certain skills that students are supposed to acquire, but place emphasis on providing students with a broad variety of experiences of cooperative situations. By working with different students and on different tasks and objectives, students may be allowed to experience what cooperation could be about by taking actions and reflecting on these actions, according to a variety of circumstances.

6.4 CL as a pedagogical model in PE

In this final theme, I discuss the extent to which the teachers' experiences of the PAR project enabled them to use CL as a pedagogical model within and beyond the pedagogical intervention. In article 3, we argued that the teachers' feelings of having attained their predefined goal of learning to teach through a more student-centred approach after the second unit was highly problematic in the Deweyan (1916) view of education as growth. Below, I continue this discussion and highlight the need for teachers to not only continue to grow as teachers using CL but also to sustain their use of CL as a pedagogical model (Casey, 2017).

While our findings in articles 1 and 2 showed how the teachers' experiences of CL in unit 1 was highly problematic as stated by the teachers themselves, article 3 highlighted how the

experiences from unit 2 helped the teachers to reach some level of harmony and feelings of being complete. In turn, these experiences made the teachers suggest that the way CL was implemented in unit 1 did not work, while the way it was implemented in unit 2 worked. Despite being a failure, the teachers' experiences from unit 1 could, in a Deweyan sense (Dewey, 1938), be characterised as educative experiences. More precisely, the experience of failure opened up fruitful investigations (as discussed in section 6.2) as to why this unit, in the opinion of the teachers, did not work particularly well. In turn, these investigations opened up new and richer experiences of teaching through CL. The process of investigating how a particular way of implementing CL with certain students resulted in a particular outcome represents an example of what Casey (2017) referred to as an iterative process between practice and theory, which is a prerequisite in order make a model 'truly pedagogical' (p. 58). On the contrary, the experiences from the second unit can be regarded as mis-educative despite being successful (Dewey, 1938). Beyond stating that the unit worked well, the teachers' expressed little interest in investigating why this way of implementing CL was successful. Hence, even though the experience of being successful was delightful, it simultaneously becomes a barrier to having new and richer experiences of how CL could be implemented in various ways. Instead, the teachers began viewing CL the way it was implemented in unit 2 as a recipe that could be blueprinted in the future to achieve desired outcomes.

Taking Quennertstedt's (2019, p. 613) argument that 'education rarely functions in mechanistic ways where a certain input or intervention will produce a certain outcome' into account, it could be questioned whether students' responses (as highlighted in article 2) to intervention periods 1 and 2 would have been the same in a different context (e.g. in a secondary school class). Although this question is theoretical, it recognises the need for teachers[17] to move beyond simply labelling CL lessons or units as 'this works' or 'this does not work' in order to use CL as a pedagogical model. Teachers need to continuously be engaged with investigations of why certain ways of teaching through CL lead to certain outcomes within a specific context regardless of whether the implementation is seen as successful or not. Through a never-ending process of moving back and forth between theory and practice, teachers would become equipped to continuously develop and adjust their theory on how CL could be implemented. Such ongoing processes will enable CL to become a dynamic model that might look different within different contexts and situations, although the overarching idea remains the same. In a

[17] I view researchers working in teacher education as teachers

recent article on MBP, Casey et al. (2020) problematised the use of 'model' as a noun and suggested that the verb 'modelling' should be used instead. According to the authors, 'modelling' is 'less about exactness, precision, blueprints and model fidelity' (Casey et al., 2020, p. 16), and recognises how models must be adapted to the local context. Based on the findings, particularly from article 3, this suggestion might offer a constructive way forward in the field of MBP. Choosing the term 'modelling' more explicitly open up multiple ways of 'modelling' CL with the students for example, and move away from viewing the critical elements (or 'non-negotiables') as the gold standard for implementation. Moreover, although I consider the rationale behind addressing model fidelity important (Hastie & Casey, 2014) to get an accurate understanding of the outcomes, this project has left me wondering whether a change in terminology would be beneficial. Instead of proving loyalty or faithfulness to a particular model, terminology such as 'modelling transparency' would shift emphasis towards being open to what has been done without being afraid of doing it wrong. After all, it is important to have in mind what we as teachers and researchers in the PE field are searching for; namely good examples of teaching PE that enable students to have meaningful learning experiences in PE. Hence, convincing colleagues about how certain practices correspond with certain labels should not be considered equally important.

Erik, the most experienced teachers, represents an example of how CPD initiatives (PAR in this case) might provide teachers with experiences that will enable them to sustain their use of CL as a pedagogical model beyond the duration of the initiative. For example, in article 3, we highlighted how Erik explicitly expressed how his experiences from the project had enhanced his curiosity about how CL could be implemented and enabled him to develop new lessons after the project was completed. In other words, although the project had come to an end formally, Erik's journey towards becoming a teacher using CL continued. The fact that he was still reflecting on whether CL could be used to plan new lessons after the project had ended alongside his estimate that 30% of his teaching beyond the intervention was delivered through CL, could be regarded as the acquisition of new habits. Dewey (1938) argued that to acquire new habits (understood as something that guides who we are and what we do), a learner must go through a series of acts that gradually enable the learner to change. In other words, Erik's acquisition of new or modified habits needs to be understood in light of his three years of accumulating experiences of how CL could work according to a broad variety of settings and tasks. At the same time, Dewey (1938) have underpinned how active learning needs to be

supplemented by reflection to learn from these experiences and that the time needed between thinking and taking action decreases as learners gain more experience. In other words, although it is unrealistic that Erik, beyond the project, engaged in systematic and time-consuming reflective processes similar to the ones illustrated in section 6.2, his growing experience enabled him to develop new lessons and units within the limitations of the school day. As an interesting parallel, Casey (2010) used the term 'pedagogical fluency' to describe the state in which he had developed a language and actions that enabled him to fully utilise pedagogical models within the limitations of his school context. Given our findings, it could be argued that Erik's acquisition of new habits could be seen as him reaching such a level of pedagogical fluency. In contrast, David's experiences from the project might not have enabled him to reach the same level of fluency, as the barriers of life in schools made him neglect the possibilities of sustaining his use of CL as a pedagogical model beyond the project.

Finally, Erik and David's different paths beyond the project is a good example of how educational activities, such as implementing CL through PAR, do not work mechanically and could lead to a variety of outcomes. Similar to their students, teachers always join an educational initiative with different experiences that have impacted on them to draw on (Dewey, 1938). For example, one explanation for why the project seems to have had a greater impact on Erik's practices beyond the project might be his considerable longer teaching experience in general and his educational background as a generalist teacher, as well as the fact that he, in his own words, had 'touched upon CL' earlier in his teaching career. Given our findings in article 3, setting an exact timeline for how long educational initiatives needs to be in order to enable teachers to sustain their use of a pedagogical model, seems at best to be guessing. Educational activities therefore need to move away from a one-size-fits-all approach to designs that are flexible and individualized (Goodyear, 2017). For example, instead of setting a particular time limit, projects may be open-ended and focus on making teachers accumulate the experiences they need to continue to grow as teachers using a particular model beyond the initiative itself (i.e. making them reach the level of pedagogical fluency). Although it might differ what that exactly mean for the individual teacher, our findings clearly support other studies suggesting that this would take a significant amount of time (Casey et al., 2009; Dyson & Rubin, 2003; Dyson & Strachan, 2000, 2004; Dyson, Colby et al., 2016; Goodyear, 2017; Goodyear & Casey. 2015; Ovens et al., 2012).

6.5 The thesis's validity

In terms of quality, this thesis was guided by a relativist approach to validity and trustworthiness (Burke, 2017). In other words, the criteria were not applied universally through a criteriological approach (Lincoln & Guba, 1985; Tracy, 2010), but the quality of the research was determined by a list of the study's distinct characteristics or 'traits' (Burke, 2017). For this study, I find resonance, credibility, coherence and transparency particularly relevant to the discussion.

Resonance: This thesis has explored how three teachers and their students within one particular context, working with me as the researcher-facilitator, have experienced the implementation of CL over time. In other words, different teachers (in terms of gender, age and teaching experience) and different students, working with a different researcher-facilitator with different characteristics in another context, might experience the implementation of CL differently compared to the participants in this project. Hence, instead of suggesting that blueprinting this project in another context would give the same outcomes, my ambition has been to give the reader what, according to Kelchtermans (2015), might act as a 'good example of practice'. More precisely, through giving an in-depth account of how the PAR project was operationalised at Forest School, my ambition has been to give the reader an understanding of how the implementation approach led to certain outcomes in this context. If readers of this thesis can use the findings to think creatively about their practices and explore new ways of teaching, the findings presented may have transferability and resonance beyond Forest School (Geertz, 1973).

Credibility: I believe that my prolonged and close engagement at Forest School strengthened the credibility of the study. As an example, Erik, the most experienced teacher, explicitly stated this: 'You [Lars] would never get these honest answers [from students and teachers] if you just had dropped by once' (post-interview). I sought to enhance credibility through the triangulation of the multiple data sources (see Table 7) and also used respondent validation to share findings with the participating teachers in an attempt to get a richer and more appropriate understanding of the data (Smith & McGannon, 2018).

Coherence: My supervisors, as well as other colleagues in the broader academic community, continuously challenged me to think about the relationship between my research questions, theory, methods and findings. As an example, comments on my 90% seminar arranged by my

university made me rewrite the theory section to improve coherence between my research questions and the theoretical framework. Coherence was also addressed externally by positioning my findings against previous research (Burke, 2017).

Transparency: I was continuously challenged to think about my interpretations of the data – for example, by being presented with alternative explanations by my supervisors and critical friends. Although a different researcher might interpret the data slightly differently (Fangen, 2010), I do believe another researcher would also identify many of the same key findings that I highlighted. Perhaps more importantly, to the best of my ability, I have tried to be transparent about how my interpretations need to be understood in light of who I am, my theoretical framework and the methods utilised.

6.6 Concluding thoughts

The ambition with thesis has not been to finger-point everything that is bad with the way PE is being practiced, but instead face the reality and together with teachers, explore how a different way of teaching PE might enable students' experiences from PE to become more educational and meaningful for all students. The project investigated in this thesis had a practical purpose at a local level and a research purpose at a more global level. At a local level, three PE teachers, and perhaps some of their colleagues, learnt more about how implementing CL might work and how CL could be beneficial to students' learning in PE. At a global level, the research community gained more knowledge about how teachers and students experience the implementation of CL over a sustained period. Although this thesis is a small contribution to the bigger picture, it gives teachers and researchers more knowledge about how and why the dominating way of practicing PE can and should be challenged. Although PE, according to most students, is associated with having fun with their friends, I genuinely believe, as shown in this project, that PE can do more. As an example, I believe there is no antagonism between enabling students to experience PE as fun and joyful and simultaneously emphasising the educational element. This thesis supports other studies highlighting how students' experiences of PE might be even enhanced when lessons include learning that students find relevant and transferable to other contexts (Beni et al., 2017; Kinchin et al., 2009; Smith & Parr, 2007). Particularly, students whose skills and abilities are not valued in a sport or fitness-oriented PE might have better experiences from PE if the scope of the kind of skills students should possess and develop is broadened. More precisely, by emphasising physical, social, affective and

cognitive learning, more students are allowed to experience PE as meaningful. In other words, PE might become fair and just (Dyson et al., 2020).

This thesis was conducted in the middle of a process of renewing all school subjects in Norway. Hence, when this thesis is published, PE in primary school was regulated by a new core curriculum (NDET, 2017) and a new curriculum for PE (NDET, 2020). One of the key ambitions for the renewal has been for each subject to clarify what students are supposed to learn by developing core elements. One of the three core elements of PE is 'participation and cooperation in movement activities' (NDET, 2020). Given the findings from this thesis, CL should at least be considered as a pedagogical alternative in the future to allow students to work with participation and cooperation in-depth. However, given the current position that pedagogical models such as CL have in Norway, it seems as if we have a long way to go in order to have a situation in which pedagogical models can make a significant contribution. If we consider pedagogical models as a viable future for PE, then effort and change are required in several areas at the same time. For example, the PE teacher education programmes and CPD initiatives for in-service teachers need to equip teachers with learning experiences of how pedagogical models can be employed. However, given the findings in this thesis, such learning experiences need to more away from short, decontextualized happenings and the mindset that teachers should be passive receivers of knowledge.

As a final thought, I once more return to Dewey's ideas about education to 'zoom out'. Throughout his career, Dewey repeatedly argued that education cannot be isolated from its social mission. Education should in fact be seen as a preparation for the life outside of schools, and Dewey therefore argued that a better society requires a better education. Teachers play a significant role in fostering democratic values, feeling of belonging and citizenship, and the genesis of CL in the 1970s emerged from such ideas. Despite being 50 years ago, I still believe this rationale is equally relevant today. Through creating an environment for cooperation and dialogue within classrooms, teachers might equip students with the abilities they need to take an active part in a democratic society. Yet again, this underpin the importance of CL not being reduced to a recipe for teaching but rather to be considered a philosophy of living and acting as humans.

6.7 Suggestions for future research

Although this thesis adds more knowledge about how teachers and students experience CL over time, it has also opened up new questions to be explored. Given the somewhat different positions of pedagogical models internationally and within the Norwegian context, I make some suggestions for each context separately.

While this study has shown how CL might work overtime within one particular context, we still need more longitudinal studies to investigate teachers' and students' experiences of CL. Such studies might support, complement or contradict the findings from this study and create a more nuanced picture of how longitudinal implementation might work. Future research might also consider investigating how CL can be used alongside other pedagogical models. To my knowledge, only very few studies have explored a multi-model approach (see Casey & MacPhail, 2018), and such studies would provide important knowledge about teachers' and students' experience using various models within a curriculum. Researchers might also consider investigating hybridisations of CL with other pedagogical models.

This thesis shows how teachers' development beyond a pedagogical intervention might evolve along different paths. Hence, future studies might more explicitly teachers' experience after such interventions have been completed to gain more knowledge about why and how pedagogical change is being sustained or rejected. Moreover, given the initial challenges of this project, more studies that investigate the start-up phase of CPD initiatives would also be of great interest (see Postholm, 2020a). Future projects might consider working with teachers to find solutions for how pedagogical change could be better supported, in and beyond interventions to better meet the needs of different teachers.

From a Norwegian perspective, this study shows how CL might be a suitable pedagogical model to work in-depth with parts of the Norwegian curriculum (NDET, 2015b). However, little is still known about how CL or other pedagogical models can be used within the Norwegian context. Consequently, there is a need for more studies that investigate the applicability of CL, as well as other pedagogical models, to the newest Norwegian curriculum for PE (NDET, 2020). There is also a need for more studies to investigate how preservice and in-service teachers can learn to use pedagogical models within the Norwegian context.

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Dissertation articles

1

'Damn – why did we join this project?':

Investigating physical education teachers' reflections on teaching and learning over a one-year participatory action research project

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‘Damn – why did we join this project?’:

Investigating physical education teachers’ reflections on teaching and learning over a one-year participatory action research project

Although reflection and reflective practice have been researched for many years within the contexts of physical education (PE) and PE teacher education (PETE), there is a lack of studies investigating the development in teachers’ reflections over time (Standal and Moe, 2013). Hence, the research question investigated in this study is ‘how do teachers reflect on teaching and learning in PE over a one-year participatory action research project?’ Wackerhausens’ (2015) conceptualization of reflection has provided a useful framework with which to understand teachers’ reflections over the project. Three primary school PE teachers using Cooperative Learning as a pedagogical intervention participated in the study. Qualitative data (i.e., interviews, observation notes, and researcher’s reflective diary) were analysed using an abductive approach (Alvesson and Sköldberg, 2018). Although the teachers developed their reflections over the project, their journey is better understood as a ‘messy’ one, developing through three critical cycles (Cook, 2009). These cycles show how the teachers had trouble developing their pedagogical practice from a teacher-centred to a student-centred approach. However, the study concludes that the interplay between new theoretical perspectives, positive practical experiences, the establishment of a collectively reflective community through PAR, and the prolonged design eventually facilitated transformative second-order reflections. It also highlights how the role of being a researcher-facilitator was like balancing on a knife’s edge. While the facilitator needed to be an active part to facilitate change, X needed to give the teachers enough space for them to take ownership of their pedagogical change.

Keywords: physical education; participatory action research; Wackerhausen; Norway; primary school

Introduction

Reflection and reflective practice have been researched in the context of physical education (PE) and PE teacher education (PETE) for a number of years. Indeed, the extent of the research output has warranted two literature reviews in the last 25 years (Tsangaridou and Siedentop, 1995; Standal and Moe, 2013). While there seems to be an a priori belief in the value of reflection (Tsangaridou and Siedentop, 1995), the concept is used in many different ways, drawing on a variety of theoretical traditions and conceptual alternatives (e.g., the work of Dewey, 1910; Schön, 1991; van Manen 1977).

Much of the research concerns efforts to improve the reflection of students and teachers (Tsangaridou and Siedentop, 1995; Standal and Moe, 2013). Several studies within the contexts of both PE and PETE report on enhanced reflective capabilities (Standal and Moe, 2013), but it appears that both in-service and pre-service teachers rarely reflect on the critical level, where they reflect on their own teaching in a broader political, social, and ethical perspective. Jung (2012) revealed that even 'exceptional' (p. 157) PE teachers mainly reflected on a technical level with a focus on the effect of different teaching methods to reach predetermined goals. There are, however, a couple of exceptions. Tsangaridou and O`Sullivan (1997) found that teachers' 'ideas, beliefs, professional theories, and values about teaching' (p. 21) changed over time. As the teachers' experience grew, new knowledge and perspectives helped the teachers reach a critical level of reflection. In a more recent study, pre-service teachers were introduced to and practiced an inquiry-based approach to teaching over a six-week period (Østergaard, 2018). The study found that the new theoretical input and students' experiences of the inquiry-based approach supported the creation of higher levels of reflection and a critical attitude towards traditional ways of teaching PE.

One finding in the literature is the need for communities for reflections. Several studies highlight how such communities provide teachers with opportunities to reflect upon topics of mutual interest (Attard and Armour, 2005; Standal and Moe, 2013). However, as 'merely putting teachers together will not result in productive discourses or substantive actions to improve their teaching context' (Deglau, Ward and O`Sullivan, 2006, p. 427), concerns have been raised as to whether and how such reflective communities should be moderated by outsiders (Keay, 2005, 2006; Standal and Moe, 2013).

One study that did succeed in creating a constructive reflective community is that of Casey, Dyson, and Campbell (2009). In this study, Casey was engaged in an action research project while working as a PE teacher in secondary school, with the co-authors acting as critical friends. Through an action research approach using a pedagogical intervention, he was challenged by his own reflections, the critical friends, and his own students, which in turn helped Casey develop a more student-centred pedagogical practice. Although Casey (2012) later suggested that 'insider action research and reflective practice should be seen as a vital ingredient' for educational change, he acknowledged how this process 'needs to go hand-in-hand with collaboration with significant others inside and/or outside the school setting' (p. 231).

In addition to communities in which to reflect, previous research has pointed out that there is a lack of studies that follow teachers' development of the content and quality of teachers' reflections over time (Deglau et. al, 2006; Standal and Moe 2013). Against this backdrop, the first author initiated a participatory action research (PAR) project to explore the development in three PE teachers' reflections about teaching and learning as they collectively change their pedagogical practice. More specifically, the research question for the present paper is *'how do teachers reflect on teaching and learning in PE over a one-year participatory action research (PAR) project?'*

Understanding PE teachers' reflections

To investigate how teachers reflect on teaching and learning in PE over a one-year PAR project, the study draws on Wackerhausens' (2015) conceptualization of reflection. Wackerhausen (2015) suggests that although there are many different understandings of what reflection is, there is a common pattern for all kinds of reflection, namely what he labels 'the anatomical structure of reflection' (p. 93). He suggests that when we reflect, (a) we always reflect *on* something – there is always an object for reflection such as 'teaching and learning in PE.' (b) We always reflect *with* something. That is, we employ concepts, assumptions, and knowledge. This could, for instance, be assumptions about direct instruction as an efficient way of teaching PE. (c) We always reflect *from* something, such as our interests, motivations and values; for example, a motivation to keep students as physically active as possible. (d) Finally, the reflections always take place *within* a context, such as running alone in the forest, in a team meeting, or at a pub. According to Wackerhausen (2015), reflections might take different directions based on these four common features. Even though the object of reflection is the same, such as 'teaching physical education,' reflections might be different depending on what we reflect with, from, and the context within which we reflect.

