



## Research paper

# It's the journey, not the arrival that matters – Teachers' perceptions of their practice after participating in a continuing professional development program in physically active learning

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## ABSTRACT

Continuing professional development (CPD) programs have been suggested as a way of supporting teachers' use of physically active learning (PAL) to enhance pupils' learning. Drawing on Dewey's theory of 'education as growth' (1916), this qualitative study explored teachers' perceptions of their practice after participating in a CPD program in PAL. Findings from eleven semi-structured interviews analyzed through reflexive thematic analysis illustrated that the teachers viewed their participation as beneficial by diversifying their teaching practice, stimulating their professional reflectiveness, and encouraging collaborative learning. These findings indicate that using and reflecting on PAL may support teacher learning in the longer term.

## 1. Introduction

In recent years, physically active learning (PAL) has emerged as a way of increasing pupils' daily physical activity opportunities by integrating bodily movements into subject teaching (e.g., science and mathematics) (Watson, Timperio, Brown, Best, & Hesketh, 2017). Examples of PAL might include running relays whilst practicing spelling (Daly-Smith et al., 2018) or mathematics (Bartholomew, Jowers, & Golaszewski, 2019), or recreating subject matter through whole-body movements (Madsen, Aggerholm, & Jensen, 2020). PAL has received increased attention across research, policy, and practice fields as research demonstrates that PAL can be beneficial for pupils' physical activity level and academic and health outcomes (Donnelly et al., 2016; Norris, van Steen, Direito, & Stamatakis, 2020; Watson et al., 2017). Teachers view PAL as relevant to pupils' health and educational progress because it can support pupils in developing academic and social competencies in ways that traditional classroom teaching often struggles

to achieve (Chalkley et al., 2022; Mandelid et al., 2022; Teslo et al., 2023). One example of the growing interest in Norway is from policy-makers, who have been attracted to using physical activity in teaching practice in order to lead to improved educational outcomes (Ministry of Education and Research, 2020; Ministry of Health and Care Services, 2020).

However, PAL is still relatively new to the Norwegian educational context and teachers tend not to be familiar with its use in teaching (Schmidt, Bratland-Sanda, & Bongaardt, 2022). In these circumstances, the use of PAL is thus left to chance, such that it is individual teachers and their previous experiences that determine whether they use PAL or not. However, teachers are viewed as key agents for integrating PAL in schools (Routen, Johnston, Glazebrook, & Sherar, 2018). Research has, therefore, concluded that teachers need to be supported in various ways to increase and improve their use of PAL in their everyday teaching. Continuing professional development (CPD) is suggested as a possible strategy for developing teachers' competence in this field (Daly-Smith et al., 2020, 2021; Lerum et al., 2021; Teslo et al., 2023).

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### Abbreviations

CPD	continuing professional development
PAL	physically active learning
RTA	reflexive thematic analysis

While preservice teacher education seems to be beneficial for teachers' use of PAL (Goh et al., 2013; Michael et al., 2018; Romar et al., 2020), there remains limited knowledge and understanding of how CPD programs can support in-service teachers' use of PAL (Daly-Smith et al., 2021; Vazou et al., 2020). Therefore, this study set out to explore teachers' perceptions and experiences of their practice after participating in a one-year CPD program designed to develop teachers' competence in integrating PAL into their everyday teaching practice. We start by providing an overview of research on teacher CPD. We then present Dewey's theory of 'education as growth' (1916) as the conceptual background for understanding how CPD programs can support teachers' lifelong learning.

#### 1.1. Challenges of teacher CPD

In general, CPD programs are perceived to improve the quality of teachers' practice and pupils' academic outcomes (Borko, Jacobs, & Koellner, 2010; O'Brien & Jones, 2014; Sims & Fletcher-Wood, 2021). Every year, governments worldwide invest considerable resources in CPD programs with the intention of enhancing teachers' knowledge and practice, especially by helping them keep abreast of advances in education (Bowe & Gore, 2017; Guskey & Yoon, 2009; Timperley, Wilson, Barrar, & Fung, 2008). For these reasons, teachers have been encouraged to take part in CPD programs (Borko et al., 2010). In Norway, in 2015, the Government introduced a strategy called 'Competence for Quality' calling for stakeholders to work together to provide teachers with better CPD opportunities (Ministry of Education, 2015). In the current educational context in Norway, CPD thus remains important and the number of teachers who participate in CPD programs is increasing (Ministry of Education, 2022a; 2022c).

However, there is little consensus on what constitutes 'effective' CPD programs (Goodyear, 2017; Timperley et al., 2008). Researchers have, for example, raised critical questions about the quality and 'impact' of CPD programs on teachers' practice and pupils' learning and achievement (Armour, Quennerstedt, Chambers, & Makopoulou, 2017; Desimone, 2009; Evans, 2014). A central critique of previous teacher CPD programs is that they are often viewed as something done *to* teachers rather than *with* them (Armour & Yelling, 2004) and have often been based on a 'one size fits all' approach (Avalos, 2011; Biesta, 2015). In this regard, the content of such initiatives has been too often standardized and delivered without due consideration to the contexts within which teachers work, and which to a large extent shape their professional learning needs (Patton, Parker, & Neutzling, 2012). These types of CPD programs tend to be based on a number of assumptions: that teachers can demonstrate a clearly defined body of skills, to a nationally agreed standard, and moreover, that these can be developed through a given process, delivered by an expert in one-off workshops, seminars, or courses, taught away from teachers' everyday school context (Day & Sachs, 2004; Hayes, 2019; Opfer & Pedder, 2011).

This pattern has also been documented by PAL researchers. For example, Vazou et al. (2020) criticized previous CPD programs in PAL for undermining teachers' autonomy and the sustainability of PAL in everyday teaching situations. Vazou et al. (2020) have also been critical of programs often being led by researchers without pedagogical and first-hand knowledge of everyday teaching and being of a short duration (varying from a couple of hours to one or two full days).

#### 1.2. Kennedy's three CPD approaches

Kennedy (2005; 2014) identified nine types of CPD frameworks with different characteristics and categorized these into three sequential and iterative groups based on their purposes: transmissive, transitional, and transformative. The transmissive approach is characterized as being practically oriented and focused on the technical aspects of the job. In CPD programs with such an approach, the teachers have opportunities to update their skills with training delivered by an expert. The teachers normally play a passive role in these training sessions, and most of this training takes place away from the school context (Kennedy, 2005). An example is university courses where teachers are taught specific PAL activities by a teacher educator, as described above by Vazou et al. (2020).