Wackerhausen (2015) divides reflections into two categories that are helpful in understanding how different forms of reflections might have different impacts on the teachers' practices. First order reflections are the problem-solving reflections that all PE teachers have to do on a day-to-day basis to solve problems that arise. Even though they are necessary, these kinds of reflections will not lead to professional development and change. On the contrary, Wackerhausen (2015) argues that they will only confirm the existing practice and status quo. In order to challenge the status-quo and transform existing practices, second order reflections are required. These are reflections about first order reflections; in other

words, reflections about our own habits and taken-for-granted PE practices. Second order reflections can, in turn, help PE teachers reveal limitations and challenge their traditional practices. However, second order reflections do not occur by themselves. In order to facilitate second order reflections, borrowing concepts, knowledge, or theories from an 'unknown landscape' can be helpful (Wackerhausen, 2015).

Altogether, this conceptualization of reflection helps us investigate teachers' reflections over a one-year PAR project. More specifically, it enables us to shed light on how changing what the teachers reflect from and with, as well as establishing a new context for these reflections to take place within, might change their reflections about teaching and learning in PE.

Methods

This study employed a participatory action research (PAR) design. PAR emerged as a critique towards the way educational action research had been developed. In particular, PAR asked for a re-emphasis of the participatory and collaborative nature of action research (Carr and Kemmis, 1986; Kemmis and McTaggart, 2008). Advocates for PAR argued that even though action research can only be conducted on one's own practice, practitioners collaboratively construct understandings from their own context. Through collectively changing their context, practitioners are able to enhance their practices (Carr and Kemmis, 1986). Successful PAR can thus be seen as an improvement of practitioners' practices, their understanding of their practices, and the situations in which they practice (Kemmis and McTaggart, 2008). Through the self-reflective cycles of think/plan, act, evaluate, and reflect, PAR has proven to be an influential approach for facilitating critical reflections on practices (Kemmis and McTaggart, 2008).

Setting and participants

The research site for this study was Forest primary school (pseudonym), an average-sized public school in a medium municipality in Norway, with approximately 225 pupils. The study was conducted with teachers working at grades 5-7. Teachers were recruited through a purposive sampling strategy, namely criterion sampling (Schreier, 2018). The selection criteria were that the teachers needed to be interested in investigating and developing their practice in PE and working at grade 5-7. After meeting the principal at Forest primary school, the whole PE section (year 5-7) joined the project. This sample thus consisted of three male

trained PE teachers: David, Ole, and Erik (pseudonyms). Two of the teachers, David and Ole, were recently qualified teachers with only 1 and 2 years of experience, while Erik had around 25 years' experience. Common between all teachers was that they taught PE 1-2 hours a week, as other subjects dominated their teaching schedules.

The first author, X, acted as a facilitator in order to both 'support disruption in participants' and 'enable them to maintain sufficient confidence in themselves as knowledgeable practitioners' (Cook, 2009, p. 285). X is an educated PE teacher who attained six years' experience in primary school before entering teacher education in 2013. X's own PE classes were mainly delivered through direct instruction in a broad variety of sport activities. The role of X was inspired by Kemmis and McTaggart (2008), who criticized how 'facilitators' have aimed at being neutral through merely adopting a technical role. Instead, X's role in this project was as more of a co-participant with particular knowledge (about the pedagogical intervention and the key elements of PAR) that was helpful for the teachers in developing their practice. The facilitator sought to establish a collaborative community for all participants to engage in equally (Kemmis and McTaggart, 2008). The facilitator role also encapsulated collecting, interpreting, and analysing data. These ongoing analyses were used as a starting point for analysis, dialogue, and negotiations with the participating teachers throughout the project.

The pedagogical intervention

The teachers and X agreed to use a pedagogical intervention based on Cooperative Learning (CL). CL is a pedagogical model that focuses on students learning with, for, and from each other in small, heterogeneous groups (Johnson and Johnson, 2009). In Johnson and Johnson's (2009) conceptual approach to CL, tasks are organized in a way that makes students believe they are positively interdependent with the other group members in order to succeed. Good learning processes occur when students engage in positive interactions. The model is centred around five elements that are central to a teacher's practices when using this approach (Table 1).

Element	Description
Positive interdependence	Students perceive that they only can succeed if the other team-members do. Students 'sink or swim together'.
Individual accountability	Each group member must complete his or hers part of the group's total work.
Promotive interaction	Students help each other to reach the groups goals. They support each other, provide feedback, act appropriate, exchange ideas, and take other perspectives.
Group processing	The group reflect on what they have achieved, what they have done well, and what they need to change or improve.
Social skills	Students learn to use interpersonal and small-group skills such as communication, accept differences, conflict solving and the ability to trust each other.

Table 1. Five elements for CL. After Dyson & Casey (2016) and Johnson & Johnson (2009).

Altogether, the five elements of CL guide planning and teaching through the model. None of the teachers had prior experience with CL, although Erik said he had 'touched upon it' in other subjects. X had a good theoretical understanding of CL without practical experiences.

The PAR design was created in close dialogue between the teachers and X. Drawing on the key elements of PAR (Ax, Ponte and Brouwer, 2008; Kemmis and McTaggart, 2008), the ambition of the design was to support the teachers in their implementation and sustained use of the five elements of CL. The design sought to support active engagement from all participants and create spaces for both individual and collective inquiry into the teachers' practices (Kemmis and McTaggart, 2008).

Initially, X introduced teachers to the self-reflective spiral as a means to support their journey (Kemmis and McTaggart, 2008). Over the project, teachers were involved in PAR through the three key elements identified by Ax, Ponte, and Brouwer (2008): analysis, dialogue, and negotiation. *Analysis* occurred individually (observation of their students and post-lesson reflective analysis (Dyson, 1994)) and collectively (post-unit reflective analysis). *Dialogue* occurred in both formal (e.g., workshops) and informal (e.g., in the staffroom) scenarios. This dialogue occurred between the teachers and between the teachers and X. Finally, over the project, both students (before, during, and after lessons) and X (e.g., workshops) were important information sources and negotiation partners for the teachers.

Self-reflective cycles

Figure 1 illustrates a linear version of the cyclical (non-linear) design of the study.

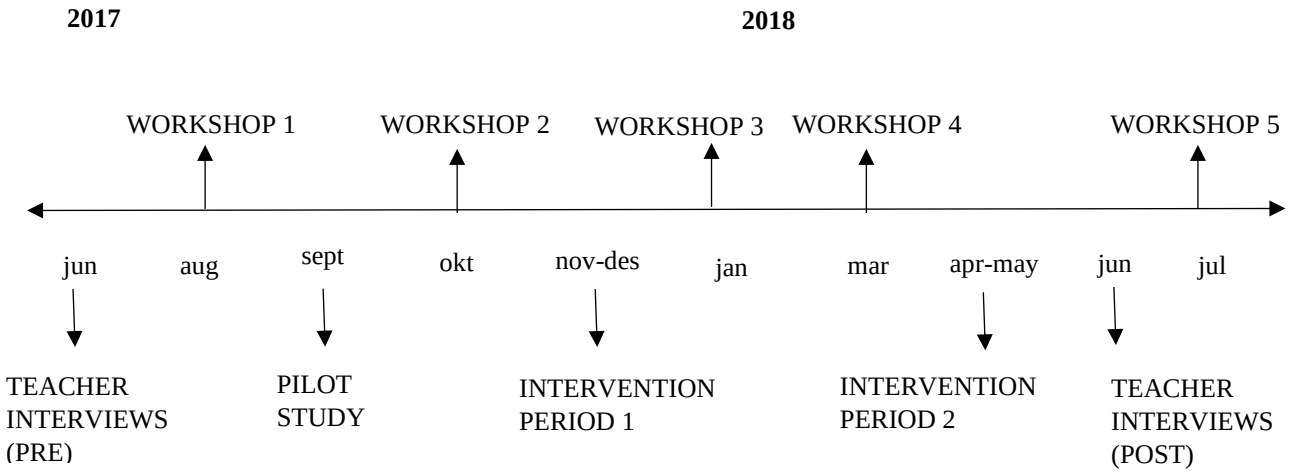

Figure 1. Research design

First, the teachers were interviewed about their reflections on teaching and learning. After that, X and teachers met for Workshop 1. In this workshop, the topics for dialogue (*think*) were the self-reflective spiral, teaching and learning in PE generally, as well as CL theoretically. This included the underlying learning theory of CL, the five key elements (see Table 1), and different CL structures (Dyson and Casey, 2016). Two pilot study lessons were also planned (*plan*). After this, X completed the two pilot study lessons at a different school to get some 'real life experiences' (*act*). Then, in Workshop 2, X shared h** experiences from the pilot study lessons (*evaluate*) before we reflected together on these experiences (*reflect*). In Workshop 2, the first cycle acted as a background. This means that, together, we went back to re-thinking CL, re-planning the two lessons, and planning for four more lessons (Unit 1). Throughout Intervention Period 1 (*act)*, constant small changes were made based on ongoing analysis. A modified version of the post-lesson teaching analysis (Dyson, 1994) helped identify what worked, what did not work, and what we wanted to change for the next lesson. Thus, each lesson can also be viewed as a cycle of thinking, planning, acting, evaluating, and reflecting. This is in line with Casey (2018), who stresses that it is important to acknowledge that the steps in an action research project are taken on numerous levels such as, but not limited to, the micro level (lesson-by-lesson), to the unit-by-unit level, and to the macro level – the steps taken across the life of the study. Thus, as Figure 2 illustrates, the lifetime of this PAR study should be viewed in multiple cycles, as cycles within cycles.

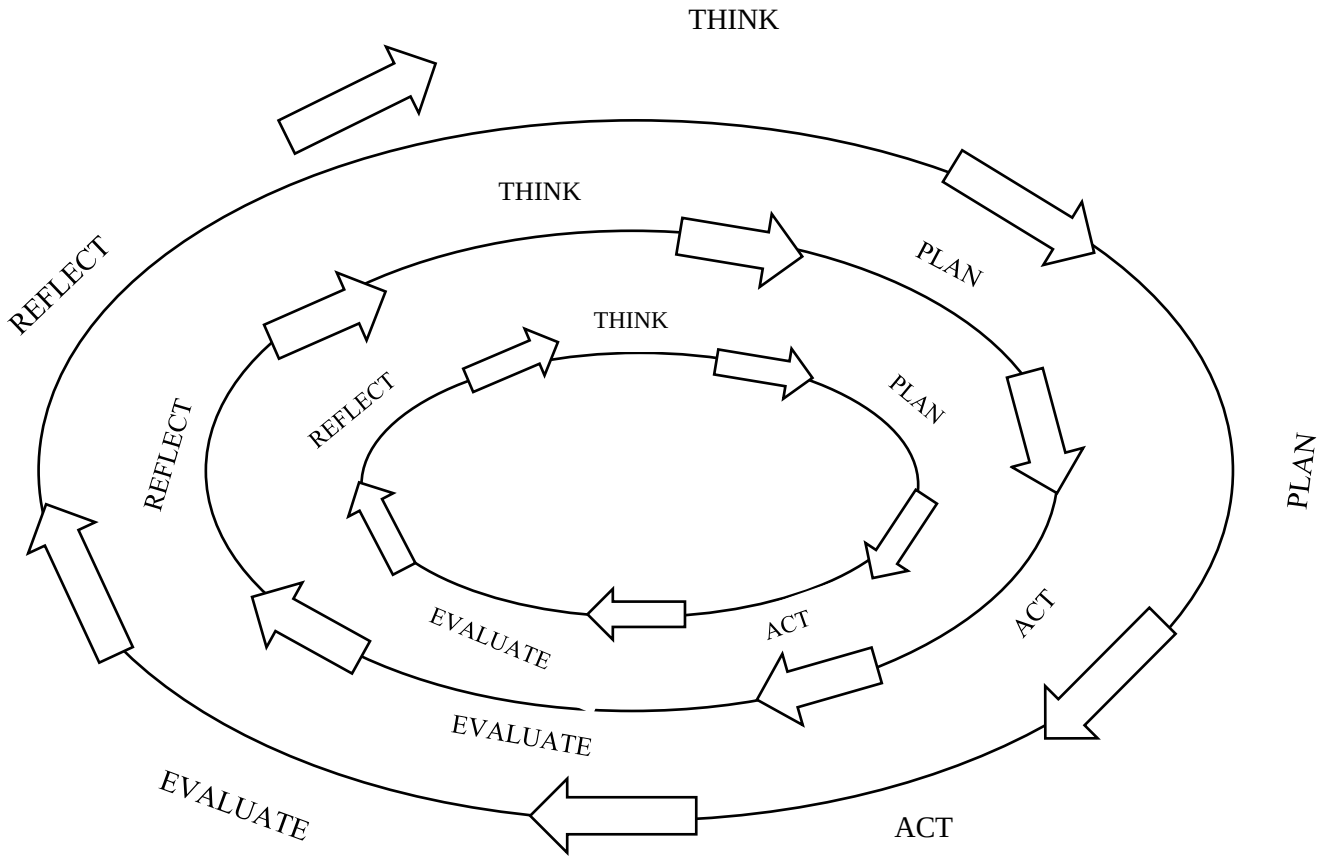

Figure 2. The action research project as cycles within cycles. Inspired by Casey (2018)

After Intervention Period 1, the teachers and X met for Workshop 3 to *evaluate and reflect.* After this, the cyclical process of *think*, *plan* (Workshop 4), *act* (Intervention Period 2) and *evaluate, reflect* (Workshop 5) was repeated.

Data gathering

Method	**Detail**
Interview	Teacher interviews before and after the project, each lasting about 25 minutes
Workshops	Five recorded workshops
Observation notes	First author's notes from 60 lessons (45 pages)
Post-lesson teaching analysis	A modified version of Dyson (1994) PLTA was used after each lesson
Researchers reflective diary	Researcher's reflective diary from the entire project (40 pages)

Table 2. Summary of data gathering methods

As Table 2 shows, data have been gathered from multiple sources to gain an in-depth understanding of the teachers' journey throughout the project. Teachers were interviewed before and after the project in order to investigate possible changes in their reflections about teaching and learning. All interviews were recorded and transcribed. The five workshops were recorded, each lasting 2-3 hours. Moreover, the facilitator observed all of the 60 lessons. The notes taken in the lessons were recorded right after each lesson and constitute a total of 45 pages of data. Additionally, right after each lesson, the facilitator interviewed the teachers to investigate their reflections about the lessons. The questions used were inspired by Dyson's (1994) post-lesson teaching analysis (PLTA), and included the following questions: What do you think about this lesson? What worked well? What did not work well? What do we change for next lesson? Finally, through the whole duration of the project, the researcher's reflective diary has been used to record informal conversations and important incidents or events relevant to the research question.

Analysis, trustworthiness and authenticity

PAR aims to transform both theory and practice (Kemmis and McTaggart, 2008). Therefore, analysis has been an ongoing and iterative process serving different purposes over the project. To facilitate the teachers' pedagogical development, X sought to analyse and interpret data (observation notes, PLTA, and researcher's reflective diary) continuously. One example is how these analyses revealed challenges related to how the students experienced group processing (see Table 1) in the first unit. These analyses were then used as topics for discussion (individually and/or collectively) of how to address these challenges. Although these analyses at the practical level were less structured, they helped familiarize the first author with the gathered data.

After the pedagogical intervention was completed, the first author took one step back and systematically re-investigated the data (see Table 2). As the first level of analysis, combined with comprehensive reading of other similar studies, had started X's theorizing, the next level of analysis moved into an abductive approach (Alvesson and Sköldberg, 2018). These analyses were carried out in two phases. In phase one, the first author analysed the teacher interviews before and after the project to investigate how the teachers reflected about teaching and learning, and whether their reflections had changed. The interviews were coded with a specific attention to the focus of the research question. After several rounds of coding, re-coding, and

discussions between the authors, one theme related to learning (*a clearer and expanded object of learning),* and one related to teaching (*new understanding and new tools)* were identified. Then in the next phase, the purpose was to analyse the teachers' journey to understand whether and how teachers' reflections had changed. This phase of the analysis was done through identifying *critical cycles.* The concept of *critical cycles* was inspired by Tripp's (1994) notion of critical incidents, and is understood as *cycles that mark a significant change or turning point in a teacher's journey.* Two of the cycles, *'new spaces of experience'* and *'the tipping point'* (albeit with different labels), were identified first as these clearly stood out as significant. The latter cycle, '*joining the project,'* was identified later in the process after new rounds of analyses and discussions between the authors. This is an example of how the abductive approach was found to be fruitful: X's prior analysis had given some assumptions about critical cycles that might be relevant. At the same time, the approach made it possible to take a critical stance towards the already-identified cycles and look for contradictions or nuances in the material, as well as identify the third critical cycles that had not yet been visible (Alvesson and Sköldberg, 2018). Wackerhausen's (2015) theory was used as an analytical lens to enhance our understanding of teachers' reflections over the project.

Credibility was achieved through the first author's prolonged engagement in the project. Triangulation of multiple data sources (see Table 2) also strengthens the credibility. Respondent validation was also used to get an enriched understanding of the findings (Smith and McGannon, 2018). *Dependability* was maintained through several discussions between the authors to challenge the first author's findings and conclusions. Furthermore, we sought to establish *confirmability* through keeping a reflexive attitude through the researcher's reflective diary. Finally, *transferability* has been addressed through rich descriptions of the context (Lincoln and Guba, 1985).

Ethics

The study was approved by the Norwegian Centre for Research Data (NSD) and followed the ethical guidelines provided by the Norwegian National Research Ethics Committees (2014). Prior to the study, informed consent was obtained from all participants. All participants could withdraw from the study at any point without consequences.

Findings

In order to investigate how teachers reflected about teaching and learning in PE over the one-year project, we first report how teachers reflected at the beginning of the project and at the end of the project. Thereafter, we explore three critical cycles to understand more of the teachers' journey throughout the project, step by step (Casey, 2013).

A clearer and expanded object of learning

One key finding in the study is that what students are supposed to learn has become clearer for the teachers throughout the project. When asked about what they thought students were supposed to learn in PE in the pre-interview, all three teachers hesitated, stalled, and appeared to be uncomfortable. Erik, the most experienced teacher argued that 'this [what students are supposed to learn] is not something I normally think about' (pre-interview). Erik's statement was not only illustrative of himself, but for all three of the teachers, as they expressed in various ways that what students are supposed to learn in PE were not something they were used to reflect about. Even the idea that 'there is something to be learned in PE' seemed distant to the teachers, as the focus was more on finding activities and content.

Although learning was hard to talk about at an explicit level, analyses of the teacher interviews revealed what the teachers perceived as important objects of learning at a more implicit level. Erik speaks for all when he says, 'I begin with the easiest, what the typical PE teacher would do – jump straight to the sports, and the skills related to different sports, such as gymnastics. [...] But also, I'm thinking health' (pre-interview). In addition to learning different sports, sport techniques, and health, the teachers highlighted that students should learn to enjoy being physically active and experience happiness in PE lessons. This was highlighted by Ole, who suggested that:

> If you meet a former student in twenty years, and ask him whether he like to move and to be physically active - and the answer is yes […] and he says that he was happy in PE lessons, then I think you have done a great job [as PE teacher].

Even though learning was still hard to talk about in the post-interview, all of the teachers were explicit about the fact that there is something to be learned in PE and that there has to be specific learning objectives for each lesson. One example of this change was given

by Ole when he suggested that, ‘you have many objectives that students are supposed to learn. It has to be learning’ (post-interview).

Moreover, all teachers expressed that they had developed their understanding of what students are supposed to learn over the project. Looking back at his prior understanding of learning in PE, Erik argued:

> Previously, I have been very focused on, what should I say, skills. Now, we have three goals, the social goals have become really in focus, and it`s not that they haven`t been there before – but they have been made more conscious for me (post-interview).