Researchers have called for new ways of thinking and designing programs to meet teachers' CPD needs. Numerous frameworks have been proposed for understanding teacher CPD programs. Many of these frameworks converge on the position that teacher CPD programs are more likely to be beneficial if they are: sustained over time rather than one-day sessions, collaborative among peers or communities of practice rather than individual teachers, have a strong buy-in where teachers identify with and endorse taking part in the program, combine subject knowledge and general pedagogical techniques, draw on external expertise to recycle existing internal expertise, and involves opportunities to use and apply what has been learned in real teaching situations rather than only receiving new information passively (Desimone, 2009; Sims & Fletcher-Wood, 2021; Timperley et al., 2008). Furthermore, modeling effective practice and opportunities for reflection, sharing, and feedback can transform teachers' needs into new knowledge, skills, values, and beliefs (Darling-Hammond, Hyler, & Gardner, 2017; Darling-Hammond & McLaughlin, 2011).

Kennedy (2005; 2014) identifies these frameworks as a transitional and transformative approach to teacher CPD. Programs that fit under the transitional approach include coaching, mentoring, and communities of practice (Kennedy, 2005). As Kennedy (2014) argues: 'mentoring can be used to support and encourage autonomy, creativity, and independence, but equally can be used as a powerful means of professional socialization to encourage conformity to the status quo' (p. 692). The transformative approach is a further development of both the transmissive and the transitional approaches. CPD programs based on action research and communities of practice are examples of this approach. Both approaches have a strong link between theory and practice (Kennedy, 2005), and include elements of 'collaborative problem identification and subsequent activity, where the subsequent activity involves inquiring into one's own practice and understanding more about other practice, perhaps through engagement with existing research' (Kennedy, 2014, p. 693). In other words, this approach can be characterized as a 'bottom-up' approach as the teachers act as researchers of their own practice to overcome an identified challenge or problem.

Based on the above, the transformative approach can be understood as the 'gold standard' of designing CPD programs for teachers. However, Kennedy (2005) highlights that one approach is not necessarily better than another and that the capacity for teacher autonomy increases as CPD programs move from a transmissive approach to a transitional and transformative approach. Which approach is most appropriate depends on factors such as the aim of the CPD program, whether teachers will participate individually or collectively, what resources are available, as well as the participants' previous experiences and level of professional growth. Furthermore, teachers' competence in PAL is not static, and may vary depending on the teaching situation. Therefore, Kennedy's (2005) framework may be useful in designing CPD programs. However, teacher educators may be better served if they perceive these approaches as a spectrum rather than in isolation and conceptualize CPD in process-oriented terms - moving back and forward between these three in order to meet the specific situation and support teachers in developing their practice both in the shorter and longer term. To understand how

and why CPD programs might be better understood as a process to support teachers' CPD in the longer term, we use Dewey's theory of 'education as growth' (1916) as a conceptual background.

### 1.3. Dewey's 'education as growth'

Based on the above critique, there is a need to reconsider how we understand teacher CPD and Dewey's (1916) notion of 'education as growth' can serve as a guide for exploring how CPD programs might be understood in relation to PAL. For Dewey, growth is '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' (1916, p.44). By viewing education as growth, Dewey challenged the traditional view of education: that is to say, that education has an end (Bjørke et al., 2021; Dewey, 1916). He was critical of the way in which education was judged by fixed and predefined standards, established by others, such as teacher educators. According to Dewey (1916), this was problematic because once the standards were reached, it was perceived that no more learning and development was necessary, such that an 'excessive attention to surface phenomena may lead to their fixation and thus to arrested development' (p.61). In this way, the achievement of education was always related to a predefined goal (Armour et al., 2017). Instead, Dewey (1916) argued that education must be viewed as a continuum of growth throughout life and that there was no definitive meaning for anyone to become fully educated:

'Growth is the characteristic of life and education is all one with growing; it has no end beyond itself. 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' (Dewey, 1916, p.62).

In other words, education is not only a social process where we learn how to master challenges that we know exist, it should also foster personal growth where we learn how to master future challenges. Because our environment is always changing, he argued that teachers needed to develop skills to be able to acquire new knowledge and skills to cope with changing circumstances. In a professional context, this means that education (and CPD programs) must support teachers' life-long learning and support them in identifying problems and solutions based on knowledge and skills (Dewey, 1916). This is related to the concept 'bildung' (Klafki, 2000) and 'subjectification' (Biesta, 2015), which both focus on the process of 'becoming' rather than 'being'. In this regard, teacher CPD can be understood as a continuum. This is also supported by Norwegian educational policy:

'The (teacher) profession and the individual teacher have a mandate to use their professional judgement in complex situations (...) Professional judgement also requires regular updating. The teaching professional must, therefore, assess its pedagogical practice to meet pupil's needs as best as possible.' (Ministry of Education, 2022b).

According to Dewey (1916), learning from experience is the key to growth. He argued that learning (and growth) is an ongoing process of constantly reconstructing experiences in ways that enable a person to make sense of even broader realms of experience (Armour, Makopoulou & Chambers, 2012). This can relate to sensemaking - the ongoing process where individuals give meaning to their individual and collective experiences (Teslo et al., 2023; Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005). Dewey (1916) argued that the nature and quality of current learning experiences influence how humans understand and learn in future experiences. He theorized this as the principle of continuity, explaining 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' (1958, p. 27). That is, teachers bring experiences from previous situations, which work as a lens to understand new experiences, such as participating in a CPD program. Dewey (1958) also explained that not all experiences are equally educative, saying that

'every experience affects for better or worse the attitudes which help decide the quality of further experiences' (p. 29). Experiences can thus also limit the possibilities for growth.

Dewey was particularly concerned that when students are passive in the learning process and are directed towards achieving a stipulated end point, possibilities for further growth and innovation are limited. This means that through different (learning) experiences, a person can become more or less critical, more or less willing to learn in future experiences, more or less able to subject their own practice to scrutiny, more or less creative or independent.

Learning progression, from this standpoint, refers to building teachers 'learning capacity' for ongoing learning and development. If, as was stated in the first section, professional learning across a career is understood as a continuum, then such capacity building seems to be essential.