Ole and David shared Erik’s reflections and emphasised how learning objectives within the social domain had now become a part of what they believed students should learn in PE. Importantly, this emphasis of learning within the social domain did not replace their prior reflections about learning sports, about health, and about the joy of being physically active as important learning objectives for PE. Instead, the teachers argued that they had expanded their perspectives about what students should learn.

New understanding and new tools for teaching PE

In the pre-interview, all three teachers struggled to describe the way they taught PE. Erik expressed that how he taught was not something he usually thought about, or, as he expressed with his own words, ‘you ask questions about many things that I normally do not think about’ (pre-interview). His colleagues shared Erik’s experience, and Ole offered one explanation in the post-interview when he argued:

> It is very rare that we get the time to discuss the subject, objectives and teaching. And the time we do get disappear to everything else. Especially related to PE – there is no time for these kind of discussions (post-interview).

Throughout the pre-interviews, all teachers expressed, albeit in different ways, that direct instruction was their preferred – and seemingly only – model for teaching PE. Erik even expressed that ‘unfortunately, I have to say that I use too much direct instruction.’ The teachers reported that they focused on high levels of activity and guided students on how to perform skills correctly through their instruction.

However, in the post-interview, teachers reported that they had gained new knowledge about other ways of facilitating student learning. Ole suggested that he no longer had to think, 'this is a ball; this is what you do with the ball – do it.' Instead 'you can think of other ways that pupils can learn' (post-interview).

David also felt that he had improved his teaching throughout the project: 'This is my first year as a PE teacher, and in the beginning, I used to show them how to do it correctly too often […] what we have done now is more student-centred' (post-interview). Common for all was how they had become familiar with new tools to make the pupils more active in their own and their peers' learning processes. Ole reflect on what they had done in the CL lessons and suggests:

> This is a quite different way to do it. I used to show, explain, and move around trying to guide each student individually. This gives me very little time for teach student. In these lessons, the students have become more self-directed and active in their own learning (post-interview).

This change in the role of the teacher from what often is referred to as 'the sage on the stage' to 'the guide on the side' (Dyson and Casey, 2016) was something the teachers found meaningful for both themselves and their students. David explained his experience with the new role when he claimed:

> So, if you observe a group that does not work very well, you need to go over to the group and try to make the group work better without saying 'do it like this' and 'do this.' It is more like, 'how should I help them now, and why should I do that?' So, it's a different way to face the students. I think it is healthy – for both my students and myself (post-interview).

Critical cycles – understanding the steps

So far, the teachers' journey over the project has been presented as having a starting point and an end station. The changes in the teachers' reflections have seemingly followed a rather linear and unproblematic path. According to Cook (2009), this seems to be a common way to describe findings in action research projects. However, this only tells a small part of the truth. According to Cook (2009), teachers go in and out of 'mess' when they are involved in action research. Reporting on this 'messiness' is to recognize rigour within action research (Cook, 2009). Thus, to better understand the teachers' change in

this project step-by-step, three critical cycles that emerged out of the analyses will be presented.

Cycle One – Joining the project

The first critical cycle is best understood as a critical incident that later facilitated multiple critical cycles: the teachers joining the project and consequently being involved with a cyclical reflective practice through PAR. As the previous section showed, the teachers had trouble with answering questions about teaching and learning. They were not used to reflecting *on* these objects of reflection. In joining the project and becoming involved with PAR, teaching and learning in PE became an explicit topic to reflect *on* (Wackerhausen, 2015). At the same time, to argue that the teachers had not reflected at all before the project would be wrong. However, it appears that these reflections were typically first order reflections, often done in action, concerning how to face practical challenges they experienced *in situ* (Wackerhausen, 2015). Through analyses, dialogue, and negotiation as part of the PAR design, the teachers were able step out of these reflections and gradually develop a critical attitude towards their old habits and practices. In addition to more explicitly reflect *on* teaching and learning in PE, the PAR design provided a new context for these reflections to take place *within* (Wackerhausen, 2015). Looking back, Erik argued that, in this project, 'I have been lucky to work together with two colleagues and you. We have been sitting down and working together' (post-interview). Thus, while teachers prior to the project had been left to themselves to reflect, PAR provided a new collective space (e.g., the workshops) for reflections to take place *within.*

Cycle Two – 'New spaces of experience'

The second critical cycle began with the theoretical introduction of CL in Workshop 1 (*think*), and the subsequent phases of planning, acting, reflecting, and evaluating in accordance with CL. To plan lessons through the five elements of CL was no simple task *(plan)*. The teachers experienced difficulties with translating the theoretical introduction of CL into practical lessons, and time was restricted. However, this experience facilitated what Wackerhausen (2015) refers to as 'new spaces of experience' (p. 91) as the teachers reflected from and with new theory, perspectives, motives, and concepts. Erik, the most experienced teacher, concluded that 'it was a lot of new ways of thinking' (reflective diary) when using the five elements of CL. These 'new spaces of experiences' were even

more distinct when the teachers experienced practical teaching for the first time through CL in the first unit (*act).* These experiences were challenging, and Erik said he felt 'it was like entering a new world' (Workshop 3), while Ole added that, 'we felt really insecure in many ways' *(evaluate/reflect).*

Even though these new experiences of planning and teaching through CL might have facilitated second order reflections, these second order reflections were not necessarily transformative at that time. What makes second order reflections transformative is the way they reveal the weaknesses of the established practices (Wackerhausen, 2015). However, as their experiences with CL were rather 'negative,' their prior practice of using direct instruction appeared as a better alternative. In retrospect, the teachers have explained that, at that time, they were thinking *'*damn – why did we join this project?*'* (Workshop 4).

Cycle Three – 'The tipping point'

The tipping point can be understood as the point at which a lot of hard work has not yet paid off. The question is whether you manage to continue to push forward and eventually get over the top and gain momentum, or give up and resign (Gladwell, 2006). This metaphor is helpful in understanding Cycle Three, which emerged between Workshop 3 and Workshop 4. After our challenges in Intervention Period 1, X was worried about whether this project was sustainable. *he knew that one teacher considered leaving the project, primarily for other reasons, but *he was afraid that the 'failure' in the first period would affect his choice negatively. So what could *he do *(think)*? *he started to analyse what had been done so far in the project by listening to the recorded workshops and analysing the collected data. These analyses made it clear to X that *he took too much space within the PAR design. *he presented the theory, suggested what could be done in the lessons, and led the discussions. *he had even done the pilot study. Before Workshop 4, X therefore decided to step back and empower the teachers to share their views, ideas, and thoughts *(plan/act).* One example of how this was accomplished was through using modified versions of the CL structures, Think-Pair-Share and Numbered-Heads-Together (Dyson and Casey, 2016), with the first author raising questions such as 'how can we facilitate students feeling positive interdependence in Unit 2?' (reflective diary). After this workshop, X noted in h** reflective diary: *(evaluate/reflect)*

> In many ways, this was the best day so far in the project. The teachers showed more initiative, came up with many suggestions, and were generally more active in the planning of the next period. For the first time, I really felt that our community of practice benefited all. This was also the first time I've heard the teachers expressing, 'this was a good meeting.'

Although Gladwell's (2006) argument that small things can make a big difference was not written within a PAR context, his argument was found valid for this project. In many ways, the choice of taking a step back restarted the project and gave much-needed energy and optimism (reflective diary). At the same time, this choice was the beginning of the project gaining more momentum. One direct consequence emerged out of increased teacher involvement, namely the decision of returning to and executing 'Lesson Zero' (Dyson and Casey, 2016). 'Lesson Zero' is a lesson used in the beginning of a CL unit to prepare students for the upcoming unit. One of the main challenges in Intervention Period 1 that we had identified in Workshop 3 was that the students did not feel that they were 'positively interdependent.' After discussing how we could address this issue in Workshop 4, the teachers suggested to return to 'Lesson Zero' (Dyson and Casey, 2016) as the first lesson in Intervention Period 2 (*plan)*. In this lesson, students did cooperative activities before they decided on names, rules, and roles for the coming period of athletics. Importantly, the teachers themselves planned this lesson, with the first author being more of a 'guide on the side' (Dyson and Casey, 2016). After sharing ideas about the lesson, each teacher made different adjustments to meet the different needs of his own students (reflective diary). In the post-lesson teacher analysis after the first lesson, Ole argued that 'this was a really good Lesson Zero.' Furthermore, he suggested that this positive experience gave a much better starting point than in Unit 1. Ole's experience was shared by the other teachers, as they expressed how this lesson gave hope, courage, and belief in entering the second unit. In retrospect, this lesson acted as a catalyst for the rest of the unit, and eventually helped teachers get past the tipping point. Throughout the unit, teachers finally experienced how students were able to learn from and with their peers, as well as the benefits of teaching through CL compared to their traditional teacher-led pedagogy.

Discussion

The purpose of this study has been to investigate how teachers reflect about teaching and learning in PE over a one-year PAR project. Over the project, the three teachers in this

study developed their reflections about teaching and learning in PE. More specifically, they became more aware of PE as a subject for learning and expanded their perceptions of what students are supposed to learn in PE. The teachers also highlighted how the project has provided new understanding and new tools for teaching PE. However, even though the teachers' reflections have been developed over the project, the teachers' development is best understood as a messy process rather than an unproblematic journey (Casey, 2013).

The change in the teachers' reflections can be understood through drawing on the work of Wackerhausen (2015), in the sense that this theoretical framework has allowed us to explore the content and function of the teachers' reflections. Using CL as a point of departure in *thinking, planning, acting, evaluating,* and *reflecting* about PE lessons created a change in the anatomical structure and, more accurately, what teachers reflected *from and with* (Wackerhausen, 2015). This change gradually facilitated transformative, second order reflections by revealing the limitations of their prior practices and habits. Although Østergaards (2018) study was conducted in another context (PETE), the findings of the two different studies are similar. In his study, the inquiry-based approach to teaching was found to facilitate higher levels of reflections and a critical attitude toward traditional ways of teaching. Hence, both studies show that using new theoretical perspectives can be an effective way of facilitating second order reflections.

However, the present study also shows that merely being presented with and practicing new ideas might not be sufficient to challenge the traditional way of reflecting about teaching and learning in PE. Based on the evidence from this study, experiences of planning and teaching PE in accordance with new and unfamiliar theoretical perspectives could even have the opposite effect. The teachers found it difficult to move from their traditional approach to CL. Instead of challenging their traditional approach to teaching PE by revealing its limitations and weaknesses, the difficulties they experienced led to reflections that painted a positive picture of their traditional teacher-led pedagogy (Wackerhausen, 2015). Thus, reflecting on prior habits *with* and *from* new perspectives does not automatically challenge the status quo.

Importantly, the present study shows clearly that in order to be able to challenge teachers' reflections using a new pedagogical approach, interventions must be longitudinal in order to help teachers beyond initial challenges they face (Standal and Moe, 2013). Helped by the one-year PAR design, the teachers gradually overcome the challenges of using their pedagogical approach. This study shows that to what extent these reflections

have a transformative impact is contingent on the practical experiences teachers make in their teaching. Similar findings have also been highlighted by Casey (2014), who suggests that experiences of 'success' were crucial in facilitating teachers' pedagogical change. Even though it is difficult to identify exactly how much time is needed, the duration of research projects aiming at developing transformative reflections in the future should be of great concern. Based on the knowledge we do have, what seems most important is to allocate enough time for teachers to overcome initial challenges in their new pedagogical approach, giving teachers the opportunity to experience what they perceive as 'success.'

Another change in the anatomical structure needs to be highlighted in understanding the change in the teachers' reflections: the establishment of a context for reflections to take place *within* (Wackerhausen, 2015). The teachers' involvement in PAR through workshops, post-lesson/post-unit teaching analysis, and informal conversations have provided contexts for sharing reflections between the teachers and between teachers and the researcher-facilitator. Although several studies have highlighted the need for communities for reflections to take place in (Casey, Dyson and Campbell, 2009; Casey, 2012; Standal and Moe, 2013), this study supports Deglau et. al (2006), who suggests that merely putting teachers together will not necessarily result in actions that improve their teaching. In the present project, the role of the facilitator was found to be crucial. However, it was also experienced as balancing on a knife's edge. On the one hand, the facilitator needs to be in close proximity, sharing ideas and perspectives to support teachers in challenging their initial reflections. Contrary to Keay (2006), who found that some teachers became less reflective due to the influence of their colleagues, this study found no such effect. The role of the facilitator was important in creating an innovative community aiming for development 'and not just maintenance' (Keay, 2005, p. 154). On the other hand, the facilitator must be conscious about his or her role and maintain the role as 'the guide on the side' without taking up too much space. Increased involvement from the teachers in this project lead to both a greater ownership of their own journey as well as new ideas that helped in creating conditions for successful implementation of CL. Thus, although having an 'outsider' (e.g., university researchers) to moderate reflective communities can be helpful (Deglau et. al, 2006; Standal and Moe, 2013), this role must be performed with great awareness. The facilitator must be reflective in his or her own role and develop and adapt continuously to improve conditions for teachers' participation and development to support teachers learning and pedagogical development.

Altogether this study shows that the interplay between the use of CL as a new theoretical starting point, positive practical experiences, the establishment of a collectively reflective community through PAR, and the prolonged design eventually facilitated transformative second order reflections about teaching and learning. Future studies should also address how second order reflections might facilitate a change in teachers' actual teaching in and beyond the duration of the project.

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Disclosure statement

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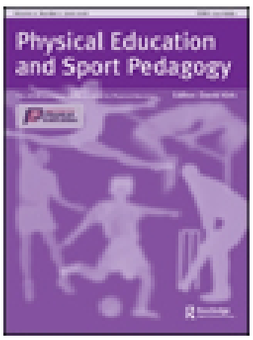

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Cooperative learning in physical education: a study of students' learning journey over 24 lessons

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ABSTRACT

Background: Although a review of literature on Cooperative Learning (CL) in Physical Education (PE) has shown that CL can facilitate student learning in all legitimate learning domains for PE [Casey, A., and V. A. Goodyear. 2015. "Can Cooperative Learning Achieve the Four Learning Outcomes of Physical Education? A Review of Literature." Quest 67 (1): 56–72. doi:10.1080/00336297.2014.984733], we need further knowledge about student learning which results from the sustained implementation of the model beyond the initial unit.

Purpose: This paper draws on 24 lessons of CL over two academic years investigating students' learning journey through (a) teachers' perceptions on students' learning journey through CL, and (b) students' experiences of their learning journey through CL.

Method: The study is part of a larger participatory action research project and follows students through four related six-week interventions in PE. The study draws on different data sources such as interviews, observation notes and the researcher's reflective diary in order to acquire an in-depth understanding of students' learning journey. Through first author's close presence throughout the project, Lars was very familiar with the data. Hence, the analysis adopted an abductive approach [Alvesson, M., and K. Sköldberg. 2018 Reflexive Methodology: New Vistas for Qualitative Research. 3rd ed. Los Angeles, CA: Sage] in which the empirical data were examined with the aid of pre-established theoretical concepts.

Findings: Three themes emerged from the analysis. The first, 'shifting attitudes' highlighted how students changed their attitudes towards CL from being reluctant to positive. The second, 'the influence of having learning objectives' shows that working systematically with learning objectives over time, helped students understand that physical education is, in fact, a subject for learning. The final theme, 'social- and emotional learning', identified aspects of students' learning that eventually results in all students being capable of working alongside their peers to master academic tasks in physical education.

Conclusion: After experiencing learning through CL as meaningful, many students developed a positive attitude towards CL and working with their peers in small groups. The paper shows that having learning objectives is something most students appreciate and value. Nevertheless, working with learning objectives must be undertaken systematically over time so that students understand that they are expected to learn in physical education. While other studies have suggested that it took a few weeks

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for students to work comfortably together [Casey, A., B. Dyson, and A. Campbell. 2009. "Action Research in Physical Education: Focusing Beyond Myself Through Cooperative Learning." Educational Action Research 17 (3): 407–423. doi:10.1080/09650790903093508], students in this project required up to 17 lessons before they were able to function in their groups. At the same time, all students, with different motor, social, cognitive and affective challenges, can be capable of learning through CL. However, this did not happen by chance, and the teacher must carefully adapt the delivery of the CL model to meet the needs of all students.

Previous research has highlighted challenges related to how students perceive and experience learning in physical education (PE) (Redelius, Quennerstedt, and Öhman 2015; Smith and Parr 2007). For example, studies show that students perceive PE as a break from academic subjects and that they are left to themselves to understand what they are supposed to learn in PE (Larsson and Karlefors 2015; Lyngstad, Bjerke, and Lagestad 2019). This picture of students' experiences of learning in PE, mirrors what we know about teachers' practices. Studies have especially highlighted how teachers consider keeping levels of physical activity high to be more important than what students learn (Kirk 2010; Larsson and Nyberg 2017). Many scholars reject this emphasis and outline the need to keep a focus on learning, and to develop students' skill and attitudes (Quennerstedt 2019).

Against this backdrop, and a desire to explore how a change of teachers' pedagogical practice promotes student learning, the first author initiated a participatory action research (PAR) project in collaboration with three primary school PE teachers. Over the last decade, there has been a growing consensus that a model-based practice (MBP) is a possible future practice for PE (Casey 2017; Casey, Goodyear, and Dyson 2015; Kirk 2013). A model-based practice can be seen as a pedagogical approach in which the teacher moves away from an emphasis on subject matter (curriculum) or a specific instructional style (e.g. direct instruction), and instead aligns outcomes with the students' needs and teaching style (Casey 2017). MBP has been positioned as a way of promoting physical, cognitive, social and affective learning in PE (Bailey et al. 2009; Kirk 2013). Although an MBP requires use of multiple models, this paper investigates students' learning journey through a single pedagogical model, and more precisely Cooperative Learning (CL). Choosing CL over other models was based on the teachers' desires and the first author's (Lars') training and expertise in CL.

Cooperative learning

In CL, students work in small, structured, heterogeneous groups to master subject content (Dyson and Casey 2016). Working together, students are not only responsible for learning the content themselves, but also assist peers in their learning processes. Research on CL is extensive, and research from the late nineteenth century shows that working cooperatively effects learning positively (Dyson and Casey 2016; Johnson and Johnson 2009). However, it was not until the twenty-first century that CL began to develop in PE (Dyson and Casey 2016). CL is centred around five principles deriving from the work of Johnson and Johnson (2009) on the conceptual approach to CL. In this approach, it is assumed that teachers can learn the five key principles of structuring CL, and then adapt these to their own classrooms (Table 1).

A recent review of CL literature in PE summarized learning outcomes as 'an academic achievement (an ability to apply and understand content), interpersonal skill development and relations (communication skills and/or peer relations), enhanced participation (engagement with learning tasks), and an improvement in young people's psychological health (self-esteem and/or motivation) (Casey and Goodyear 2015, 57).

More specifically, studies have highlighted the importance of lesson goals to facilitate student learning through CL (Dyson 2001; Darnis and Lafont 2015). Dyson (2001) found that students

Table 1. Key principles for CL.

Positive interdependence means that members of a group are linked together in such a way that they 'sink or swim' together; one student cannot succeed unless the other group members do.
Face-to-face promotive interaction is the students being head-to-head, toe-to-toe or knee-to-knee. In order to succeed, the students must share resources, help, support, encourage and praise each other`s efforts.
Individual and group accountability refers to the group being accountable for achieving its goals at the same time as each individual must be responsible for completing their part of the total work.
Students must learn *interpersonal and small-group skills* to function in their group. They must know how to lead effectively, make decisions, build trust, communicate and solve conflicts
Group processing refer to students discussing how well they work together and to what extent they have reached the learning objectives

Source: Johnson and Johnson (2009) and Dyson and Casey (2016).

began to articulate and reflect upon the learning objectives in CL lessons. Having both psychomotor and social goals made 'both content achievements and cooperative success' important criteria for students (270). In a similar vein, Darnis and Lafont (2015) highlighted how group goals influenced social interaction between the students, which in turn enhanced their motor learning. However, for lesson goals to have such an impact, there seems to be a need for creating a shared understanding of the lesson goals between teachers and students (Dyson 2001).