Both Armour et al. (2017) and Bjørke et al. (2021) have used Dewey's thinking as a guide to evaluate teacher CPD programs in physical education. Both emphasize that education is a complex endeavor that requires thinking critically about what constitutes 'effective' CPD. Armour, Makopoulou, and Chambers (2012) argued for a pause in 'the frenetic rush to find practical models of "effective" CPD that will "work"' (p.800). They argued that using a Deweyan framework is relevant for designing, implementing, and evaluating effective CPD in physical education. Bjørke, Standal, and MordalMoen (2021), on the other hand, used Dewey's framework to evaluate teachers' learning and professional growth from a CPD program using participatory action research and cooperative learning. They concluded that in order to create educative experiences, teachers must undergo a wide variety of work-related experiences over time.

Based on the theoretical background and previous research results, this study aims to determine teachers' perceptions of their practices in PAL after participating in a CPD program.

## 2. Method

### 2.1. The CPD program in PAL

This study was conducted in the context of a one-year CPD program in PAL for primary and secondary school teachers in Norway. The program was run by PAL teacher educators and not the researchers in this study. The aim of the CPD program was to enhance teachers' capabilities, opportunities, and motivation to embrace PAL in their practice and go beyond the acquisition of skills and knowledge to help teachers rethink and develop their practice. Drawing on experience-based learning principles (Kolb, Boyatzis, & Mainemelis, 2001) and a transformative approach (Kennedy, 2005), the CPD program incorporated elements of action research, individual reflection, and collaborative learning. For example, it provided opportunities for the teachers to use PAL in their teaching practice during their work hours, alongside opportunities to reflect, evaluate, and reconstruct these experiences individually and collectively.

In doing so, the CPD program was designed to harness the potential benefits of teachers working together from the same school by using their contextual knowledge to support each other to consider what opportunities existed for PAL in their teaching practice. For example, consideration might be given to what opportunities the teachers had in their school in terms of indoor and outdoor spaces for PAL, and what activities would be suitable for their pupils and a variety of different subjects. Therefore, participation in the CPD program depended on at least ten teachers from their school participating in the CPD program. Teachers were also reliant on their head teachers' support by providing time and opportunities for them to engage in the program during their work hours. Hence, the headteacher at the participating schools had a pivotal role in the CPD program.

The program involved the teachers being challenged and supported to use PAL in various ways through five learning modules (see Fig. 1).



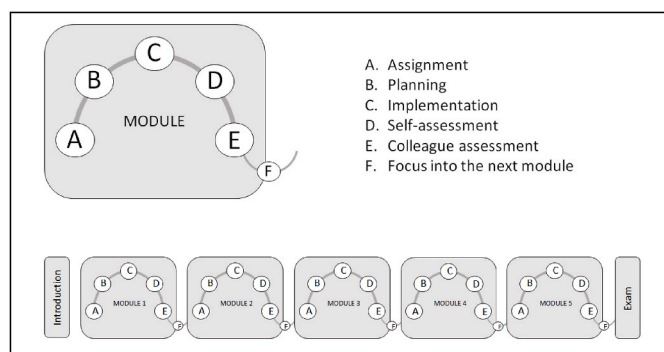


Fig. 1. Overview of the module structure in the CPD program.

Table 1  
Overview of the content in the modules of the CPD program.

Module	Content
The introductory module	The teachers had the opportunity to practice important skills for mastering the formal requirements of the CPD program, such as the webinars.
Module 1	The teachers developed a PAL activity by integrating academic content into a familiar and non-academic activity.
Module 2	The teachers explored previous PAL activities in their own teaching.
Module 3	The teachers explored an online database of PAL activities ( <a href="http://www.askbasen.no">www.askbasen.no</a> ). They were challenged to identify areas (and activities) they felt were missing and develop new activities to address this gap.
Module 4	The teachers were challenged to develop lesson plans where PAL was used in the start-up phase of the lesson and/or introducing a new academic topic and knowledge.
Module 5	The teachers explored PAL in online teaching. The teachers were challenged to develop an online lesson plan and a PAL activity that the pupils could do at home (due to the Covid-19 pandemic).
The exam module	The exam covered planning and conducting a PAL activity for the colleagues and staff who did not participate in the CPD.

Table 1 provides information about the content of each module. In each module, the teachers planned a lesson with PAL, used it in their practice while filming it, and evaluated it afterwards alone and with other teachers from their school who participated in the CPD program. The aim of the phased approach of each module was to facilitate teachers' engagement with PAL in their teaching practice. The teachers who completed all the modules achieved 15 credits (European Credit Transfer and Accumulation System) at the master's level.

The CPD program also had a transmissive aspect (Kennedy, 2005), in that the teacher educators supported the teachers with webinars (digital meetings) at the beginning of each module as an introduction to the content, as well as providing asynchronous videos of relevant research and theories for each module. The teacher educators also supported the teachers with an online database of examples of PAL activities ([www.askbasen.no](http://www.askbasen.no)) to make it easier for them at the beginning of the program to use PAL in their teaching. However, the program was primarily based on a transformative perspective in that the teacher educators sought to approach the teachers as the 'experts' in the classroom. Consequently, the CPD program did not provide the teachers with detailed instructions on how to use PAL, for example, regarding what PAL activities were best or how to use them. Rather, the teachers were encouraged to make these decisions themselves based on their professional judgment. To empower the teachers to do this, they were given assignments where they had to develop, use, and evaluate lesson plans which integrated PAL, to gain experience and ownership of PAL.

## 2.2. Study design and participants

To explore the teachers' perceptions and experience of their practice after participating in the CPD program, we used a qualitative research approach based on semi-structured interviews. The study was conducted during May and June 2021, one year after the teachers had completed the CPD program. This approach and the timing enabled the teachers to reflect upon their experiences of their practice beyond their participation in the initial CPD program, to make sense of these experiences in a broader essence. According to Dewey (1916), having individuals reflect on their previous experiences is essential for them to learn and grow. The interviews thus became an integrated part of the teachers' learning process as they became more aware of their perceptions, experiences, and actions.

This was a follow-up study, recruiting the same teachers who had participated in a previous study (see Teslo et al., 2023), who enrolled in the CPD program in 2019–2020. A purposeful sampling approach (Patton, 2014) using the following criteria was used to recruit teachers: a) a minimum of three years of teaching experience, b) teaching in 5–10th grade, c) teaching in more than one subject, d) both genders, e) varying ages. The intention was to ensure a diverse sample of teachers with varied experiences that would yield rich data. With support from the head teachers, 16 teachers agreed to participate in the original study (Teslo et al., 2023). The study was registered with the Norwegian Centre for Research Data (NESH, 2021) in accordance with ethical requirements in Norway at the time. The participating teachers were provided with written information about the study. Written and verbal consent was given before the interview took place.