Many studies of CL report on students' social learning. This includes developing interpersonal skills, improved relations between students, listening skills, sharing ideas and collectively developing new meaning and understanding (Casey and Goodyear 2015). For example, several studies have shown how CL creates a trusting and respecting atmosphere within the classes (Dyson 2001; Fernandez-Rio et al. 2017; Goudas and Magotsiou 2009). For example, Velázquez Callado (2012) discovered that increasing levels of 'prosocial behaviours and inclusion of pupils with educational needs' (80). Inclusion was also the focus of Grenier and Yeaton's (2012) study, in which the authors highlighted how CL could be differentiated to give all students meaningful tasks. In another study, Goudas and Magotsiou (2009) found that students developed empathy with and towards other students. The same study also revealed that students who participated in a CL learning programme developed positivity towards group-work in PE.

Learning social skills have been found to act as a catalyst supporting students' academic learning through the model. The development of these skills takes time 'although there is no definitive timeline for this' (Casey and Goodyear 2015, 63). Casey, Dyson, and Campbell (2009) however, suggested that it took a few weeks before the students were comfortable working and learning alongside their peers.

Although CL has received increased attention from researchers within the PE field over the last few decades, very few studies report on sequential learning over time as most interventions last typically for between six and ten lessons (Casey and Goodyear 2015). Hence, one of the conclusions in the review of literature on CL in PE is that we need further knowledge about student learning which results from sustained implementation of the model beyond the initial unit (Casey and Goodyear 2015). To address this, the purpose of this paper is to explore students' learning journey through 24 lessons of CL over two academic years. More precisely, the paper explores (a) teachers' perceptions of students' learning journey through CL, and (b) students' experiences of their learning journey through CL.

At this point, it is necessary to highlight how learning is understood in this paper. We draw on the work of Casey and Quennerstedt (2020) who recently suggested that in studying students' learning through CL, emphasis should be more about the learning journey rather than the specific learning aspiration. Hence, this paper investigates students' learning as a journey of doing CL for related 24 lessons.

Method

This section commences with a short description of the participants in the study prior to a discussion of the research design. Data collection and analysis are then described, before trustworthiness and

ethical considerations are highlighted. Finally, we draw on the work of Hastie and Casey (2014) in a discussion of model fidelity.

Participants

Two trained PE teachers from the same PE department (grades 5–7), signed a declaration of consent to participate in the study. David, the 5th-grade PE teacher was newly qualified as a teacher with one year of teaching experience. Erik, the 6th-grade teacher had approximately 25 years' teaching experience.

Through the recruitment of the teachers into the project, two 5th-grade classes and one 6th-grade class were included in the study. Hence, the study draws on a sample of 41 5th-grade students (10–11 years) and 23 6th-grade students (11–12 years). Of the total of 64 students, 20 5th-grade students and seventeen 6th-grade students together with their parents signed the declaration of consent to participate in group interviews. These students were organized into two groups of four or five students in each class. Dialogue with their teachers ensured that the individual group characteristics were similar to those of the group as a whole in respect of gender, background and ability (Cohen et al. 2018).

Lars, the first author, had the role of being the facilitator in the project. Lars is a qualified PE teacher with six years of teaching experience from primary school. He has been a teacher-educator since 2013. Lars's role in the project was influenced by Kemmis and McTaggart's (2008) notion of a facilitator: they view his role as a co-participant with particular knowledge that is helpful for the teachers as they develop their practices.

Design and data collection

The project was designed by Lars in close collaboration with the teachers**.** As PAR pays specific attention to the participatory and collaborative nature of action research (Kemmis and McTaggart 2008), the project was designed with an emphasis on creating structures for dialogue, analysis and negotiation between the teachers, and between teachers and Lars (Ax, Ponte, and Brouwer 2008).

Being a PAR project, it was designed to serve both a practical and an academic objective: (a) to facilitate teachers' professional development through CL, and (b) enable Lars to collect the data used in this paper (Kemmis and McTaggart 2008). To provide clarity in our writing, we therefore first present how PAR was operationalized to serve the practical purpose. Then, we outline different methods for collecting data. Simultaneously, we acknowledge that there was an interplay between the practical and academic objectives. For example, Lars used the collected data as a starting point for discussion, analysis and negation with the participating teachers (Ax, Ponte, and Brouwer 2008) to facilitate their pedagogical development. Figure 1 illustrates how PAR was operationalized in practice.

For professional development purposes, both teacher and student interviews were used to gather information on how they experienced the project. For example, Lars presented student voices from the mid-interviews to the teachers before planning the next unit (i.e. how they experienced different CL structures and tasks). The workshops, in which both teachers were present together with Lars, were used to discuss CL theoretically, collaboratively think and plan units in accordance with CL (Workshops 2, 4, 6 and 8), as well as evaluating and reflecting on the completed units (Workshops 3, 5, 7 and 9). Each of the four intervention periods (units) consisted of six lessons and were spread over the two academic years in order to best fit the teachers and class schedules. In all other lessons that were not part of the project, the teachers were free to choose how they taught PE. Based on our on-going conversations, it was clear that they mostly used direct instruction in these lessons.

For the academic purpose, data were collected from several sources as shown in Table 2.

Teachers and student interviews included questions about student learning and experiences from the CL lessons. All interviews were recorded and transcribed verbatim. All of the nine professional

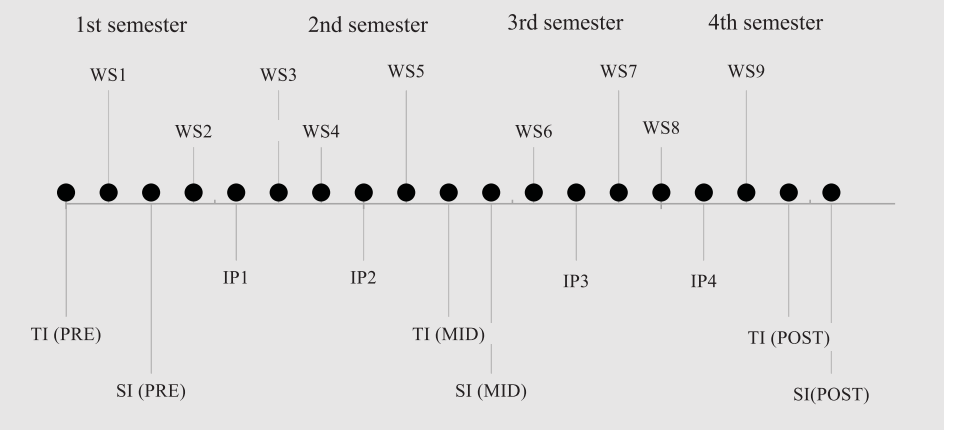

Figure 1. Timeline. Notes: TI = Teacher Interviews, WS = Workshop, SI = Student Interviews, IP = Intervention Period.

development workshops were recorded using a voice recorder. These workshops included discussions about students' learning journey following a completed unit. After each lesson, the PLTA (Dyson 1994) investigated questions such as: Did you observe any learning occurring among the students today? Due to the large amount of data (about 25 hours workshop and 72 post-lesson teaching analyses), neither the workshops nor the PLTA were transcribed in their entirety. However, key aspects of the events (such as teachers' sharing their perceptions of student learning) were noted continuously. These notes made it possible for Lars to return to specific parts of the recordings for further investigation. In addition, Lars wrote down a reflective summary after each event.

Lars observed all lessons personally and wrote down observations from the 72 lessons. These observation notes included student comments, conversations and actions relevant to the investigation of their learning journey. Finally, Lars's reflective diary recorded informal conversations, events or incidents that were not captured by the other data sources, since they occurred outside the interviews, workshops or PE lessons.

Data analysis

The analyses have been a cyclical process undertaken at different times to serve different purposes (Kemmis and McTaggart 2008). At an ongoing level, lessons and units have been continuously analysed to facilitate teachers' professional development.

After the project was concluded, Lars took one-step back to re-investigate the data related to the students' learning journey. In order to investigate changes throughout the duration of the project, data were organized chronologically before being analysed. As the ongoing analysis had created some preconceptions, that were also informed by prior research on student learning through CL, the analysis at this point moved into what Alvesson and Sköldberg (2018) label 'an abductive approach'. Through the abductive approach, the empirical data were examined with the aid of preliminary established theoretical concepts such as 'social learning', 'motor learning' and 'time'. At the same time, Lars sought to develop, elaborate and adjust these themes to the empirical data (Alvesson and Sköldberg 2018). One example is how 'social learning' through the analyses developed into 'social and emotional learning' since this framework, as proposed by Dyson (2019), better encapsulated the span of the data. The constant comparison method (Lincoln and Guba 1985) helped investigate how the ongoing theorizing was supported or contradicted in the different data sources. As the student learning journey is the focus of this paper, the four legitimate learning domains of PE (Bailey et al. 2009) acted as an analytical lens through the comprehensive data material. However, the first

Table 2. Data collection methods.

Method	Detail
Teacher interviews (pre, mid and post)	Individual interviews, typically 25–35 min.
Student interviews (pre, mid and post)	Group interviews of 4 or 5 students, typically lasting for 15–20 min.
Workshops	Nine recorded professional development workshops (each lasting 2–3 h). X were present alongside all participating teachers.
Post-lesson teaching analysis	A modified version of Dyson (1994) post-lesson teaching analysis (PLTA) was used after each lesson
Observation notes	First author's observation notes from 72 lessons (about 100 computer written pages)
Researchers reflective diary	Researcher's reflective diary from the entire project (about 95 computer written pages)

author remained open to other findings outside of the analytical scope by writing down codes and themes that were not always related to the four learning domains. At this stage, both first and second authors discussed the themes identified and tried to refine them accordingly. Finally, putting all analyses together, three themes were identified: 'shifting attitudes towards CL', 'the influence of having learning objectives' and 'the development of social and emotional skills'.

Trustworthiness and ethics

Several actions were taken to address trustworthiness (Lincoln and Guba 1985). Lars's reflective diary helped maintain a reflexive attitude to establish confirmability. To address credibility, Lars sought to create an open and free dialogue with both students and teachers so that they would share how they actually experienced the learning journey through CL, and not only what the first author wanted to hear. Eric (the 6th-grade teacher) highlighted Lars's prolonged presence as a strength when he suggested that 'you would never get these honest answers [from students and teachers] if you just had dropped by once' (post-interview). Moreover, the triangulation of data sources also helps to establish the credibility of the findings. Discussions between teachers and Lars, as well as between Lars and the second author, enhanced the study's dependability. Finally, we seek to provide a rich description of the programme context in order to address transferability (Lincoln and Guba 1985).

The study was approved by the Norwegian Centre for Research Data and follows the ethical guidelines provided by the Norwegian National Research Ethics Committees. Parents were informed about and given the opportunity to ask questions about the project at a parental meeting for each class. All participants could withdraw at any time without consequences.

Cooperative learning model fidelity

Hastie and Casey (2014) provide a guide for reporting research on MBP by identifying three key elements that should be included in every methods section as a minimum. It is important to add that model fidelity is not concerned with 'getting it right', but to show what has been done in order to identify one's own model (Hastie and Casey 2014).

(1) A rich description of the curricular elements of the units

Table 3 illustrates themes and objectives for each of the four six-lesson units in this study. The participating teachers decided on content, objectives and CL structures in dialogue with Lars.

The teachers purposefully selected heterogeneous groups in all of the four units. Students spent most of the time in groups of 4 or 5, but some pair-work was also included. Different versions of worksheets and team-folders (including aims, group rules and names, description of roles, tasks and reflective questions) developed by teachers and the researcher collaboratively, were used in all units.

(2) A detailed validation of model implementation

In order to assess and maintain model fidelity, the first author observed all lessons in person. Lars's observations made it possible assess to what extent model fidelity had been achieved through recording how the five CL features and additional features were present (Casey, Goodyear, and Dyson 2015). While fidelity, in general, was high throughout the project, there were a few examples where this was not the case. For example, students were not always given time for group processing in the first unit. When examples of lower fidelity were observed, this was a topic for discussion in the PLTA or the following workshop. Altogether, we support Casey, Goodyear, and Dyson (2015) who suggest that although full fidelity was not achieved in every lesson, we are confident that the student learning in the four units under investigation occurred as a result of CL.

(3) A detailed description of the programme context including previous experiences of the teacher and students with Cooperative Learning.

The study was conducted at Forest Primary School (pseudonym). This is an average-sized Norwegian state school with 225 pupils (grades 1–7, ages 6–12) located in a medium-size municipality in Norway. PE was compulsory and typically taught in co-ed classes once a week for approximately 1 hour. Prior to the study, PE was taught through a multi-activity approach, using mainly direct instruction. According to the participating teachers, the classes included in this study were very heterogeneous in terms of ability, ethnicity and gender.

None of the teachers nor students had prior knowledge or experience of CL as a pedagogical model, although Eric had 'touched upon CL in some other school subjects' [his own words]. Through extensive reading of CL literature and a three-month exchange period at Loughborough University working closely with Dr. Ashley Casey (an expert on CL in PE), Lars had a good understanding of CL.

Findings

In presenting our three themes, we place emphasis on the students' learning journey over 24 lessons of CL. Although the students progressed an academic year throughout the project, they are consistently referred to as 5th- or 6th-grade students.

Table 3. Curricular elements for each unit.

Unit	Theme	Student unit objectives	CL structures
1	Floorball	Master basic skills in floorball (passing, dribbling and shooting) Help other students learn. Give and receive feedback. Contribute to cooperation and team play. Know basic rules for floorball. Know key moments for passing, dribbling and shooting in floorball.	JIGSAW, Think Pair-Share, Numbered Heads Together, Learning Pairs.
2	Athletics	We will together as a team practice different forms of athletic. We will do our best each time. We will respect each other's roles. We will help each other learn. We will learn key points for executing six different athletic activities.	Students Team Achievement Division (STAD)
3	Cooperation (orienteering, parkour/freerunning, dance, acrobatics)	We will give and receive feedback that promote other students learning. We show positive attitude towards other group members. We know how our group work well together	Learning pairs, Learning Teams
4	Cooperation (skates, play, snow cave, skiing)	We will work together as a group to learn. We will do our best each lesson so that the group reaches the goals. We will learn about how group work support our learning	Learning Teams, Learning Pairs

Shifting attitudes towards CL

The change from being a *participant* in a PE programme that emphasized high levels of activity, play and having fun, towards becoming a *learner* in cooperative groups, was significant and challenging. This challenge was particularly problematic in the first few lessons where there seemed to be a broad gap between how students expected PE to be, and how PE was experienced through CL. For example, the first author overheard a male 5th-grade student arguing at the end of the first lessons that 'expert groups [a way of structuring a class using JIGSAW] takes time away from PE', as 'you don't get physically fit by using time in expert groups' [observation notes] His frustration was shared by many of his peers, as the amount of what they considered 'time thieves' (tasks that did not include physical activity such as doing group processing) was significantly higher in their teacher's new pedagogical approach.

The students' problematic view of the first lessons of CL was shared by their teachers. In evaluating and reflecting on unit 1 the teachers suggested that they believed students had experienced CL as 'irrelevant, unsafe, demanding, and even boring' (workshop 3). To address these concerns, a number improvements were suggested before planning the next unit. The following actions were discussed (workshop 4) and actioned (intervention period 2): (a) create new groups based on experiences from unit 1; (b) return to a modified version of 'Lesson Zero' (Dyson and Casey 2016) as the first lesson of unit 2 so as to improve group affiliation and atmosphere; (c) attach more emphasis to social goals, and add 'we' to all objectives (see Table 3); (d) use STAD as the CL structure to emphasize different roles (coach, encourager, warm up responsibility and secretary) rather than all students being responsible for a piece of the content; and (e) discuss social skills needed to succeed more explicitly with the students.

After applying these improvements, many students finally experienced learning through CL as something positive. This is one example of how the teacher's involvement with PAR enabled them to continuously address how they could enhance students' experiences of learning through CL. This development from unit 2 was further reinforced in units 3 and 4, which eventually facilitated a change in attitude towards CL. One strong example of this change in attitude was found outside PE towards the end of the project. The 6th-grade class had struggled with many internal conflicts between the students. When Eric (the teacher) discussed with the class how these problems could be addressed, the students themselves suggested working in 'cooperative groups' (as they referred to them) consisting of students who did not know each other very well. Furthermore, they had suggested having different roles and tasks with different team-building activities in order to get to know each other and learn how to interact together with students with whom they had never worked together before (reflective diary). A similar change in attitude was observed in the 6th-grade class. David described the change in students' attitudes towards CL from 'what is this [CL]? I do not want to participate [in these lessons]' in the first unit, to students having a 'generally positive attitude towards CL' at the end (post-interview).

The influence of having learning objectives

A clear finding in the pre-interviews was that the students did not perceive PE as a subject for learning. Instead, 'having fun', 'get in shape' and 'have a break' were the ways in which they talked about the subject and hence the primary reasons for having PE. Michael, a 6th-grade student, even argued that 'we do not consider PE a subject, so we don't really feel that we learn anything' (pre-interview). This lack of focus on learning is in many ways confirmed by David, the 5th-grade teacher who, in the PLTA after a lesson in unit 1, stated: 'I guess they are used to the teacher opening the equipment room and just say 'go ahead'. They are not used to learning things in PE'

However, in the post-interview, after participating in 4 six-week units with CL over two years, a few students expressed a different view on learning in PE. One of them, Turid, a 6th-grade girl suggested that

> there is definitely something to learn in all subjects – even in PE. … We have noticed that now. Even rules are something we need to learn. And, how you do different things. … I think that has become clear through working in groups with specific objectives for the stuff we have done. What we have done has not been so incidental and based on what we want to do.

Peter, a 6th-grade boy, claimed that he had changed his mind and he now believed that 'it [PE] is definitely a subject'. When asked more about why he had changed his opinion, now arguing that PE was in fact 'a subject', one of his classmates, John, interrupted and argued that 'because it is almost like maths; you learn something. You learn new things, stay physically active and use your brain' (post-interview). Several other students highlighted that 'using your brain' was something they associated with learning, and that through CL PE demanded more use of cognitive skills than traditional PE. Jonas (a 7th-grade male student) even argued that 'having objectives as in maths and English makes it easier to understand that PE is a subject' (post-interview). However, although some students changed their view, for most students PE was still a subject for merely being active and having fun – if they considered PE as a subject at all.

Many students expressed that having 'specific objectives' was something they appreciated as these objectives made them aware of what they were supposed to learn in the PE lessons. During a high-jump lesson in unit 2, one female student was, for example, anxious about whether or not she could make it over the bar. The coach (a student role in STAD) approached her and told her that 'to get over the bar is not the most important, but that you try. The objective is to practice high-jump [not to make it]' [observation notes]. This is one of many similar examples of how having defined objectives guided students towards what they were supposed to do, and what they were supposed to learn. Eric, the 7th-grade teacher, suggested in his post-interview that having these objectives was quite different from what students were used to, especially experiencing the objectives being explicitly communicated at the beginning of the lesson, and having objectives related to different learning domains. Both teachers experienced learning objectives as key for their students' learning journey. One example is how teachers came to realize that the learning objectives for the first unit had been too much oriented towards individual motor learning (see Table 3). Thus, in creating objectives for unit 2, teachers added 'we' to the objectives, in addition to placing social objectives more explicitly in the foreground. Moreover, discussions on how to communicate, explain and discuss these objectives with the students emphasized how the teachers could create a mutual understanding of the objectives of the lessons.

Several students emphasized having the same objective for several consecutive lessons as useful. Turid described this as having 'something specific for a longer period, contrary to us [the students] just agreeing with the teacher on something each time'. One example of how giving students the same objective for several lessons was effective was found in unit 2. To reach the learning object 'we will help each other learn', one of the groups identified 'listening to each other' as something they needed to improve for three consecutive lessons. After the fourth lesson, I noted that the group finally wrote in their team-folder that they had reached the objective and commented that 'today, everything was perfect' (observation notes). This example also shows how the group processing in CL was efficient as students collectively reflected and learned from their learning journeys. These processes were found to be most efficient when group processing was based upon previous group processing, allowing the students to work with their challenges over time (observation notes).