In this follow-up study, eleven of the sixteen teachers consented to participate (see Table 2). The remaining five did not participate for various reasons: two teachers had changed jobs, one had not finished the program, and two did not respond to the request. The eleven teachers (seven women and five men) who participated came from three rurally located schools in the western and eastern parts of Norway. One was a primary school (1st – 7th grade), while two were combined primary and secondary schools (1st – 10th grade). Seven of the teachers that participated had more than ten years of work experience as a teacher. One teacher worked at the secondary level (8th – 10th grade), while most of the teachers worked at the primary level (5th - 7th grade). All eleven participants completed the CPD program in 2020.

## 2.3. Data generation methods

Individual semi-structured interviews were used to generate data for the study. This approach allowed the teachers to share their individual perceptions of and reflect on their experiences, after having participated in the CPD program (Brinkmann & Kvale, 2015). The first author conducted all the interviews online due to Covid-19 restrictions in place at the time. However, this offered the benefit of having participants talk at a time and place of their choosing. Both Zoom and Microsoft Teams were used as applications for the interviews according to participants' preferences. Both applications offered videoconferencing services with the ability to securely record and store sessions without recourse to third-party software (Archibald, Ambagtsheer, Lawless, 2019; Hubbard & Bailey, 2018). The applications were also used in the CPD program, and, therefore, participants were already familiar with their use. An interview schedule (see Appendix) was developed together with co-authors, which included questions covering themes relating to the teachers' perceptions and experiences of their teaching practice, the use of PAL, and the CPD program. The questions were inspired by the original study (Teslo et al., 2023) and informed by the researcher's knowledge of the PAL and CPD literature. The questions were open-ended to get a deeper insight into the teachers' perceptions of their practice and experiences of the CPD program. The online interviews lasted between 17 and 51 min (with an average duration of 28 min).

**Table 2**  
Participant characteristics.

Number	Pseudonym	Gender	Subject teaching	Grade	Years of experience	School	School characteristics
1	Karin	F	English, Math, Norwegian, Religion, Science, Social studies	6.	13	A	Eastern rurally located, primary school (1st – 7th grade), 248 students and 24 teachers.
2	Morten	M	Math, Norwegian, Science, Social studies	5.	10		
3	Veronica	F	Math, Music, Norwegian, Social studies	6.	1		
4	Lisa	F	English, Math, Norwegian, Physical education, Religion	7.	11		
5	Cathrine	F	English, Math, Norwegian, Science, Social studies	7.	5		
6	Elise	F	Norwegian	7.	30	B	Western rurally located, combined primary and secondary school (1st – 10th grade), 238 students and 26 teachers.
7	Mary	F	English, Religion	10.	17		
8	Bob	M	Norwegian, Physical education, Religion	7.	18		
9	Gunnar	M	English, Religion, Social studies	6.	10	C	Western rurally located, primary school (1st – 7th grade), 92 students and 11 teachers.
10	Trine	F	English, Norwegian, Physical education	5-7.	1		
11	Nils	M	English, Math, Norwegian, Science, Social studies	6.	3		

#### 2.4. Data analysis

Reflexive thematic analysis (RTA) (Braun & Clarke, 2019) was used and supported by NVivo software (QSR Version 12.6) as a data management tool. RTA was used to identify patterned meanings within the data relating to participants' perceptions. This process included six stages: (1) familiarization of the data, (2) creating initial codes, (3) grouping codes and generating themes, (4) reviewing initial groups and identifying themes, (5) refining themes, and (6) writing up the analysis. Although this is presented as a linear process, it was carried out as a fluid and recursive process, going back and forward between the six phases, and involving co-authors at different points (Braun & Clarke, 2019).

In the first stage, we started to gain an overall sense of the data by the first author (ST) listening to the audio recordings and transcribing them into Microsoft Word. The data material was a total of 74 pages with single-spaced lines. ST then read and re-read the transcriptions to get an overall understanding of the data material and made notes in a reflexive journal. In the second stage, codes linked to the main areas of interest for the study were created as part of the initial data interpretation. The data were coded inductively as sentences, inspired by Tjora's (2018) stepwise-deductive induction, to capture the details and reduce the volume of information and amount of data. For example, reducing the volume of this paragraph: 'I think the CPD programs was very useful in retrospect, because you become more aware of your teaching, what is PAL, and what is not PAL. You get a broader horizon in a way and what opportunities that exist in teaching. So, I really enjoyed taking that education', into this sentence: 'Becoming more aware of their teaching practice after participating in the CPD program'.

In the third stage, after all the transcripts were coded, ST collect the codes into groups to identify broader patterns of meaning across the transcripts and create initial themes. Initially, the groups were divided into two overarching sections: experiences with the CPD program and their perception of their practice after participation. This provided an overview of the data. In the fourth stage, each theme was reviewed and refined so that they were congruent with the collated extracts as well as the entire data set. The two groups were then unified, and Dewey's (1916) 'education as growth' was used to elaborate the themes to provide a deeper level of meaning to the findings. In other words, this level of analysis involved not only focusing on the teachers' use of PAL but also other aspects that the teachers perceived as valuable for their practice after participating in the CPD program. Then, the findings were organized into three main themes: 'Practical PAL competence', 'Active learning and reflection', and 'Collegial participation and collaboration'. The themes were then refined to emphasize teachers' perceptions of

their practice.

The identified themes were discussed with co-authors at each stage but especially during stage 5, which aimed to encourage deep exploration and alternative interpretations. After several rounds with co-authors, the themes were named: 1) diversifying the teaching practice, 2) stimulating professional reflectiveness, and 3) encouraging collaborative learning. In the sixth and final stage, the data analysis was written up as a narrative that sought to balance analytic commentary with illustrative quotations from the interviews in a way that shed light on the research question.

### 3. Findings

The themes and sub-themes developed to reflect teachers' perceptions of their practice after participating in a CPD program are illustrated in Table 3.

#### 3.1. Theme 1: diversifying the teaching practice

This theme was developed to describe how participating in the CPD program strengthened the teachers' perceptions of their own teaching competence, which was understood in a variety of different ways.

*The number of PAL activities:* The teachers had developed knowledge of and experience with several PAL activities that they could use in their own teaching practice through participating in the CPD program. Thus, they described that their 'teaching toolbox' as having become larger and richer. Trine, for example, said: 'I think the difference between before and after the CPD program is the number of [PAL] activities'. The teachers with experience of teaching outside the classroom also believed that they got a positive benefit from participating in the program. Bob,

**Table 3**  
Overview of the generated themes.

Main themes	Subthemes
Diversifying the teaching practice	The number of PAL activities A broader understanding of PAL Opportunities to develop PAL activities Receiving PAL activities
Stimulating professional reflectiveness	Increased awareness of their practice Using theories in practice for sensemaking Becoming more confident as teachers
Encouraging collaborative learning	Collective participation in the CPD program Establishing routines for sharing Towards acceptance of teaching in new ways

for example, said that: 'I use it [PAL] more now than I did before'.

The teachers perceived that their practice had become more varied, enjoyable, and engaging for the pupils when enacting PAL. Trine exemplified this with various forms of PAL activities that she used after participating in the CPD program. In one activity, the pupils learned words by jumping from one of two sides to whether the word called out had a B or D. In another activity, the pupils ran and picked up words they had to divide into different word classes. In a third activity, the pupils moved around the classroom and discussed academic statements with peers. Trine favored the latter because: 'it can be done inside and outside the classroom, in all subjects, and all pupils are speaking. It doesn't have to be a correct answer. The activity is, therefore, easy to adapt to the pupils'.

*A broader understanding of PAL:* The teachers' perceived that their understanding of PAL had become broader after participating in the CPD program. Before their participation, the teachers viewed PAL as involving the pupils in highly intensive physical activity in PAL, such as running relays. However, following their participation, they understood PAL as fostering a variety of situations for pupils to learn and develop relevant academic and social competencies through movement, and that this did not have to involve a highly intensive physical activity or competition. This expanded view of PAL meant that it was perceived as more relevant. Veronica, for example, said:

'When I started the program, I thought we were going to learn how to do relays and things like that, but I have a different view of what it now (...) It's not about being as active as possible, but about teaching in a more varied way. We don't just have to sit and read a book. We can learn in other ways too'

The teachers also valued activities such as relays because they were easy to use in all subjects. Furthermore, when the pupils used their bodies to solve assignments during PAL activities, the teachers could observe the pupils' academic knowledge in action. Mary, for example, said: 'activities focusing on text or facts, it is easier to measure whether any learning has occurred. We do have a responsibility to check this'.

*Opportunities to develop PAL activities:* That the CPD program provided opportunities for the teachers to try out and gain experience with PAL in their own practice with their own students, was significant for the development of teachers' understanding and use of PAL. Karin, for example, said this:

'I probably have PAL with me all the time. We, teachers, do a lot of strange things, we participate in a lot of different courses, and we get these "aha"-experiences. Like "I should start with that" or "I should do this", but it often disappears. But I know that this (PAL) will be a part of me. I am not just saying that. I think so. It is that you do something in the classroom, and then you use PAL as a practical part of it. I see that it matters.'

At the same time, the teachers said it was more challenging to try new PAL activities after the CPD program than during the CPD program. This was why they preferred to reuse the PAL activities that were familiar to them and that they experienced to be successful during the CPD program. The experience that the teachers gained during the CPD program influenced their choice of PAL activities subsequently. Mary, for example, felt this was safer:

'I prefer to do what I know works. During the program, you had to do things that you had not done before. There is a difference. I think it is safer to do what is safe, and the activities [PAL] that I have done before. Whereas last year I tried new ones because it was part of the program.'

*Receiving PAL activities:* Furthermore, the tips and examples that the teachers received during the CPD program were also perceived to be vital. The examples inspired the teachers and helped them understand how to use PAL in their teaching. The teachers perceived it to be challenging to create new PAL activities themselves, especially, at the

beginning of the CPD program. They highlighted, therefore, the value of getting concrete examples of PAL activities from the teacher educators and other teachers. Mary, for example, said this:

'We are concerned about what is useful. When you are on a course, you think "what can I get out of this" and then it is probably the [PAL] activities, and to see the value of an activity. Whether it is your subject or your pupils. That we get more ideas, I think, or tips. That is very concrete, and not so fancy and theoretical.'

Although the teachers preferred to do PAL in an easy way, some requested activities that focused on in-depth learning. They wanted activities that matched the new curriculum in Norway (LK20), where pupils were 'exploratory' in their learning process. The teachers perceived that there was potential to use PAL to work towards this, but they struggled to find ways to do it. They wished, therefore, that the teacher educators had provided them with examples of how to do this. Karin, for example, said this: 'I hoped that I was going to get a better understanding of how to work with larger topics, such as "in-depth learning" and things like that, through practical teaching'.

### 3.2. Theme 2: stimulating professional reflectiveness

This theme describes how teachers perceived participating in the CPD program had developed their professional awareness and critical thinking about their teaching practice. The teachers believed that they had become more knowledgeable about and perceptive towards their teaching practice in general, after participating in the CPD program. They perceived this to be the learning process used in the program as well as relating to PAL as a way of teaching.

#### 3.2.1. Increased awareness of their practice

It was evident that participating in a CPD program had shifted the teachers' attention towards reflecting on their didactic choices throughout an academic year. This fostered an increased awareness about their teaching practice in general and how they accommodated the pupils in their learning process. This was an important rationale for the teachers' use of PAL after the CPD program. Lisa, for example, said that she had become 'more aware' of her pupils, and how much they were 'sitting on the chair' in her teaching, and that she needed to activate them more often, both physically and mentally, than she had done previously. The teachers also perceived that they had become more aware of the relationship between the aim and methods of teaching after focusing on their pedagogical practice in the CPD program. Trine, for example, said: 'I think it [the CPD program] was very valuable because you become more aware of your teaching, what PAL is, and what it is not. You gained a broader horizon of what possibilities exist'.

The teachers also perceived that the pupils enjoyed PAL and that PAL was more beneficial for many pupils compared to traditional classroom teaching. In their view, PAL gave many pupils better opportunities to show their strengths to both the teachers and the other pupils in the class. Some pupils even requested more PAL in teaching. The teachers perceived this as positive and gave them the motivation to continue with PAL. Gunnar, for example, said this:

'I see that the weak ones can become strong, and the strong ones can become weak. It all depends on what the task is and that you as a teacher can get the most out of them (...) It is important that the pupils show themselves in a different way and that they are also good at something'

#### 3.2.2. Using theories in practice for sensemaking

The CPD program was also designed to develop teachers' reflectiveness and critical thinking. During the program, the teachers were challenged to use PAL in different ways and to reflect on these experiences both individually and collectively. Although the teachers perceived the program to be academically demanding, e.g., involving

lots of writing, they viewed this as important for their learning process. Similarly, they also viewed the reading attached to the CPD program as valuable in helping them understand their pupils to a greater extent than hitherto and guiding them in how they could structure and organize their teaching to better accommodate each individual. Gunnar, for example, said this:

‘I paid little attention to motivation models and things like that before, but I have become more aware of that after the CPD program. Like what type of pupil is this and what motivates her. So, when I plan and stand in front of the blackboard, I know what to do to motivate them. So, the theory in the CPD program has been useful for me afterward, apart from PAL.’