The development of social and emotional skills

The most prominent finding directly related to students' learning was the development of social and emotional skills. The following example from the first author's observation notes from unit 3 highlights how several subsequent CL lessons had facilitated students' social and emotional skills. The story is from a creative dancing lesson:

> Due to a colleague's illness, the teacher had to move today's lesson forward one hour at short notice. Thus, I was not able to arrive on time and arrived a little too late. I entered the gym and the teacher approached me with a

> big smile on his face: 'Lars – I am so sorry – you should have been here from the beginning. This is just unbelievable'. I'm a little confused, but the teacher continued 'I had never believed that this could happen'. What the teacher referred to was how every individual in all the groups participated equally part in creating a dance routine. Students who normally hade much trouble interacting with others, suddenly held their arms around their peers, smiled and resolved their particular role exemplarily.

Although this story shows how a classroom might appear when students work together in CL groups, the story itself needs to be understood and placed in a larger context. This particular lesson was the seventeenth of the total of 24, and was the first evidence of all students being able to work constructively together in their group. In the opinion of the teacher, this 6th-grade class is a very heterogeneous class with several physical, social, emotional and cognitive challenges. In such a mixed group, some students were comfortable working together after only a few lessons, while others needed much time, experience and guidance from the teacher and their peers. However, as the story above illustrates, all students, regardless of background or ability, showed evidence of being able to learn through CL.

In order to understand more of the students' journey, some aspects related to students' development of social and emotional skills need to be acknowledged. One of these was students learning how to treat, take care of, and support each other. An example was found in unit 4 when the 5th-grade students were supposed to create an ice-dance routine using learning teams. In the post-interview, David pointed to this lesson as being one of his strongest memories from the project when an African student, who did not speak Norwegian, had her first experience on ice skates. David remembered this lesson especially for 'students flocking around her to help her get the skates to move forward as they all wanted her to have a good experience and feel pleasure' (post-interview). This was corroborated in the first author's observation notes which stated that 'the group supported her, adapted own tasks so that she could take part in the dancing routine, encouraged her when she fell and provided positive feedback for effort and progress. Her face was just one big smile'.

Similar evidence of a supportive group climate was also found in the 6th-grade class. According to Erik, this atmosphere was quite different from how it used to be two years earlier: 'I remember the class being full of strong individualistic students. We had challenges with comments and body language when students were organized into teams and groups' (post-interview). However, Eric suggested that

> we have worked specifically with this over so many lessons now, and I think that is the main reason for why both individual students and the class as a whole has changed. We have made enormous progress in how we treat each other.

A repetitive topic throughout the project was how teachers should address group composition. In many of the lessons as well as in the interviews, students expressed a desire to be grouped with their best friend. However, in the post-interviews some of the students said that although they still preferred to work with their best friends, they had learned to work together with others. The following dialogue from the post-interview of students between two 6th-grade students and the first author shows how students experienced learning together with different students in different groups:

> Turid: We have cooperated with everyone. It has not always been your best friend, but you learn to cooperate with everyone.
>
> Jonas: When you are grouped with them – you kind of have to cooperate with them.
>
> First author: How was that?
>
> Jonas: 'So-and-so' [a mixed blessing]
>
> Turid: It was hard in the beginning, to cooperate with those who you do not want to be together with in the same group with. I think that was really hard, and sometimes someone did not want to do what we were supposed to do. But then, it started to work, after doing it more and more.

[…]

Jonas: I have become better at working together with people I did not used to cooperate with. Now, I do not work with the same people all the time.

Turid: We have not done that before, in PE; cooperation has been more in other subjects – if there is something special we are supposed to do. So in PE, we have just been on our own before and then you can be with whoever you want to be with.

Developing the ability to work together with different people with different tasks was also noted by the teachers. In his post-interview, the 6th-grade teacher, Erik, explains:

I remember really well you talking about that the students either sink or swim together. In the first period, a lot of students sank [laughter]. No doubt about it. But then, after that I believe that most students mostly have stayed floating.

Eric highlighted their development in being able to listen to each other, showing respect, caring, sharing opinions, discussing and then agreeing on their various choices as significant. Moreover, he describes a positive 'spiral' in which students gradually attacked the tasks with an expectation of succeeding together, something which was confirmed over and over again, leading to a feeling of 'yes, we can make it!', regardless of whom they worked together with.

A final finding related to the development of social and emotional skills was how the teachers experienced CL as an inclusive pedagogy that gave all students the possibility to 'shine'. Having taught CL for 24 lessons, this was one of the greatest experiences for both teachers. The teachers used the term 'to shine' to describe how different roles with fixed limits in small groups created a safe learning environment for all students in which they could master their assigned piece of work or role. Scaffolding different student roles made it possible for all students, regardless of ability, to master their assigned role. According to Erik, this 'gave them a great sense of mastery and good feelings about themselves' (post-interview). However, as David also mentioned in the post-interview, it could also have the opposite effect. What he referred to was especially evident in unit 1 when students worked in JIGSAW groups to learn basic floorball skills. When returning to their home group, only a few students managed to teach the other group members their assigned material, due both to the complexity of the task and lack of social skills among the students (observation notes). David suggested that these experiences might 'harm students' self-image' (post-interview).

Discussion

This paper is based on data from 24 lessons of CL organized in four units over two academic years. The purpose is to explore students learning journey through: (a) teachers' perceptions on students' learning journey through CL and (b) students' experiences of their learning journey through CL.

Students' first experiences of learning through CL was characterized by a mismatch between how students previously had experienced being *participants* in a subject that emphasized high levels of activity (Larsson and Nyberg 2017), and how they experienced being a *learner* in CL lessons that focused on learning for, with, and by other students (Dyson and Casey 2016). Implementing CL certainly did not work in a mechanical way 'where a certain input […] produces a certain outcome' (Quennerstedt 2019, 613). Although several challenges occurred, the teachers' involvement with PAR enabled them to find practical solutions. As the study progressed, repeated positive experiences of learning through CL led to the students to gradually change their attitude towards CL. Similar to what Goudas and Magotsiou (2009) reported, students began to appreciate working in cooperative groups.

While previous studies have suggested that students perceive PE as just a break from academic subjects (e.g. Lyngstad, Bjerke, and Lagestad 2019), this paper shows how changing the teachers' pedagogical practice made some students change their perception of PE. One key in this change was the impact of having learning objectives. While this was new to the students, the majority valued and

appreciated it. The learning objectives gave students direction and guided their actions within the lessons, especially when students worked towards the same objectives over several consecutive lessons. Similar to what has been found in other studies, having both motor- and social learning objectives, made students evaluate their own learning across different domains (Dyson 2001). For example, the students reflected on their social relations through group processing which, in turn, facilitated the development of their social skills (Darnis and Lafont 2015). However, the study also shows that working with learning objectives must be undertaken systematically over time to make students aware that they are supposed to learn something in PE (Larsson and Karlefors 2015). Moreover, as other studies have suggested, there is a need for teachers to discuss explicitly the learning objectives with their students. These discussions help students to become aware of the learning objective, and to understand what they are supposed to learn (Dyson 2001; Lyngstad, Bjerke, and Lagestad 2019; Redelius, Quennerstedt, and Öhman 2015). Although learning objectives had an impact, it must also be acknowledged that even though some students developed their perceptions of PE towards a subject for learning, most students still associated PE with merely being physically active and having fun.

Addressing students' learning more directly, the study shows a great development of social- and emotional skills. While previous research has suggested that several weeks lapsed before students began to work comfortably together (Casey, Dyson, and Campbell 2009), students in this study used up to 17 lessons before they were able to apply the skills needed to function in their group. At the same time, all 64 participating students in this study, regardless of physical, social, cognitive or affective challenges, eventually started to work constructively in their groups.

Three aspects of the students' social and emotional learning need to be highlighted in order to understand more of the students' journey. First, the study mirrors other studies that show how students develop their ability to treat each other respectfully, take care of each other and support each other (Dyson 2001; Goudas and Magotsiou 2009; Velázquez Callado 2012). The teachers highlight how CL had created a change from an individual-oriented to a cooperative-oriented class environment over the project. Second, similar to what Fernandez-Rio et al. (2017) highlighted, the students' report that they have learned to cooperative with all students, and not merely with their best friend. This led to a positive spiral in which students expected to succeed, regardless of whom they were grouped with. Third, the study supports other studies that have shown how CL is an inclusive pedagogy (i.e. Grenier and Yeaton 2012). According to the teachers, giving different students differentiated tasks that fit their needs, made it possible for all students to 'shine' simultaneously.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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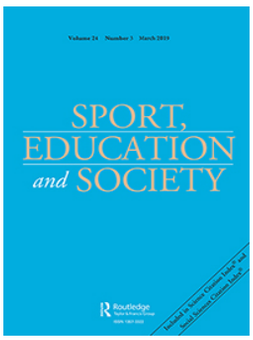

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'While we may lead a horse to water we cannot make him drink': three physical education teachers' professional growth through and beyond a prolonged participatory action research project

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'While we may lead a horse to water we cannot make him drink': three physical education teachers' professional growth through and beyond a prolonged participatory action research project

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ABSTRACT

Instead of 'the frenetic rush' to find effective models of continuing professional development (CPD) that will 'work', Armour et al. (2017, What is 'effective' CPD for contemporary physical education teachers? A Deweyan framework. *Sport, Education and Society*, *22*(7), 799–811. https://doi.org/10.1080/13573322.2015.1083000) suggest rethinking the nature of effective CPD by drawing on the work of John Dewey, and particularly his notion of education as growth. Against this backdrop, the study evaluated three physical education (PE) teachers' engagement with a prolonged transformative CPD initiative using participatory action research (PAR) to implement Cooperative Learning. More specifically, the study posed two research questions: 'How do three PE teachers experience their engagement with a prolonged CPD initiative using PAR?', and 'How do their experiences facilitate and/or obstruct development and growth?' I, the first author, took the role of facilitator, supporting the teachers throughout their journeys. The study draws on data from interviews with the teachers conducted at four points through their journey, from nine professional development workshops and from about 100 pages of my reflective diary. On analysing the data, we identified four themes relevant to understanding the teachers' journeys: 'PAR as an educative CPD experience'; 'experiencing Cooperative Learning as something that "works" – and "costs"'; 'reconstruction of mis-educative experiences'; and 'further development and growth'. We found that the tension between previous experiences of teaching PE and new experiences of teaching through Cooperative Learning challenged the teachers' established knowledge and practices. However, not all experiences were equally educative, and some restricted possibilities for further development and growth. We found that the teachers' journeys beyond the pedagogical intervention developed along different paths, making the project both educative and non-educative. We acknowledge that education must be understood as a complex endeavour (Quennerstedt, 2019, Physical education and the art of teaching: Transformative learning and teaching in physical education and sports pedagogy. *Sport, Education and Society*, *24*(6), 611–623. https://doi.org/10.1080/13573322.2019.1574731), making the directions of teachers' learning journeys hard to predict.

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Introduction

Continuing professional development (CPD) is an umbrella term for different educational activities aimed at improving teachers' practices and pupils' learning outcomes. These activities may be voluntary or mandatory, individual or collaborative, formal or informal (Kennedy, 2005, 2014). CPD for physical education (PE) teachers includes activities such as professional learning communities, conferences, workshops, staff development programmes and reading journals and books (Tannehill et al., 2015). Despite its different characteristics and purposes, there seems to be general agreement on the value of CPD, as it enables teachers to become learners in a changing society (e.g. Dadds, 2014).

Drawing on a wide range of CPD literature, Kennedy (2005, 2014) identified a spectrum of nine CPD models, each with different characteristics. According to Kennedy (2005), these can be divided into three groups based on whether the purpose is transmission, transitional or transformative. At one end of the spectrum, transmission CPD is perceived as 'fulfilling the function of preparing teachers to implement reforms' (Kennedy, 2005, p. 248), while at the other end of the spectrum, transformative CPD seeks to help teachers contribute to educational policy and practice. Transformative CPD models are typically collaborative professional inquiry models, such as action research (Kennedy, 2014). In the middle of the spectrum, CPD can be viewed as transitional or malleable, being able to support underlying agendas of both transmission and transformative CPD, depending on how they are implemented (Kennedy, 2014). Transmission approaches have low levels of teacher autonomy, while teacher autonomy increases as one moves through transitional approaches towards transformative approaches to CPD. However, even within the transformative category, Kennedy (2005) warns that external stakeholders might set the agenda, thus restricting teacher agency. Hence, the greater potential for professional autonomy offered by transformative models such as action research is not necessarily achieved (Kennedy, 2005).

Since Kurt Lewin's (1946) first conceptualisation of action research, various action-research traditions have emerged with different or even conflicting perspectives on how it should be operationalised to help practitioners develop their practices. The participatory action research (PAR) tradition emerged as a critique of how action research had developed within education (Carr & Kemmis, 1986). While Lewin (1946) had originally intended action research as a social movement, it later evolved largely into a technique for developing individual practices (Carr & Kemmis, 1986; Kemmis & McTaggart, 2008). PAR was therefore positioned as a collective movement of teachers who wish to understand their practices and address the challenges they might identify in their practices (Kemmis & McTaggart, 2008; Lewin, 1946). Within the field of PE, several studies have previously explored how PAR can support teachers to develop their pedagogical practices (e.g. Farias et al., 2017; Goodyear, 2017; Goodyear et al., 2014; Luguetti & Oliver, 2020; Petrie et al., 2018).

Although evidence on what makes CPD effective is growing (see Armour et al., 2017; Lee et al., 2019), it is so far contradictory and inconclusive (Goodyear, 2017; Makopoulou, 2018; Parker & Patton, 2017). According to Parker and Patton (2017), the question of effectiveness is contingent upon 'the CPD's purpose, the context, and school culture within which it resides' (p. 448). Effective CPD can thus, for example, be viewed in terms of increased teacher commitment, teacher development and improved teacher practice or students' learning (Patton & Parker, 2017). In their discussion about the future of CPD in PE, Armour et al. (2017) argue for a 'pause in the frenetic rush to find practical models of "effective" CPD that will "work"' (p. 800). They suggest taking one step back and rethinking the nature of effective CPD. By drawing on the work of John Dewey, and especially his notion of 'education as growth', they suggest a new conceptual framework for CPD policy, research and practice that fit the dynamic nature of contemporary and future PE. Armour et al. (2017) argue that using a Deweyan framework for designing, implementing and evaluating effective CPD in PE would encourage us to '(i) recognize the dazzling complexity of the learning process; (ii) understand context and contemporary challenges; (iii) seek to bridge research/theory–practice in innovative ways; and (iv) focus on nurturing the career-long growth of PE teachers' (p. 809).

In response to Armour et al.'s (2017) appeal, this study aims to evaluate three PE teachers' engagement with a prolonged transformative CPD initiative using PAR. The study posed two research questions: 'How do three PE teachers experience their engagement with a prolonged CPD initiative using PAR?' and 'How do their experiences facilitate and/or obstruct development and growth?' To answer these questions, the study investigates the teachers' journeys as learners over the two-year PAR project, and one year beyond. Inspired by Armour et al. (2017), we draw on Dewey's educational theory, and specifically on his ideas of education as growth occurring through continuous reconstruction of experiences.

A Deweyan perspective on CPD as an educational experience

By viewing education as growth, Dewey (1916) challenged the perception that development has an end point. He criticised the way in which educational goals were 'conceived of as completion, perfection' (Dewey, 1916, p. xlii) and the view that the journey towards attaining these goals was merely an unavoidable means to something else, without any particular educational significance. Another problem of measuring development against predefined standards is that once the learner has reached the fixed end point or objective, no more development is needed or even possible. Instead, Dewey (1916) suggested that one of the main purposes of education was to create conditions so that all could become, in present-day parlance, lifelong learners. For Dewey (1916), life is an ongoing process of growth in the sense that we must all continuously work towards development and change due to the ever-changing nature of the world in which we exist. Importantly, growth holds a normative aspect, and Dewey (1938) stated that 'only when development in a particular line conduces to continuing growth does it answer to the criterion of education as growing' (p. 36). Hence, in the context of PAR as an educational activity holding a transformative mission, expressions of growth could, for example, be transformed practices and teachers shaping their own pedagogical practice from within (Dewey, 1916, 1938; Kennedy, 2005).

For Dewey (2004), education needed to be understood 'as a continuing reconstruction of experience' in which 'the process and the goal of education are one and the same thing' (p. 21). In this form, Dewey considered education as the fundamental method for social progress and reform. In Dewey's (2008/1922) theory, experience represents the interaction between our beliefs and our actions. More precisely, since beliefs and actions are in a cyclical interdependent relationship, teachers' beliefs about CPD inform their actions just as actions shape their beliefs.

For Dewey (1938), some experiences are educative as they create curiosity, allow new perspectives and create conditions for further growth. However, not all experiences are equally educative. Some experiences are non-educative, while others might even be mis-educative as they obstruct further growth. While these experiences might develop a teacher's skills on the one hand, they might also restrict or narrow the possibilities for future experiences on the other. For example, a teacher who has several positive experiences of teaching PE in a particular way and who even improves his teaching through his preferred model might not see the need to develop different pedagogical approaches and thus may end up in what Dewey (1938) labelled a 'groove or rut' (p. 26).

To determine the quality of an experience, Dewey (1938) highlighted two principles: the principle of continuity and the principle of interaction. According to the principle of continuity, 'every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after' (Dewey, 1938, p. 35). This highlights how humans always bring something from the past into current experiences, thereby influencing the quality of future experiences. The principle of interaction concerns the interdependence between learner and environment (Dewey, 1938). Through the dynamic reconstruction of experiences, people gain new understandings, meanings, actions and habits. Dewey (1938) highlights how these experiences must not 'repel' the learner yet need to be more than just enjoyable (p. 27).

Methods

PAR emphasises creating spaces for dialogue, negotiation and analysis between the participants (Ax et al., 2008; Kemmis & McTaggart, 2008), as the teachers move through the cyclical action research process of think–plan–act–evaluate–reflect (Lewin, 1946). Hence, although each teacher individually changes his or her own practices, the construction of knowledge about the change is collectively generated.

The PAR project on which this study is based was established after I, the first author, reached out to schools in search of a PE department interested in developing their PE practices. This led me to Forest School (pseudonym), whose upper primary PE department (grades 5–7; students aged 10–13 years) comprised three PE teachers. To ground the project in the teachers' challenges and needs as experienced by the teachers themselves, I began by interviewing the teachers individually about what they wanted from the project. Based on their wish to explore more student-centred pedagogies, and on X's knowledge about Cooperative Learning (CL), they agreed to use CL as the project's pedagogical intervention.

Setting and participants

Forest School is an averaged-sized Norwegian primary school. PE is typically taught once (one 90-minute lesson) or twice (two 45-minute lessons) per week in co-ed classes. At the time of the study, the upper primary school PE department comprised three male PE teachers: Ole, Erik and David (pseudonyms). David and Ole had one and two years of experience as teachers, respectively, while Erik had over 25 years of teaching experience. Due to changes in teaching duties, Ole did not participate in the second year of the pedagogical intervention. However, he has been included in the study to allow us to investigate how his shorter engagement with PAR might have facilitated a journey different from those of his colleagues.

Due to his training and expertise in CL, the first author, X, took a facilitator role to support the teachers' professional development. More precisely, I sought to create conditions for constructive discussions, cause disruption in the teachers' thinking through presenting new ideas, and help teachers cooperate, debate and reflect (Cook, 2009). I had six years of primary-school PE teaching experience prior to becoming a teacher educator in 2013.

The pedagogical intervention

In CL, students learn from, by, with and for each other in small groups (Dyson & Casey, 2016; Johnson & Johnson, 2009). The CL model is centred around five key principles that guide teachers in their teaching (Table 1). None of the teachers in this study had prior experience of using CL in PE.

The pedagogical intervention (Figure 1) was designed by me and the teachers together. The overall purpose of the design was to create contexts for analysis, dialogue and negotiation

Table 1. Key principles for CL.

Positive interdependence	All members of a group are linked together in such a way that they cannot succeed unless the other group members do
Face-to-face promotive interaction	Students share resources, help, support, encourage and praise each other`s efforts
Individual and group accountability	The group is accountable for achieving its goals as a whole. At the time, each individual must complete his or her part of the work
Interpersonal and small-group skills	Students must learn how to lead effectively, make decisions, build trust, communicate and solve conflicts within their groups to succeed
Group processing	Students discuss how well they work together and whether they have learned what they were supposed learn

(Dyson & Casey, 2016; Johnson & Johnson, 2009).