### 3.2.3. *Becoming more confident as teachers*

The teachers believed that the state of becoming more reflective and aware of their own teaching practice and their choices made them more confident as teachers. They were convinced that they could deal with the unpredictability and the pressure of being a teacher in a better way after participating in the CPD program. Karin, for example, said this:

‘You are in a role where you read a lot about school and learning in the newspapers, parents have several views, and pupils love and hate you. And I think it gives me confidence that I know that I am reflective about my teaching.’

### 3.3. *Theme 3: encouraging collaborative learning*

This theme describes how the CPD program had reached beyond the individual teachers to the collective level in terms of facilitating learning together.

#### 3.3.1. *Collective participation in the CPD program*

The fact that several teachers from the same school participated in the CPD program was perceived to be beneficial for teachers’ use of PAL in school after the CPD program. By planning, sharing, and discussing PAL ideas, activities, lesson plans, and experiences related to them with their colleagues during the program, the teachers perceived that the quality of the lesson plans and the PAL activities that they had developed was amplified. Knowing that they had collaborated to develop these lesson plans and activities, gave the teachers confidence in reusing them in their teaching after the CPD program. Cathrine, for example, was clear about this: ‘it was safe knowing that several of us had worked together about this, and not just me being responsible for everything’.

#### 3.3.2. *Establishing routines for sharing*

Also sharing PAL activities and experiences with colleagues was important for the teachers to sustain PAL in their teaching practice after the CPD program. The teachers had found that developing lesson plans with PAL was time-consuming. Therefore, they perceived that it was important to support each other by sharing lesson plans they made with their colleagues. In that way, they would save time and make it easier for themselves to continue using PAL. For example, Morten said: ‘If you are good at sharing, it will be much easier in the long run’. Sharing lesson plans with PAL also inspired and served as a reminder for the teachers to include PAL after the CPD program, and opened new opportunities for collaboration among the teachers, e.g., by using PAL for interdisciplinary work. Trine, for example, said this:

‘We were several teachers from the same school who participated in the program, and I feel it is important that we as a colleague can help each other. That we work interdisciplinary and add movement [PAL]. I think we have become better at working together.’

However, the willingness to share varied between the teachers. Some

teachers perceived that they shared a lot with their colleagues, while others felt that they could share more. In that context, the teachers emphasized the importance of establishing a supportive culture of sharing. Those who perceived that they were good at sharing, explained that they had routines for sharing within their school. They had formal meetings for sharing and an open-door policy where the teachers could observe each other’s teaching. Mary, for example, said:

‘A strength of our school is that we have a very good culture of sharing. We share with the staff in formal sharing sessions. We also have open doors between the classrooms so we can see what other colleagues are doing in their classes. This allows me to get inspiration for PAL.’

#### 3.3.3. *Towards acceptance of teaching in new ways*

The teachers also experienced a greater willingness towards and tolerance of using different spaces within the school for teaching after the CPD program. Several teachers used various areas for PAL, such as the schoolyard, which they perceived had become accepted as an arena for learning rather than just play and recreation. Elise, for example, experienced that the outdoor area gained a greater acceptance as a learning arena after participating in the CPD program:

‘My impression is that going out and spending time outside has been seen as leisure earlier. Something you do before the summer holiday. It had nothing to do with learning. But being outside, using the outdoor area, has gained more acceptance and an equally good learning arena as sitting in front of a screen or book. There is a slightly different attitude now, I think. All over. I do not have any numbers or statistics, but that is my impression at least.’

## 4. Discussion

In this study, we set out to explore how teachers perceived their practice after participating in a one-year CPD program in PAL. Overall, the findings reveal that the teachers viewed their participation as beneficial in several ways, such as: 1) diversifying their teaching practice, 2) stimulating their professional reflectiveness, and 3) encouraging collaborative learning. These findings support previous research advocating CPD programs as a way to support teachers in using PAL in their everyday teaching practice (Daly-Smith et al., 2020, 2021; Lerum et al., 2021; Teslo et al., 2023) as the teachers became familiar with PAL and confident in using it after participating in the CPD program. The findings also reveal that the teachers perceived that participating in the CPD program had ripple benefits beyond PAL, such as fostering teachers’ critical reflectiveness and ability to cooperate with their colleagues.

These findings could be attributed to the design of the CPD program, which was carried out to facilitate a transformative practice (Kennedy, 2005). The CPD program created processes of interaction that gave rise to experiences, discussion, and critical reflection in a myriad of ways, that connected tangibly to the everyday context of teachers’ practice. The teachers were also able to participate with their colleagues, which offered added value to the CPD program. The collective participation was perceived to be important as it allowed critical reflection on what was being experienced in a way that provided opportunities for colleagues to check and challenge their conventional knowledge and practice both individually and collectively. The design was, therefore, essential to the teachers’ benefit from participating in the CPD program, which supports many of the key characteristics suggested by previous research on teacher CPD (Darling-Hammond et al., 2017; Desimone, 2009; Sims & Fletcher-Wood, 2021; Timperley et al., 2008). Participating in a CPD program can thus develop teachers’ use of PAL and wider professional abilities if it is designed in an appropriate way.

However, if the purpose of CPD programs is that teachers can demonstrate a clearly defined body of skills after their participation to improve their teaching and students learning, the utility of this CPD



program and whether it has met its purpose can be called into question. Findings from this study indicate that not all teachers benefitted equally from participating in the CPD program. For example, some teachers perceived that it was easier for them to use PAL after the CPD program than before, while others perceived it to still be challenging. The teachers' use of PAL was also characterized by reusing activities from the CPD program. The extent to which the CPD program influenced teachers' everyday teaching practice and their ability to use PAL to a greater extent in the longer term thus remains unclear. This is particularly the case if the aim of CPD programs is to develop teachers' abilities to develop themselves (Dewey, 1916). Nonetheless, these findings underpin the challenges related to measuring the 'effect' of CPD programs on teachers' practice (Armour et al., 2017; Desimone, 2009; Evans, 2014) as the teachers in this study benefitted in various ways from participating in the CPD program. This challenges the assumption that participating in CPD programs will change teachers' practice in desired ways as well as questioning whether it is possible to design 'effective' CPD programs that can guarantee a certain outcome.

Therefore, one option is to rethink how we understand 'effective' CPD (Armour et al., 2017). In this context, we used Dewey's (1916) educational theories as an alternative way of understanding teacher CPD and designing CPD programs for teachers in PAL. Dewey (1916) believed that education should develop teachers' ability to learn from experiences and reconstruct these to accommodate the ever-changing nature of the world. This means that CPD programs should support teachers' predisposition towards life-long learning, beyond contextual knowledge and skills. In other words, teacher educators should begin with practical engagement and provide teachers with opportunities to gain experiences with new phenomena, such as PAL. Then, they can support teachers in reconstructing experiences as a basis for negotiating future situations. For example, this might involve questioning why things are as they are and how they might be different. The ability to reflect on experiences to develop a deeper understanding of everyday life was vital for Dewey (1916), who believed that we do not learn from experiences because they are not automatically educative. In other words, teacher educators cannot simply facilitate practical activities in CPD programs and expect teachers to learn. Experiences can be understood as more or less random threads that must be actively sorted by teachers in order to be made sense of. Thus, according to Dewey (1958), there is a need to reflect on our experiences if they are to be educative. To do this, teacher educators would benefit from gaining insight into teachers' individual and collective experiences during a CPD program, especially given the complexity of changing and developing teachers' practices (Darling-Hammond et al., 2017). Such an approach requires moving away from conceptualizing CPD programs as prepacked commodities with a clear fixed endpoint that magically will fix and create fully trained teachers, as this limits teachers' opportunities for deeper learning and thus, growth. Rather, if we recognize CPD programs as a 'room for action' and 'conditions' for teachers to be experimental and try out new ways of working to gain new experiences, then this is likely to give rise to authentic CPD that avoids the dichotomy between CPD and everyday teaching as separate. The teacher educators then can position themselves as supporting and challenging teachers to make sense of such experiences. If this approach is used to guide the development of CPD programs, then it increases the likelihood that these initiatives will be educative (Bjørke et al., 2021).

However, to what extent can teachers' professional growth be stimulated through a CPD program such as this one? If we understand growth as a process that includes critical reflection and a skill that must be practiced and maintained over the years, it may be difficult to encourage and stimulate this through a one-year CPD program alone. Yet, if it is a shared goal among several actors - teachers, head teachers, teacher-educators - then it may well become embedded into teachers' everyday teaching practice. This suggests that there is a need for a shift in the understanding of what and how teachers learn and grow to be able to accommodate this. Consequently, if future CPD programs in PAL aim

to support teachers' professional growth, a transformative approach (Kennedy, 2005) might be preferable as it allows teachers to take greater responsibility regarding their learning journey. This implies that future CPD programs ought to apply a combination of a transformative and transmissive approach with an emphasis towards a transformative approach as this may be beneficial in bringing out various experiences.

#### 4.1. Strengths and limitations

Several strategies were used to strengthen the trustworthiness of the study (Lincoln & Guba, 2000). First, the participants were provided with both written and verbal consent to participate. The participants were also provided with the opportunity to read the transcripts to check the factual accuracy of the data, however, none of them took up this opportunity. Although the first author had the main responsibility for planning and carrying out the study, the co-authors contributed regularly, for example, in designing the interview schedule, analyzing the findings, discussing the theoretical framework, and writing the paper. A detailed description of the process is also provided in the method section for the readers to make sense of and judge the transferability of the study (Lincoln & Guba, 2000).

There are also some limitations that should be acknowledged. Firstly, all the participating teachers in the study completed the CPD program, which may have influenced their attitudes toward the program. It is conceivable that the teachers who did not complete the program would have had different perceptions. Secondly, this study has given limited insight into the teachers' use of PAL in their everyday practice as it examines teachers' perceptions after their participation. The study was supposed to combine observations and interviews, but due to Covid-19, it was limited to interviews. For further research, it would be relevant to carry out observations of teachers' practice following their participation in a CPD program. The interviewees' responses may also have been influenced by the interviewer's position as a member of the CPD program. The social desirability biases might, therefore, be a limitation of the study. However, the interviewees were informed that the interviewer was not directly involved in the CPD program before starting the interview.

## 5. Conclusions

CPD programs have been suggested as a way to support teachers' use of PAL. Findings from this study illustrate that participating in CPD programs may support teachers' use of PAL by diversifying their teaching practice, stimulating critical reflectiveness, and encouraging collaborative learning. This study's findings suggest a need to rethink the way CPD programs are designed to meet teachers' needs. Understanding teacher CPD as a predictable, standardized process with fixed endpoints that can be controlled may lead to overlooking valuable experiences that arise along the journey. Instead, it might be useful to recognize teacher CPD as a process that can take many paths and be sufficiently curious and open to what arises along the way. Drawing on Dewey's (1916) educational theories, teacher educators might benefit from listening to teachers' voices to further understand and support the processes through which they reconstruct and learn from experiences. Thereby, the authors conclude that it would be beneficial if teacher educators in CPD programs shift their thinking beyond the acquisition of contextual PAL skills and knowledge in order to help teachers rethink their practice through processes of critical reflection based on experiential knowledge. This may cause ripple benefits from participating in CPD programs and foster teachers' ability for lifelong learning and professional growth.

The findings in this study are relevant for teacher educators and CPD providers who are designing CPD programs for teachers in PAL, or other similar innovations. The findings are also relevant for teachers and head teachers who want to know the potential benefit of participating in such CPD programs. For future research, observing teachers' practice during



and after participating in CPD programs may help provide a more nuanced picture of how teacher learning is shaped in everyday practice over time. How schools integrate PAL at an organizational level beyond participating in CPD programs, might also shed light on the way in which context shapes the enactment of PAL.

### Declaration of competing interest

The study was funded by Gjensidige Stiftelsen. However, they had no role in the design of the study, collection, analysis, interpretation of data or writing of the manuscript. Consequently, the views expressed are those of the author(s) and not necessarily those of Gjensidige Stiftelsen.

### Data availability

The authors do not have permission to share data.

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### Appendix

#### The interview schedule

- Retrospect
  - o What thoughts do you have about participating in the CPD program?
  - o What was good? What could be better? Why?
  - o Examples (Activities, ways of working, exams, etc.)?
- Present
  - o How do you perceive your practice today (after participating in the CPD program)?
  - o What influence do you believe the CPD program has had? How? Why?
  - o Examples?
- Physically active learning
  - o Have you used PAL after the CPD program? Why?
  - o What about PAL do you find meaningful? Why?
  - o Examples?