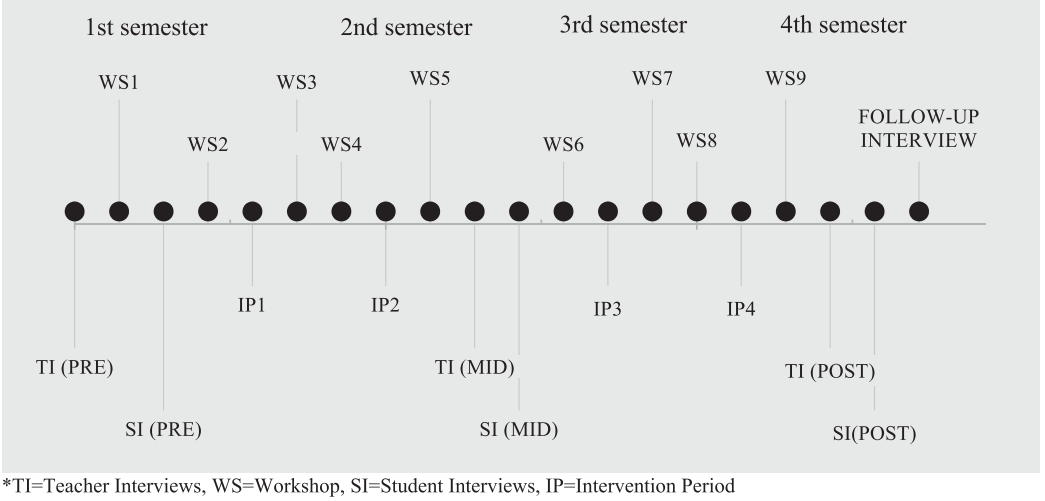

Figure 1. Timeline. *TI=Teacher Interviews, WS=Workshop, SI=Student Interviews, IP=Intervention Period.

throughout the duration of the project (Ax et al., 2008) while simultaneously enabling me to collect research data.

The nine professional development workshops, in which all teachers and I were present, were used to collectively *think* about and discuss the theoretical foundation for CL (all workshops). The workshops were also used to *plan* lessons in accordance with CL (workshops 2, 4, 6 and 8), before *acting* in each of the four intervention periods. These intervention periods lasted for six lessons and gave the teachers practical experiences of teaching through CL. I observed all of the lessons live. After each lesson, the teacher discussed his experiences from the lesson with X, so that the teacher could continuously learn from his experiences and enhance his understanding of CL.

After each intervention period, new workshops enabled the teachers to *evaluate* and *reflect on* the completed intervention periods alongside their colleagues and me (workshops 3, 5, 7 and 9). Student actions, behaviours and comments from the lessons were important sources of information, as we continuously sought to enhance the delivery of CL to better meet the students' needs.

In addition to these formal contexts, informal meetings occurred regularly throughout the project as a result of X's close and systematic presence at the school. A private Facebook group was established to keep the dialogue going and to address any practical issues that arose. In other words, action research cycles of think–plan–act–evaluate–reflect (Lewin, 1946) occurred at different times and at different levels during the project. Hence, the project should be understood as comprising multiple cycles within cycles (Casey, 2018; see Figure 2) and not as a stand-alone event.

Data collection

To answer the study's research questions, we draw on data from the teacher interviews, workshop recordings and X's reflective diary. The teacher interviews lasted about 25 minutes each and were recorded and transcribed verbatim. Questions in these interviews related to how teachers experienced the project and how the project influenced their pedagogical practice. Since Ole could not participate in the second year of the intervention, he was only interviewed before and after the second semester. However, one year after the pedagogical intervention was completed, all three teachers were interviewed again to investigate their journeys beyond their formal collaboration with X. All nine professional development workshops were recorded. Due to the large amount of data (about 25 hours of recordings in total), the workshops were not transcribed in full. However, I wrote down a summary immediately after each workshop. This summary highlighted the different

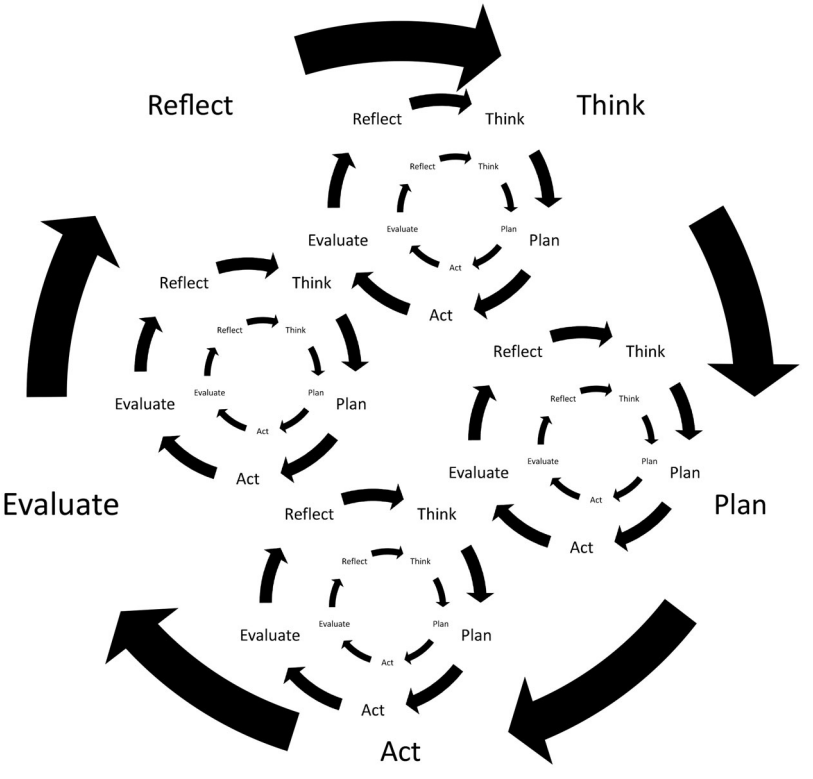

Figure 2. Action research as cycles within cycles (Casey, 2018; Lewin, 1946).

aspects of the workshops (e.g. how the teachers experienced their own journey), allowing me to revisit the recordings for more in-depth investigation. Finally, the researcher's reflective diary (about 100 pages) included X's ongoing reflections, observations, informal conversations and other events occurring during the project that were not captured by the other data-collection methods.

Data analysis

Data were organised chronologically, teacher by teacher, to allow exploration of each teacher's journey over time. Analysis followed Braun et al.'s (2017) six-step model. I was very familiar with the data due to his close participation in the project and his role in data collection and transcription. Nevertheless, I sought to analyse the data in more depth after the project's completion by repeated readings of all data sources. Data of special interest regarding the research focus were labelled with 139 different codes (phases 1 and 2). Then, the 139 codes were grouped into initial themes through a recursive process. At this point, the process was data driven. By the end of phase 3, five themes had been identified: 'going all the way', 'what works', 'duration', 'working together' and 'external researcher's role'. After identifying the initial themes, I went back to all the codes within each theme and reread the data several times to further develop and adjust the themes. Dewey's educational theory was then applied to move the themes from a 'semantic' level to a 'latent' level (Braun et al., 2017). More precisely, the themes moved from encapsulating what was explicitly said and done, to the implicit ideas underpinning the actions. In this process, the themes went through new rounds of adjustment and refinement. After several rounds of generating themes and revisiting the initial codes, as well as discussions between the authors, four themes were defined: 'PAR as an

educative CPD experience', 'experiencing CL as something that "works" – and "costs"', 'reconstruction of mis-educative experiences' and 'further development and growth'. In the final phase, I selected text extracts to demonstrate the prevalence of each theme. Extracts were also chosen based on their suitability to demonstrate the overall story we had generated in response to our research questions.

Instead of applying criteria in a universal way to judge the validity of the study, the study was guided by a relativist approach (Burke, 2017). X's close and prolonged engagement strengthened the credibility of the study. The teachers explicitly highlighted how the relationship between me and themselves encouraged them to share their true experiences of their journeys, rather than merely saying what they believed I wanted to hear (follow-up interview). Credibility was also ensured through triangulation of data sources and ongoing member checks, which enabled me to get a richer and more appropriate understanding of each teacher's journey. In terms of transparency, the co-authors acted as critical friends to challenge my interpretations of the data (Burke, 2017).

Ethics

The project was approved by the Norwegian Centre for Research Data. The study followed the ethical guidelines provided by the Norwegian National Research Ethics Committees. Before joining the project, all teachers signed a declaration of consent and were informed that they could withdraw from the project at any point, without any consequences.

Four themes relevant to understanding the teachers' journeys

Here, we present our analyses of the teachers' journeys through four themes. To acknowledge X's close presence in the empirical work and present the teachers journeys from a personal perspective, we use 'I' instead of 'the first author' or 'X' in this section.

PAR as an educative CPD experience

Although this paper investigates three teachers' experiences in a single CPD initiative, Dewey's (1938) principle of continuity helps us understand how their experiences did not occur in a vacuum. Through his 25 years of working as a teacher, Erik had repeatedly experienced CPD initiatives such as seminars or courses at the local university as top-down and de-contextualized. Erik expressed his frustration with this, suggesting that

> in Norwegian schools, the way I have experienced it, we are often introduced to new theories and thoughts from above. […] You are presented with the theory and someone who is passionate about it. Then it stops. You do not get help with how this could be done in practice, and you do not get the time to make it your own. (Mid interview)

These initiatives, as experienced by Erik, were too shallow and short to have an impact on his pedagogical practice. Since the quality of an experience is always influenced and shaped by experiences from the past (Dewey, 1938), Erik's experience from prior CPD initiatives emerged as a challenge at the beginning of the project. Through his previous negative experiences of CPD, Erik was left with a strong belief that CPD was not relevant, and consequently not worth doing.

Through several informal meetings with other staff members working at Forest School, I got the impression that Erik's CPD experiences were not unique. It was almost taken as fact by all the school's teachers that CPD did not facilitate pedagogical development and growth. On the contrary, most staff considered CPD a burden (reflective diary). Despite having far less teaching experience, Ole and David's interaction with senior colleagues (such as Erik) had provided several experiences of what 'being exposed' to CPD involved. For example, after the intervention, Ole suggested that prior to the project he 'had imagined that you [X] only would come by to interview and observe once or

twice' (follow-up interview) to gather data for research purposes. Moreover, all teachers expressed their fear of how their engagement with PAR would be 'on-top' of their many compulsory tasks as teachers (pre interviews).

Since beliefs and actions are in an interdependent relationship (Dewey, 2008/1922), the three PE teachers' beliefs about CPD were mirrored in their actions. After the first workshops and lessons, I noted several times in my reflective diary my frustration from what I experienced as a lack of engagement and initiative from the teachers: I felt that they expected me to present solutions on how to do things and that they perceived their role to be passive receivers of knowledge. Put another way, there was a gap between my seeking a transformative mission through the PAR approach, and the teachers' expectation of transmission (Kennedy, 2005). Dewey (1938) warned that not all experiences are equally educative, and in this respect, the teachers' previous experiences of CPD as transmission can be regarded as mis-educative. More precisely, the teachers' experiences of CPD had left them with beliefs and actions that from a transformative point of view restricted their development and growth (Dewey, 1938; Kennedy, 2005). The teachers' critique of previous CPD initiatives could even indicate that they in fact wanted a transmission approach, for example, to get 'fixed lessons' from an external 'expert' ready to be implemented in their classes.

Through a series of connected experiences of themselves working collectively with me discussing theory, developing lesson plans based on theory, giving lessons with the students and collectively reflecting after the lessons, the teachers' perspectives on CPD were gradually challenged. After being engaged with PAR for one year, Erik contrasted his previous frustration with CPD with his PAR experiences, suggesting that

> in this project, I have been so fortunate to have two colleagues and you. We sat down together, worked out lesson plans, and then we do it with the kids. It is about going all the way. It feels like […], for me, theory and practice are very close to each other. We plan and we act. […]
>
> That's it, it's the theory, the whole phase of planning, and then we do it. We do the whole process – BANG [claps his hands]! (Mid interview)

What was especially different between the teachers' prior experiences of CPD and the present PAR approach was the time and space allocated for collective discussions on how to transfer theoretical knowledge into practical teaching, with assistance from an external 'expert'. All three teachers highlighted how this process of 'going all the way' (from theory to practice) was particularly beneficial for learning how to use CL with their students (workshop 5) as it allowed them to 'talk about the lessons, in contrast to just doing them' (David, post interview).

Since these experiences were significantly different from their previous experiences of CPD, an interaction between 'previous' and 'current' experiences challenged the teachers' beliefs and actions (Dewey, 1938). For example, as the teachers learned more about my role in the project, I was considered as an 'opposite' to my colleagues working at the university (Erik, mid interview), as they began to realise that I wished to facilitate their professional development. As the project progressed, the teachers began to act more as full members of the PAR community by sharing their reflections, frustrations, ideas and perspectives instead of expecting me to provide all the answers. In general, the teachers went from being reluctant and sceptical, to willingly sharing ideas and showing growing enthusiasm (reflective diary).

Grounded in Dewey's (1938) claim that the active union of the principles of continuity and interaction determine the value of experience, the teachers' experiences of PAR held educational value. Through subsequent experiences of PAR (continuity) that were significantly different from how they previously had experienced CPD (interaction), teachers' beliefs and actions changed. In a Deweyan sense, these experiences were educative, as experiencing PAR as something meaningful and relevant for their own pedagogical development paved the way for new and richer experiences during the rest of the project. For example, parallel to changing their beliefs and actions, the teachers gradually began experiencing 'successes' in teaching through CL.

Experiencing Cooperative Learning as something that 'works' – and 'costs'

According to the teachers, the second unit of implementing CL was a 'big success'. At this point, the teachers experienced how their new pedagogical approach had begun to facilitate student learning in a way that had not been possible through their traditional way of teaching PE (workshop 5). For example, all teachers experienced how many students managed to learn from, by and with each other in their respective CL groups, and how this had positive effects on the class environment (workshop 5). These experiences, among others, convinced the teachers that CL was a useful approach for teaching PE. In fact, after the first year, all three teachers expressed that CL was a pedagogical approach that 'worked' (workshop 5). Although the 'success' in unit 2 was important in terms of giving the teachers practical evidence of how CL could benefit student learning, these experiences could also be seen as problematic, at least in the Deweyan view of education. For example, Ole stated that the lesson plans created in the workshops are 'just gold for us' since the lessons are 'something that you can carry with you for a long time' (post interview). Erik and David shared his view, with Erik explaining that

> now we have a 'stock', and we can just raise interest in the future. That is something I have discussed with my colleagues, that, oh my god, this is something we just use again year after year even though the project is finished and you leave. It's already created! (Mid interview)

Such experiences may narrow the possibilities for further development and growth despite being enjoyable and meaningful. More specifically, experiencing how CL had 'worked' with their students led the teachers to believe that blueprinting these lessons in the future would guarantee the same 'success'. The teachers thought they had learned how to teach PE using CL, and that no more development was needed. In a Deweyan view of the purpose of education, this is highly problematic. Instead of having created a desire and interest for continued development and growth, which Dewey (1916) argued should be the goal for educational experiences, the project had at this point caused the teachers to view their own development as complete. The interviews after unit 2 had also left me with the impression that the teachers felt they had reached their pre-defined objective of learning how to teach PE through a more student-centred approach (reflective diary). Thus, besides being 'not needed', further development was 'not possible' as they had reached the state of 'completion' and 'perfection' that Dewey (1916, p. xlii) warned about. Hence, although the teachers' skills in planning and teaching PE using CL had improved, their desire for further development and growth both in and beyond the project had become limited or had even disappeared altogether. Their experiences had instead promoted the formation of what Dewey (1938) labelled 'a slack and careless attitude' (p. 26).

At the same time, the teachers 'success' had been hard won. More specifically, the teachers had also experienced the 'costs' of their pedagogical change (workshop 5 and mid interviews). For example, looking back at his one-year engagement with PAR, Ole suggested that it was 'surprising how much time we used' (follow-up interview). Not only did learning to teach through CL take time, it required focus, dedication and energy. In this process, the teachers sometimes experienced frustration and little motivation to continue (reflective diary).

On top of that, the teachers' experiences of successful implementation in unit 2 was in strong contrast to their experiences from unit 1. In the first unit, the teachers had experienced how changing their pedagogical approach made them feel uncomfortable and stressed, as their new role as pedagogues was quite different from their old way of teaching (mid interviews and reflective diary). The student responses to CL in first unit were also quite different from the second, as the students found changing their role as learners to be hard (workshop 3). Many students had trouble with learning from, with, by and for each other, and many students were negative towards CL and wanted the teachers to return to traditional lessons (reflective diary). In the opinion of the teachers, the first unit was generally experienced as problematic and as chaotic (workshop 3).

Thus, although their experiences of teaching PE using CL had gradually become more positive and had challenged their traditional teaching practices, their experiences had at the same time repelled (Dewey, 1938) them from further development and growth. An example illustrating this is how Ole suggested in his post interview that although the project had been 'very interesting' and 'productive', and that he had 'learnt a lot', he would probably return to teach PE 'traditionally' now that he had to withdraw from the project. At this point in the project, Erik and David held a similar stance, as neither of them believed that being involved with PAR for one year would have much influence on their way of teaching in the future, beyond using the reusable lessons that had already been developed and 'worked' (mid interviews). In other words, the 'costs' were considered too high to continue growing as teachers through using CL.

Reconstruction of mis-educative experiences

David and Erik's experiences of successful implementation in unit 2 were followed by new positive experiences of students learning over the second year of the project. However, while the experiences from unit 2 had been limited to doing CL one particular way for six consecutive lessons, the experiences from the second year included CL 'working' in a broad variety of settings (e.g. inside, outside or in different seasons), with different tasks (e.g. creating dance routines or building a snow castle) to work with different objectives (reflective diary). Over the second year of the project, both teachers experienced what they perceived as 'strong individual episodes', particularly referring to how all students benefited from CL (post interviews). For example, Erik highlighted how 'students who normally struggle a lot [with fitting in], suddenly are included in their group […] and they experience success'.

Moreover, the teachers also experienced fewer 'costs' related to their change. For example, in a Facebook message sent between units 3 and 4, Erik suggested that it was 'remarkable how easily everything flows', referring to how he now experienced both lesson planning and implementation. While we had taken several hours planning unit 1 (which was a 'failure'), planning the 'successful' units 3 and 4 took approximately 60 minutes each (reflective diary). The feelings of discomfort and uncertainty had gradually diminished as both teachers showed growing confidence in teaching through CL (reflective diary).

For Dewey (1938), education is continuing reconstruction of experience, and for this project, the teachers' reconstruction of experiences between the first to the second years led to them 'seeing numerous opportunities instead of seeing numerous challenges' in terms of how CL could be implemented (Erik's post interview and workshop 9). Through the interaction between experiences of CL working in one particular way and working in various other ways, the teachers could expand their boundaries and see CL as something that could be developed and adjusted to reach different objectives with different students. A similar interaction between experiencing the 'cost' and later experiencing 'fewer costs' supported a growing optimism in terms of whether the project had changed them as teachers, both during and beyond the project's duration.

Further development and growth

Despite sharing many of the same experiences of 'ups and downs' during the project, David and Erik's development outside and particularly beyond the duration of the intervention followed two different paths.

Erik argued that his engagement with the PAR project had radically changed how he acted as a teacher, and perhaps more importantly, how he would choose to act as a teacher in the future (post interview). I asked Erik how he felt about the pedagogical intervention being over:

Erik: I am left with a really good feeling […] This has changed the way I view the subject. Both what PE is, but also how I choose to act as a PE teacher in the future.
X: Can you tell me a little more about what you mean by that?

> Erik: I will continue to use the idea of how students can be more active in their own learning in PE […] I can be creative and continue to develop lessons and units with students working in groups. […] I will not fall back now to where I used to be. I used to be the instructor, the one who started the activity and then showed them how to do it. That was how the lessons were. I still need to do some of that, but that's not me anymore. I'm changed, really, as a teacher.

Erik enthusiastically explained how he had 'used this way of thinking' to develop new lessons in PE outside the project and how he had begun to experiment with CL in other school subjects (post interview). One year later, in the follow-up interview, Erik confirmed how the project had changed the way he acted as a teacher:

> Each time when I think about my next PE lesson, I start by reflecting on whether my experiences [of using CL in the project] can be used […] I start, and I have never done that before, by thinking about how it [CL] might be a useful approach for the upcoming lessons and units. My experiences from the project have convinced me that this approach is so positive for the kids, so I want all lessons to be based on the principles.

Erik explained how he had developed new lessons and adjusted old lessons to make them better. For example, he challenged himself to use his experiences from the project to go back to the lessons that 'did not work' in the first unit to see if he could make them work. Across all subjects, Erik estimated that 30% of his teaching beyond the pedagogical intervention was delivered through CL. From a transformative point of view, these are examples of how educative experiences from the project facilitated Erik's further development and growth (Dewey, 1916; Kennedy, 2005). Two years earlier, Erik suggested that he had reached a predefined objective of becoming more student-centred. One year after the project's completion, however, he had become a learner without any particular end beyond continuing to develop and grow as a teacher using CL (Dewey, 2004).

David's journey took a slightly different path than Erik's. In his post interview, David argued that his involvement had been an 'extremely valuable learning situation' and given him 'solid theoretical knowledge' that would help him develop as a teacher in the future. For example, CL could help him 'overcome his fear of teaching football', as CL enabled him to emphasise skills and objectives other than those he traditionally used in his football lessons. At the same time, David believed that he would not use CL much after the project, other than in 'bits and pieces', as most of his lessons would probably be 'normal again' (post interview). One year later, David confirmed these predictions. He explained how he had used parts of the CL lessons in more 'traditional lessons', such as using group processing towards the end of a 'normal' or 'traditional' lesson (follow-up interview). However, as the conversation with David progressed, I realised that perhaps David had changed more than he himself was aware. Confronted with my observation, David laughed and argued that 'it has become so ingrained so maybe I'm not aware of it anymore'. David suggested that through his journey he had changed his view of the students from being 'objects to subjects that can contribute to each other's learning' (follow-up interview). This helped David think differently when he planned and implemented lessons (although his lessons did not follow the five key CL principles). This change appeared to be more at a theoretical level, however, and was not mirrored in how he described his actual teaching. Hence, from a transformative point of view, David's experiences in the project were educative at a theoretical level (to the extent that they facilitated growth), but were non-educative at a practical level (to the extent that they reinforced the status quo). This reminds us that PE teachers' growth through CPD is not only reflected in their beliefs – true growth, on the contrary, must be reflected in their actions, as improving students' conditions for growth must always be at the heart of CPD.

Interestingly, although Ole had to withdraw from the project after the first year, the follow-up interview with him revealed that his development as a teacher using CL had continued beyond the project. Given his previous suggestions in the post interview, this was a surprise. Looking back, Ole explained how the project had enabled him to think differently, even when he taught the 'most simple play-lessons'. Ole explained that he had used the five key CL principles

as a starting point to develop new lessons in PE and in other subjects with his third-grade class. He even suggested that he had 'definitely changed my view on teaching, and this [CL] is absolutely something I will keep on developing in the future'. Confronted with my surprise regarding this, Ole highlighted how he had continued closely collaborating with Erik even though he did not participate in the second year of the pedagogical intervention. Put another way, while his formal participation lasted for only one year, his professional development had continued through a more indirect engagement.

Conclusion

Although CPD encapsulates a spectrum of educational activities with different characteristics and purposes, most seem to value CPD as it allows teachers to become learners in a world characterised by continuous change (Dadds, 2014). However, evidence about what makes CPD effective remains contradictory and inconclusive (Goodyear, 2017; Makopoulou, 2018; Parker & Patton, 2017). Instead of trying to identify the best model for CPD, this paper is inspired by Armour et al. (2017), who suggest that using a Deweyan framework can help us rethink our perspectives on what truly constitutes effective CPD. Hence, the purpose of this study was to explore how three teachers' experienced a CPD initiative using a PAR approach and how their experiences facilitated or obstructed development and growth, both in and beyond the project.

The Deweyan framework helped us understand how teachers' experiences of CPD were influenced by prior experiences of other, comparable CPD initiatives. While our PAR approach emphasised the transformative aspect of CPD, the teachers' previous experiences of CPD had led them to believe that CPD was a form of transmission in which they were passive receivers of knowledge (Kennedy, 2005). Their previous experiences had also convinced them that CPD was not worth engaging in, as previous initiatives had repeatedly failed to have an impact on their practices. While this was a barrier to having fruitful experiences particularly at the beginning of the project, subsequent experiences of PAR as something meaningful and helpful for their pedagogical development gradually facilitated changes in beliefs and actions. In other words, the PAR approach helped the teachers see renewed value in CPD, as their experiences of PAR challenged many of their previous criticisms of CPD. For example, the teachers highlighted how PAR over time helped them transfer theoretical knowledge into practice with support from an external researcher.

The study also shows how experiences of successful implementation of a pedagogical intervention such as CL might be problematic according to the Deweyan view of education. Armour et al. (2017) warn that 'specific CPD activities could only be regarded as educative if they promoted an appetite and aptitude for, and engagement in, further learning' (p. 807). When the teachers in our project experienced CL as something that 'works', their desire for further development and growth became limited as they believed they had reached a state of completion (in attaining their objective of becoming more student-centred). This was further reinforced by their experiencing the 'costs' of pedagogical change (i.e. such change is uncomfortable and requires much time and energy). In this respect, we argue that although PAR was found to be an efficient approach to help teachers overcome the initial challenges of implementing a new pedagogical approach, PAR experiences are not necessarily educative from a Deweyan point of view.

Over the second year of the project, Erik and David experienced how CL could work in numerous ways to reach different objectives and how the 'costs' of CL reduced as they gained more experience using it. This challenged their experiences from the first year, thereby changing their view from one that saw only challenges to one that could see possibilities in terms of how their teaching through CL could be further developed. Our findings lead us to suggest that in order to make teachers' PAR experiences truly educative, teachers must undergo a broad variety of experiences over time, including, for example, experiencing how CL can be implemented in different ways to reach different objectives.

Our analysis shows how the teachers' journeys took different paths, particularly after the pedagogical intervention was completed. While Erik continued to learn more and develop as a teacher using CL, David suggested that his actions after the project continued to be mainly expressions of the status quo despite his beliefs about teaching having changed. We agree with Armour et al.'s (2017) assertion that while the professional growth of teachers may be the focus of CPD initiatives, effective CPD ultimately enables teachers to facilitate fruitful experiences and growth for their students. Hence, from our transformative perspective of CPD and a Deweyan perspective of education, we conclude that the project might be characterised overall as having been educative for Erik and non-educative for David. Despite his shorter engagement with PAR, Ole had continued to develop and grow beyond his formal participation in the project. This was largely a result of an indirect participation in the project facilitated by his close collaboration with Erik.

As a final reflection, we believe that Dewey's (1916) well-known phrase 'while we may lead a horse to water we cannot make him drink' (p. xxi) offers an important message for future CPD initiatives in general and for PAR projects specifically. Our project is a good example of how education is a complex endeavour (Quennerstedt, 2019) and of how creating 'effective' CPD initiatives that guarantee a certain outcome can be difficult. While designing an optimal CPD programme and predicting how teachers' learning journeys will evolve may be hard, we believe that the Deweyan framework used in this study helped us to recognise the complexity of learning, understand context, bridge the theory–practice divide and focus on the continued growth of PE teachers (Armour et al., 2017).

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Appendicies

Appendix 1 Details about the pedagogical intervention

Event	Detail
Pre-interviews	In the pre-interviews all three teachers revealed that they mainly used direct instruction as their preferred teaching method. Furthermore, they also expressed in various ways that changing their teaching style from a teacher-centered to a student-centered was something they would like to develop through the project.
Workshop 1	Based on the pre-interviews and my own knowledge, I proposed for the teachers to adopt a MBP practice using CL. After they agreed on this, I held a two-hour introduction to MBP and CL theoretically. Although this was kind of a lecture, it was organized around questioning, discussions and reflection. We discussed the five critical elements and how these could be applied in practice. We then looked into some CL structures such as JIGSAW, Learning Teams, Student Team Achievement Division and Team Games Tournament to provide some examples on how it might look when teaching through all of the five critical elements. After visiting CL theoretically, teacher‘s decided on the curricular focus for the first intervention period. Due to a tournament they held each autumn, they wanted to focus on floorball through a six-lesson unit. We then planned for two lessons using different CL structures. This first workshop also involved introducing the teachers to the reflective spiral as a means to support their journey. We discussed how the spiral would be implemented in the project, and how this first workshop could be seen as the start of a cycle of *thinking* and *planning*.
Workshop 2	In workshop 2, we began by revisiting CL and the five elements theoretically for about one hour, in order to enhance our understanding of the model. We made some small changes on the first two lessons as well as planned the following four.
Intervention period 1	Through intervention period 1, teachers got their first experience with teaching through CL. At the same time, students got their first experience of learning through the model. As I observed all of the lessons, we spent 5-10 minutes at the end of each lesson to evaluate and reflected on the lesson. These reflections were used to make small changes for the following lessons throughout the unit. For instance, teachers often experiences that activities took more time than we had planned. Sometimes I brought experiences from one lesson with one teacher to another teacher before having the same lesson. At the same time, teacher‘s shared their experiences between them in informal settings. Student‘s behaviours, comments and learning were important sources of data for developing the following lessons (re-thinking and re-planning) within the unit.
Workshop 3	Right after intervention period was over, we all met to discuss the completed period (post-unit analysis). We had discussions about what worked well, what did not and what we could do next to improve teaching through the model. We also discussed our experiences from a theoretical perspective, as teacher‘s now had experiences that they could connect to theory.
Workshop 4	A couple months later, we met to re-think and plan intervention period 2. As when planning the first period, teacher‘s got to choose the curricular focus for the period. Due to an athletics happening in June, they decided on a six lesson athletics unit. We started the workshop with another theoretical revisit on CL, followed by a discussion about how to teach through the model this period. One of the teachers remembered a video on Student Team Achievement Division that I had shown in the first workshop, and we agreed on using Student Team Achievement Division for the entire period. We then, together planned six lessons with six different activities: hurdles, long jump, sprint, relay, high jump and javelin.
Intervention period 2	Intervention period followed the same procedure as intervention period 1, with six lessons each followed by post-lesson analysis, exchange of experiences between teachers and researchers in various setting, as well as analysis of student’s behaviours, sayings and learning. It is thus important to add that re-thinking and re-planning did occur within the units based on the information gathered.
Workshop 5	Finally, the first year of the project ended with another workshop in which we evaluated and reflected on the completed period. Central questions were again: What worked? What did not work? What do we learn from this? What do we do next?

Workshop 6	This workshop began with discussions around the rationale behind MBP. Actually, the teachers appeared to 'buy-into' the arguments of why teachers should adopt a MBP based on how PE is practiced. After that, we once more revisited CL theoretically and discussed the five elements in light on our experiences from the first year. I made a suggestion that in this period, instead of setting the activity first, we rather started by setting the objectives and then find activities that were suitable. Although Erik suggested that 'for me, this is a new way of thinking' they agreed.
Intervention period 3	Intervention 3 period followed the same procedure as intervention period 1 and 2, with six lessons each followed by post-lesson analysis, exchange of experiences between teachers and researchers in various setting, as well as analysis of student's behaviour, sayings and learning. It is thus important to add that re-thinking and re-planning did occur within the units based on the information gathered.
Workshop 7	Evaluation of the completed unit. I had prepared some questions to challenge the teachers thinking. I had also challenged the teachers via Facebook to think of something they wanted to discuss. One of the topics we discussed was how positive interdependence had developed over the project.
Workshop 8	We discussed the findings of my first paper before planning the final intervention period. The teachers suggested that my findings were 'spot on' and that the way I described their journey was precise. In planning the fourth period, we began by creating the objectives. Then we tried to challenge traditional thinking around activities. The teachers were really positive and argued that 'I'm really excited about this period' and 'I really look forward to this'.
Intervention period 4	Intervention 4 period followed the same procedure as the other intervention periods, with six lessons each followed by post-lesson analysis, exchange of experiences between teachers and researchers in various setting, as well as analysis of student's behaviours, sayings and learning. It is thus important to add that re-thinking and re-planning did occur within the units based on the information gathered.
Workshop 9	Evaluation on the completed period, but also about the project overall. Discussion of my findings from article 2.
Post-interviews teachers /students	Final interview to explore experiences from the final intervention period, but also the project overall.
Follow-up interview	Interview one year after the pedagogical intervention was completed, to investigate their journeys beyond the duration of the project.

Appendix 2 NSD evaluation

Lars Korpberget Bjørke
Institutt for samfunnsvitenskap Høgskolen i Hedmark
Postboks 4010 Bedriftssenteret
2318 HAMAR

Vår dato: 04.05.2017 Vår ref: 53004 / 3 / AMS Deres dato: Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 15.02.2017. All nødvendig informasjon om prosjektet forelå i sin helhet 01.05.2017. Meldingen gjelder prosjektet:

53004	*Læring i kroppsøving - et aksjonsforskningsprosjekt på mellomtrinnet*
Behandlingsansvarlig	*Høgskolen i Innlandet, ved institusjonens øverste leder*
Daglig ansvarlig	*Lars Korpberget Bjørke*

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, http://www.nsd.uib.no/personvernombud/meld_prosjekt/meld_endringer.html. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, http://pvo.nsd.no/prosjekt.

Personvernombudet vil ved prosjektets avslutning, 01.07.2020, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

Kjersti Haugstvedt

Anne-Mette Somby

Kontaktperson: Anne-Mette Somby tlf: 55 58 24 10
Vedlegg: Prosjektvurdering

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

Personvernombudet for forskning

Prosjektvurdering - Kommentar

Prosjektnr: 53004

Prosjektet gjennomføres med aksjonsforskning som i praksis betyr at forskeren samarbeider med lærer og elever om å utvikling av kroppsøvingsfaget. Prosjektet vil innebære intervjuer og observasjoner med lyd og videoopptak av lærere og elever.

Lærere, foreldre og elever skal informeres skriftlig og muntlig om prosjektet og samtykker til deltakelse. De reviderte informasjonsskrivene mottatt 01.05.2017 er godt utformet.

Personvernombudet legger til grunn at forskere følger Høgskolen i Innlandet sine rutiner for datasikkerhet. Dersom personopplysninger skal lagres på mobile enheter, bør opplysningene krypteres.

Forventet prosjektslutt er 01.07.2020. Ifølge prosjektmeldingen skal innsamlede opplysninger da anonymiseres. Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan gjenkjennes. Det gjøres ved å:
- slette direkte personopplysninger (som navn/koblingsnøkkel)
- slette/omskrive indirekte personopplysninger (identifiserende sammenstilling av bakgrunnsopplysninger som f.eks. bosted/arbeidssted, alder og kjønn)
- slette digitale lyd-/bilde- og videoopptak

Appendix 3 Information letter with consent form - teachers

Forespørsel om deltakelse i forskningsprosjektet

Læring i kroppsøving

Bakgrunn og formål

Gjennom doktorgradsposjektet «Læring i kroppsøving» ønsker følgende problemstillinger å besvares:

1) Hvilke pedagogiske prosesser må fremmes for å læring skal fremmes i kroppsøvingsfaget?
2) Hvordan erfarer lærere å arbeide på denne måten?
3) Hvordan erfarer elever å arbeide på denne måten?

Prosjektet gjennomføres i regi av Høgskolen i Innlandet, som et selvstendig doktorgradsprosjekt av undertegnede. For å kunne svare på problemstillingene er prosjektet avhengig å ha med tre lærere som bidragsytere. Studien er et aksjonsforskningsprosjekt som går ut på at forsker og lærere tett skal samarbeide om å utvikle en ny og forbedret praksis i kroppsøvingsfaget. Det er også nødvendig å inkludere elever i studien ettersom det skal undersøkes hvilke erfaringer elevene har med en slik undervisning.

Hva innebærer deltakelse i studien?

Deltagelse i studien innebærer aktiv deltagelse i utforming av undervisningsopplegg samt intervju. Dette vil totalt være av et omfang på om lag 15 timer per skoleår.
Dataene vil være samtaler i prosessen med å utvikle undervisning, feltnotater, observasjonsnotater og transkribering av intervju. Spørsmålene i intervjuene vil omhandle hvordan lærere i kroppsøving tenker omkring læring og hvordan man best mulig kan fasiliteter for læring for elevene.

Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet konfidensielt. Alle data vil bli lagret på en intern server her på Høgskolen som kun undertegnede og veiledere har tilgang til. Dette innebærer også video- og lydopptak som blir slettet når studien avsluttes i juli 2020.
Det kan være at deltakerne kan kunne gjenkjennes i publikasjonen ettersom det vil bli skrevet nøye beskrivelser av den konteksten som studien foregår innenfor.

Prosjektet skal etter planen avsluttes 31.juli 2020. Da vil alle data fra prosjektet slettes.

Frivillig deltakelse

Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli anonymisert.

Dersom du ønsker å delta eller har spørsmål til studien, ta kontakt med Lars Bjørke, tlf: 992 72 503

Studien er meldt til Personvernombudet for forskning, NSD - Norsk senter for forskningsdata AS.

Jeg har mottatt informasjon om studien, og er villig til å delta

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(Signert av prosjektdeltaker, dato)

Appendix 4 Information letter with consent form - students and parents

Forespørsel om deltakelse i forskningsprosjektet

Læring i kroppsøving

Bakgrunn og formål

Gjennom doktorgradsposjektet «Læring i kroppsøving» ønsker følgende problemstillinger å besvares:

1) Hvilke pedagogiske prosesser må fremmes for å læring skal fremmes i kroppsøvingsfaget?
2) Hvordan erfarer lærere å arbeide på denne måten?
3) Hvordan erfarer elever å arbeide på denne måten?

Prosjektet gjennomføres i regi av Høgskolen i Innlandet, som et selvstendig doktorgradsprosjekt av undertegnede. For å kunne svare på problemstillingene er prosjektet avhengig å ha med tre lærere og elevene i disse klassene. Studien er et aksjonsforskningsprosjekt som går ut på at forsker og lærere tett skal samarbeide om å utvikle en ny og forbedret praksis i kroppsøvingsfaget. Det er også nødvendig å inkludere elever i studien ettersom det skal undersøkes hvilke erfaringer elevene har med en slik undervisning, samt hvordan de mener undervisningen kan bli bedre.

Hva innebærer deltakelse i studien?

Deltagelse i studien for elevene betyr at elevene vil bli forespurt om å delta i gruppe-intervjuer (varighet 30-45 minutter) for å undersøke hvordan de opplever kroppsøvingsundervisningen. Dette kommer både til å skje før oppstart høsten 2017, underveis og ved prosjektets slutt i 2020. Dette for å komme sammenligne hvordan elevene opplever kroppsøvingsfaget før og etter endringen av praksis. Elevenes stemme vil også kunne brukes til å gjøre undervisningen bedre. Det kan også være aktuelt med korte uformelle samtaler etter hver enkelt økt. Ellers vil kroppsøvingsundervisningen foregå som vanlig i periodene.

Hva skjer med informasjonen om deg?
Alle personopplysninger vil bli behandlet konfidensielt. Alle data vil bli lagret på en intern server her på Høgskolen som kun undertegnede og veiledere har tilgang til. Dette innebærer også video- og lydopptak som blir slettet når studien avsluttes i juli 2020.
Det kan være at deltakerne kan kunne gjenkjennes i publikasjonen ettersom det vil bli skrevet nøye beskrivelser av den konteksten som studien foregår innenfor.

Prosjektet skal etter planen avsluttes 31.juli 2020. Da vil alle data fra prosjektet slettes.

Frivillig deltakelse
Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli anonymisert.

Dersom du ønsker å delta eller har spørsmål til studien, ta kontakt med Lars Bjørke, tlf: 992 72 503

Studien er meldt til Personvernombudet for forskning, NSD - Norsk senter for forskningsdata AS.

Samtykke til deltakelse i studien
Jeg å signere godkjenner jeg at mitt barn kan delta i studien «læring i kroppsøving». Jeg har forstått all nødvendig informasjon, og er klar over rettighetene.

(Elevens navn)

(Foresatt(e), dato)

Appendix 5 Interview guide teachers before the project

Intervjuguide med lærere før

Først og fremst; dette er ingen muntlig eksamen. Noen spørsmål kan kanskje oppleves som at du må «forsvare deg» - men jeg garanterer at det ikke er hensikten. Informere om rettigheter osv.

Husk oppfølgningsspørsmål av typen

- Hva mener du med…?
- Kan du forklare….?
- Hvorfor synes du det?
- Kan du komme med et eksempel?
- Jeg har veldig lyst til å høre mer om det, kan du…?

Tema 1: Hva skal elevene lære i faget.

- Hvorfor har vi kroppsøving mener du?
    - Hva mener du er hensikten med faget?
    - Hvorfor er kroppsøving viktig?
- Hva skal elevene lære i kroppsøving?
    - Hvorfor?
    - Andre ting?

Tema 2: Teaching styles.

- Kan du si noe om hvordan du tenker at barn lærer?
- Du har sagt noe om hva du mener skal læres i kroppsøving, hvordan tilrettelegger du for at denne læringen skal skje?
- Kan du beskrive hvordan du underviser i kroppsøving?
- Er det andre tilnærminger som kunne vært gode?
- Hvilken rolle spiller elevene selv i sin egen læringsprosess?
- Hvilken rolle spiller de for hverandre i hverandres læringsprosess?
- Kan du nevne noen konkrete strategier eller metoder du bruker for at elevene skal lære i kroppsøving?
- Kan du beskrive en typisk kroppsøvingstime for deg, med tanke på oppstart, organisering, oppgavetyper?
- Hva tenker du på når du planlegger en kroppsøvingstime?
- Bruker du elevene i planlegging og/eller gjennomføring av undervisning?
    - Hvordan tenker du at elevene kan inkluderes i gjennomføring av undervisning?
- Hva tenker du om læring og undervisning i kroppsøving sammenlignet med andre fag du underviser i?
    - Er det likheter, forskjeller?

Tema 3: Deltagelse i prosjektet

Til slutt:

- Hva er din motivasjon for å delta i dette prosjektet?
- Hvis du skulle endret på noe i din praksis, hva ville dette vært?

Appendix 6 Interview guide teachers half-way into the project

Intervjuguide med lærere midtveis

Husk å verdsette deres deltagelse! Husk formulering av spørsmål!

Husk oppfølgningsspørsmål av typen

- Hva mener du med…?
- Kan du forklare….?
- Hvorfor synes du det?
- Kan du komme med et eksempel?
- Jeg har veldig lyst til å høre mer om det, kan du…?

Spørsmål:

- Nå har vi jobbet sammen et år, kan du fortelle litt om hvordan du har opplevd å være med på prosjektet så langt?
    - Hvordan har det vært å være med?
    - Hva er positivt?
    - Hva er utfordrende?
    - Annet?

Spørsmål om hvordan prosjektet eventuelt har påvirket:

Husk å referere til svarene deres fra før-intervjuet og spørre om hva de tenker om det nå!

- Har det å delta i prosjektet gjort noe med deg som lærer og din undervisningspraksis?
- Har deltagelse i prosjektet gjort noe annet med ditt syn på kroppsøvingsfaget?
- Har deltagelse i prosjektet gjort noe med ditt syn på hva elevene skal lære i kroppsøving?
- Har deltagelse i prosjektet gjort noe med ditt syn på hvordan barn lærer?
- Har deltagelse i prosjektet gjort noe med hvordan du ser på undervisning i kroppsøving?
- Hvis det har skjedd en endring, har du noen tanker om hvorfor denne endringen har skjedd?

Appendix 7 Interview guide teachers after the project

Intervjuguide lærere etter prosjektet

Husk oppfølgingsspørsmålene!

1) **Oppvarming**

- For å bruke en klisjè fra idrettsverden: Hva føler du nå etter at prosjektet er ferdig?
- Er det noe spesielt du husker fra prosjektet?
    - Episoder med elever?
    - Episoder som omhandler prosjektet mer generelt?

Elevers læring gjennom prosjektet

- Med egne ord, hva tenker du at elevene har lært gjennom prosjektet?
    - Hvorfor/hvordan har de lært disse tingene?
- Husker du noen spesielle episoder der du tenker at det var tydelig at elevene lærte?
- Hva tenker du om elevenes progresjon/utvikling gjennom prosjektet?
    - Å samarbeide har jo vært sentralt, opplever du noen utvikling innenfor det å samarbeide?
- Samarbeidslæring har gjort noe med fokus på samarbeid, men er det andre ting vi har gjort gjennom prosjektet som du tenker har fremmet elevers læring?
- 'Treffer' samarbeidslæring de samme elevene som i vanlig kroppsøving, eller tenker du at det er noen forskjeller?
    - Har du eventuelt eksempler på dette?
    - Hvorfor er det sånn at samarbeidslæring eventuelt «treffer» andre?
- Hva tenker 'skal til' for at elevene skal lære godt gjennom samarbeidslæring?
    - Hva må du som lærer gjøre?
    - Hvilke forutsetninger må ligge til grunn?
- Hvor lang tid tenker du det tok før elevene virkelig begynte å lære?
    - Hva var eventuelt nøklene for at læring skulle skje?
    - Er det noe du har gjort som du tenker har vært avgjørende for elevenes læring?
- Etter så mange økter, hva tenker du om samarbeidslæring sin plass innenfor kroppsøving?

2) **Din læring gjennom prosjektet**
    - Opplever du å ha lært noe om din praksis gjennom deltagelse i dette prosjektet?
    - Opplever du å ha utviklet og/eller endret ditt syn på faget?

    - Hva som skal læres?
    - Hvordan man kan tilrettelegge for læring?

- Hva tenker du om at prosjektet er ferdig – heldigvis? Både og? Eller skulle gjerne fortsatt?

- Hva tenker du om det vi har drevet med inn i mot din fremtidige profesjonsutøvelse?
    - Er det noe du tar med deg?
    - Hva tenker du blir borte?
    - Hva skal til for at du fortsetter å jobbe med samarbeidslæring?
    - Hvordan kan man legge til rette for at denne typen prosjekter faktisk varer utover den oppmålte tiden?
- Hva mener du er avgjørende for at slike prosjekter skal bli en suksess?
- Hva kan potensielt ødelegge denne typer prosjekter?
- Hva tenker du om denne typen prosjekter sammenlignet med andre type forskningsprosjekter du kjenner til?
- Hva tenker du forskeren bør gjøre i slike prosjekter? Hva er forskerens rolle?
- Hva ville du sagt til kollegaer som har blitt forespurt om å være med på lignende prosjektet? Eventuelt om du hadde fått spørsmål om 14 dager å bli med på noe lignende..

Appendix 8 Interview guide teachers one year after the project

Intervjuguide lærere et år senere.

- Det er et år siden vi avsluttet. Hva har skjedd etter prosjektet var over?
    - Har du brukt noe fra prosjektet?
- Hvis ja, på hvilken måte? Hva har du gjort? Utviklet noe videre? Brukt det vi lagde?
    - Hvordan har det vært/fungert etc?
- Hvis nei, hva er grunnen til at du ikke har videreført det?
    - Har du noen tanker om hvordan man kunne sørget for at det ble enklere å ta det med seg?
    - Hva kreves for at man tar det med seg?
- Hva med tiden framover, og din utvikling videre som lærer, vil prosjektet ha noe å si?
- Er det andre ting, utover samarbeidslæring, du tenker at prosjektet ga deg?
- Hvordan ser du tilbake på prosjektet nå en stund etterpå?
- Hva tenker du om forskning, etter/videreutdanning etter å ha vært med på dette prosjektet?
- Eventuelt andre ting du har tenkt på siden prosjektet var over?
- Annet?

Appendix 9 Interview guide students before the project

Intervjuguide elever før prosjektet

Velkommen til intervju

Intro: fortelle om hvorfor vi gjør dette, og hvilke rettigheter de har. Understreke at jeg er ute etter deres opplevelser og at ingen får vite hva de har sagt.

Husk: Formulere spørsmålene slik at de ikke blir ledende.

Oppfølgingsspørsmål av typen

- Hva mener du med…?
- Kan du forklare….?
- Hvorfor synes du det?
- Kan du komme med et eksempel?
- Jeg har veldig lyst til å høre mer om det, kan du…?
- Er alle enige i det X sa? Er det noen som synes noe annerledes?

Intervjuguide elever

Generelt om kroppsøving

Gym er et av mange andre fag som du har på skolen, kan du si noe om hvorfor du tenker at vi har gym som et fag på skolen?
Synes du at vi skal ha gym på skolen? Hvorfor?
Hvis mamma eller pappa spør deg om hvordan du har det i gymtimen, hva ville du sagt da?
Hvis du skal fortelle meg om en typisk gymtime, hvordan ville den vært?
Kan du fortelle om noe dere gjør i gymtimen som du synes er morsomt? Hvorfor?
Kan du fortelle om noe dere gjør i gymtimen som du synes er kjedelig? Hvorfor?
Kan du fortelle om noe dere ofte gjør i gymtimen? Er det bra eller dumt at dere gjør det så mye?
Kan du fortelle om noe som dere nesten aldri gjør? Er det bra eller dumt at dere gjør det så lite?
Er det noe du skulle ønske at dere gjorde i gymtimen som dere ikke gjør?
Er det noe dere gjør ofte som du skulle ønske at dere ikke gjorde?
Hvis du skulle fått bestemme, la oss si din drømmegym – hvordan er det?

Læring og undervisning i kroppsøving
I matematikk lærere dere å regne, i norsk lærere dere å? – hva lærer dere i gymtimen?
Kan du tenke på flere ting dere lærer i gymtimen?
Når dere for eksempel skal lære å sentre fotball eller håndball eller svømme, eller en ny dans, hvordan lærere dere det?
Kan du tenke på en gang du har lært noe i en gymtime, kan du si noe om hvordan du lærte da?

- Lærte du av læreren?

- Lærte du av andre elever?

Når du lærer, hvem er det du lærer av?
Hvordan liker du best å lære?

- Hvordan liker du å for eksempel lære i matematikk eller norsk?
- Gym?

I en del timer har dere kanskje mål som skal nås, for eksempel å lære å gange i matematikk.
Har dere mål i gymtimen om hva dere skal lære i løpet av en time?

- Står målene deres på ukeplanen?
- Hvorfor gjør det ikke det tror dere?

Appendix 10 Interview guide students half-way into the project

Intervjuguide elever midtveis i prosjektet

Snakke om hvilke timer som er prosjektet, og hvilke som ikke er det. Husk å formulere spørsmålene slik at de ikke blir ledende.
Husk: Få alles meninger.. kanskje spørre noen mer direkte?
Ikke bryte inn selv om det blir stille!
Oppfølgingsspørsmål av typen

- Hva mener du med…?
- Kan du forklare….?
- Hvorfor synes du det?
- Kan du komme med et eksempel?
- Jeg har veldig lyst til å høre mer om det, kan du…?
- Er alle enige i det X sa? Er det noen som synes noe annerledes?

Husk også: undersøke eventuelle forskjeller mellom periode 1 og 2.
Hva synes dere om måten dere har jobbet på i denne perioden? Hva med når vi hadde innebandy?
Hvordan har denne perioden vært sammenlignet med andre timer med kroppsøving?
Hva har deres rolle vært i denne perioden? Har den vært annerledes?
Hva har lærerens rolle vært?

- Hvordan var det at lærerens rolle var annerledes?

Har du lært noe i denne perioden? Eventuelt hva?
Hvordan lærte dere?
Av hvem lærte dere?
Har dere lært noe av læreren i denne perioden? Har dere lært noe av medelever?
Hva måtte du gjøre selv for å lære i denne perioden?
Har dere hatt målsetninger for denne perioden? Nådde dere disse målene?
Var det annerledes å lære i disse periodene enn hva du er vant med?
Hva synes dere om denne måten å lære på?
Kunne vi gjort noe annerledes slik at dere hadde lært enda mer?

Generelle spørsmål
Gym er et av mange andre fag som du har på skolen, kan du si noe om hvorfor du tror at vi har gym som et fag på skolen?
Synes du at det burde være gym på skolen? Hvorfor/hvorfor ikke?
Hvis du skal fortelle meg om en typisk gymtime, hvordan ville den vært?

- Er dere andre enige, eller er det andre ting som er typisk?

Har dere timer som er annerledes enn det dere sa nå?
Hva synes du at dere lærer i gymtimen?
Kan du si noe du har lært i kroppsøving i det siste?

- Andre ting dere har lært?
- Hvordan lærte du dette?

Når dere skal lære noe i gymtimen, hvordan lærer dere dette da?
Kan du tenke på en gang du har lært noe i en gymtime, kan du si noe om hvordan du lærte da?
Hvordan liker du best å lære?
I en del timer har dere kanskje mål som skal nås, for eksempel å lære å gange i matematikk.
Har dere mål i gymtimen om hva dere skal lære i løpet av en time? Hva er for eksempel disse?
Hva synes dere om å ha mål med timene?

Appendix 11 Interview guide students after the project

Intervjuguide elever etter i prosjektet

Snakke om hvilke timer som er prosjektet, og hvilke som ikke er det.
Husk: Få alles meninger.. kanskje spørre noen mer direkte?
Ikke bryte inn selv om det blir stille!
Følge med på klokka – noen spørsmål er gjentagende!
Oppfølgingsspørsmål av typen

- Hva mener du med…?
- Kan du forklare….?
- Hvorfor synes du det?
- Kan du komme med et eksempel?
- Jeg har veldig lyst til å høre mer om det, kan du…?
- Er alle enige i det X sa? Er det noen som synes noe annerledes?

Husk også: undersøke eventuelle forskjeller mellom periode 3 og 4.

Hva synes du har vært gøy i denne perioden?
Hva har vært kjedelig?
Kan du fortelle om noe som du har lært i løpet av denne perioden? Hvordan skjedde dette?

- Hva? Andre ting?
- Hva har du lært i løpet av disse timene?
- Hvordan lærte du det?
- Hvem lærte du av?

Har du lært bort noe til andre?

- Hva har du lært bort?
- Hvordan lærte du det bort?
- Hvordan var det å lære bort?

Kan dere si noe om hva målene har vært i denne perioden?

- Har du/dere nådd målene? Hvorfor/hvorfor ikke har du/dere nådd dem?

Hvordan har det vært å jobbe sammen i par?

- Er det noe som er bra med å jobbe sammen med andre?
- Er det noe som ikke er så bra med å jobbe sammen med andre?
- Er det noe som er vanskelig med å jobbe sammen med andre?

Hvordan har det vært å jobbe sammen i grupper på fire?

- Er det noe som er bra med å jobbe sammen med andre?
- Er det noe som er vanskelig med å jobbe sammen med andre?

Hva synes du om å jobbe sammen med andre på den måten vi har gjort?
Kan du fortelle om hvordan du mener en gruppe må jobbe sammen for å fungere godt?
Kan du fortelle om hvordan du mener en gruppe som fungerer dårlig sammen jobber?
Hva betyr det egentlig å samarbeide?

- Hva tenker du er bra med å samarbeide?
- Hva er vanskelig med å samarbeide?

Synes du gymtimene vi har hatt er annerledes enn de timene hvor jeg ikke er med?

- På hvilken måte?
- Lærer du mer/mindre?
- Andre ting du lærer?

Er læreren annerledes når du jobber i par eller grupper enn når dere har andre gymtimer?

- Hva synes dere om at læreren er på den måten?

Er det annerledes å være elev i disse timene enn ellers?

- Er det noe bra med det?
- Er det noe vanskelig med det?

Hvordan synes du det er det å hjelpe andre elever til å lære?
Hvordan synes du det er å få hjelp av andre elever til å lære?
Nå har du prøvd å lære på ulike måter.. ved at læreren lærer deg og ved at andre elever lærer deg
Hvordan liker du best å lære? Hvordan lærer du best?

Spørsmål fra hele prosjektet
Nå er vi ferdige med de timene jeg skal være med... vi har faktisk hatt 24 timer til sammen med innebandy, friidrett, orientering, vinteraktiviteter.
Er det noen ting du husker spesielt godt fra prosjektet, kan du eventuelt fortelle om dette og hvorfor du husker det?

Kan du si litt om hvordan du synes disse timene har vært?

- Husker du noe som har vært bra?
- Husker du noe som ikke har vært bra?

Kan du fortelle om noe du har lært i løpet av disse øktene?

- Noen som har lært noe annet?

Kan du si noe om hvordan du lærte?

- Hvem lærte du av?
- Hva synes dere om den måten å lære på?

Vi har jobba mye med å samarbeide i grupper og par.

- Hva synes dere om å samarbeide i grupper?
- Hva har vært bra med å samarbeide i grupper?
- Er det noe som har vært vanskelig?

- Kan dere fortelle om hvordan man samarbeider bra?
- Synes du at dere har blitt flinkere til å samarbeide?
    - Hvorfor har dere blitt flinkere til å samarbeide?
- Hva betyr det egentlig å samarbeide?

Hvordan føles det egentlig å jobbe sammen med andre? Føles det annerledes enn når man jobber hver for seg?
Dere har hatt forskjellige roller, hvordan føles det? For eksempel det å være trener..
Dere bestemte hva dere skulle gjøre i en kroppsøvingstime, hvordan føltes det?
Vi har hatt målsetninger med timene, husker dere noen av disse?

- Hvordan har det vært å ha mål med timene?
- Hjelper det dere å lære?
- Hadde dere målsetninger før prosjektet begynte? Er noe annerledes?

X er jo læreren deres.. har han vært annerledes i de timene jeg har vært med enn han er til vanlig?
Synes du gymtimene vi har hatt er annerledes enn de timene hvor jeg ikke er med?
Nå har du prøvd å lære på ulike måter.. ved at læreren lærer deg og ved at andre elever lærer deg

Generelle spørsmål

Jeg har tidligere spurt dere om hvor dere tenker at vi har gym.. da svarte dere ha det gøy, ikke bli late, pause fra andre fag osv. Tenker dere det samme nå?

Jeg spurte også om hva dere skal lære i gymtimen. Da sa dere at det var litt vanskelig å snakke om og at dere ikke følte at dere lærte noe særlig fordi gym handla bare om å gjøre ting. Tenker dere fortsatt det samme?
Før jeg ble med dere spurte jeg dere om hvordan man kan lære noe i gym. Da sa dere at læreren kunne vise dere hvordan noe skulle gjøres også prøvde dere selv å gjøre det læreren viste og forklarte. Det var sånn dere stort sett lærte. I løpet av de timene vi har hatt sammen, har dere lært andre måter å lære på?

- Hva synes dere om den måten å lære på?
- Hvilke måter liker du best å lære på?

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In this thesis I explore how primary school teachers and students in Norway experience the implementation of cooperative learning in physical education. The study reports from a two-year participatory action research project and adds knowledge about how teachers and students experience cooperative learning over time. Three teachers, their students and myself through my role as a researcher-facilitator participated in the study.

Findings from the study show how the implementation of cooperative learning was experienced as problematic and challenging for both teachers and students. At the same time, the study show how these challenges can be solved through systematic work over time. Reflection in particular, which enabled the teachers to collectively identify and then find solutions to the problems that emerged, found to be key. The students report that having clearly defined learning objectives was important for them to gradually begin experiencing cooperative learning as a relevant and meaningful approach. The study shows that cooperative learning should be considered a suitable pedagogical model in order to realise some of the ambitions of the Norwegian curriculum for physical education.

In light of the thesis' Deweyan framework, I argue that teachers must continuously move between having practical experiences and being engaged with reflections about how different ways of implementing cooperative learning might lead to different outcomes. Such processes enable the teachers' use of the model to be truly pedagogical rather than prescriptive. The study shows how projects that aim at developing teachers' pedagogical practices do not work mechanically but might have different impacts on teachers. Hence, there is a need for projects with flexible and individualised designs that take teachers´ different needs as learners into consideration to facilitate teachers' sustained use of pedagogical models.