### References

- Archibald, M. M., Ambagtsheer, R. C., Casey, M. G., & Lawless, M. (2019). Using zoom videoconferencing for qualitative data collection: Perceptions and experiences of researchers and participants. *International Journal of Qualitative Methods*, 18. <https://doi.org/10.1177/1609406919874596>, 1609406919874596.
- Armour, K., Makopoulou, K., & Chambers, F. (2012). Progression in physical education teachers' career-long professional learning: Conceptual and practical concerns. *European Physical Education Review*, 18(1), 62–77. <https://doi.org/10.1177/1356336X11430651>
- Armour, K., Quennerstedt, M., Chambers, F., & Makopoulou, K. (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>
- Armour, K. M., & Yelling, M. R. (2004). Continuing professional development for experienced physical education teachers: Towards effective provision. *Sport, Education and Society*, 9(1), 95–114. <https://doi.org/10.1080/1357332042000175836>
- Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education*, 27(1), 10–20. <https://doi.org/10.1016/j.tate.2010.08.007>
- Bartholomew, J. B., Jowers, E. M., & Golaszewski, N. M. (2019). Lessons learned from a physically active learning intervention: Texas I-can. *Translational Journal of the American College of Sports Medicine*, 4(17), 137. <https://doi.org/10.1249/TJX.0000000000000095>
- Biesta, G. (2015). What is education for? On good education, teacher judgement, and educational professionalism. *European Journal of Education*, 50(1), 75–87.
- Bjørke, L., Standal, Ø. F., & Mordal Moen, K. (2021). '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*, 26(8), 889–902. <https://doi.org/10.1080/13573322.2020.1799781>
- Borko, H., Jacobs, J., & Koellner, K. (2010). Contemporary approaches to teacher professional development. *International encyclopedia of education*, 7(2), 548–556. Received from [https://www.researchgate.net/profile/Jennifer-Jacobs-12/publication/242071048/Contemporary\\_approaches\\_to\\_teacher\\_professional\\_development/links/59fc9517458515d0706501b3/Contemporary\\_approaches\\_to\\_teacher\\_professional\\_development.pdf](https://www.researchgate.net/profile/Jennifer-Jacobs-12/publication/242071048/Contemporary_approaches_to_teacher_professional_development/links/59fc9517458515d0706501b3/Contemporary_approaches_to_teacher_professional_development.pdf).
- Bowe, J., & Gore, J. (2017). Reassembling teacher professional development: The case for Quality Teaching Rounds. *Teachers and teaching*, 23(3), 352–366. <https://doi.org/10.1080/13540602.2016.1206522>
- Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, 11(4), 589–597. <https://doi.org/10.1080/2159676X.2019.1628806>
- Brinkmann, S., & Kvale, S. (2015). *Interviews: Learning the craft of qualitative research interviewing* (Vol. 3). Thousand Oaks, CA: Sage.
- Chalkley, A. E., Mandelid, M. B., Thurston, M., Daly-Smith, A., Singh, A., Huiberts, L., ... Tjomsland, H. E. (2022). "Go beyond your own comfort zone and challenge yourself": A comparison on the use of physically active learning in Norway, The Netherlands, and the UK. *Teaching and Teacher Education*, 118, Article 103825. <https://doi.org/10.1016/j.tate.2022.103825>
- Daly-Smith, A., Morris, J. L., Norris, E., Williams, T. L., Archbold, V., Kallio, J., ... Resaland, G. K. (2021). Behaviours that prompt primary school teachers to adopt and implement physically active learning: A meta synthesis of qualitative evidence. *International Journal of Behavioral Nutrition and Physical Activity*, 18(1), 1–20. <https://doi.org/10.1186/s12966-021-01221-9>
- Daly-Smith, A., Quarmby, T., Archbold, V. S., Routen, A. C., Morris, J. L., Gammon, C., ... Dorling, H. (2020). Implementing physically active learning: Future directions for research, policy, and practice. *Journal of Sport and Health Science*, 9(1), 41–49. <https://doi.org/10.1016/j.jshs.2019.05.007>
- Daly-Smith, A. J., Zwolinsky, S., McKenna, J., Tomporowski, P. D., Defeyter, M. A., & Manley, A. (2018). Systematic review of acute physically active learning and classroom movement breaks on children's physical activity, cognition, academic performance, and classroom behaviour: Understanding critical design features. *BMJ Open Sport & Exercise Medicine*, 4(1), Article e000341. <https://doi.org/10.1136/bmjsem-2018-000341>
- Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.
- Darling-Hammond, L., & McLaughlin, M. W. (2011). Policies that support professional development in an era of reform. *Phi Delta Kappan*, 92(6), 81–92. <https://doi.org/10.1177/003172171109200622>
- Day, C., & Sachs, J. (2004). Professionalism, performativity and empowerment: Discourses in the politics, policies and purposes of continuing professional development. *International handbook on the continuing professional development of teachers*, 3, 32.
- Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher*, 38(3), 181–199. <https://doi.org/10.3102/0013189X08331140>
- Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. Macmillan.
- Dewey, J. (1958). *Experience and nature*. Dover.
- Donnelly, J. E., Hillman, C. H., Castelli, D., Etnier, J. L., Lee, S., Tomporowski, P., et al. (2016). Physical activity, fitness, cognitive function, and academic achievement in children: A systematic review. *Medicine & Science in Sports & Exercise*, 48(6), 1197–1222. <https://doi.org/10.1249/MSS.0000000000000901>
- Evans, L. (2014). Leadership for professional development and learning: Enhancing our understanding of how teachers develop. *Cambridge Journal of Education*, 44(2), 179–198. <https://doi.org/10.1080/0305764X.2013.860083>
- Goh, T. L., Hannon, J. C., Newton, M., Webster, C., Podlog, L., & Pillow, W. (2013). "I'll squeeze it in": Transforming preservice classroom teachers' perceptions toward movement integration in schools. *Action in Teacher Education*, 35(4), 286–300. <https://doi.org/10.1080/01626620.2013.827600>
- Goodyear, V. A. (2017). Sustained professional development on cooperative learning: Impact on six teachers' practices and students' learning. *Research Quarterly for Exercise & Sport*, 88(1), 83–94. <https://doi.org/10.1080/02701367.2016.1263381>
- Guskey, T. R., & Yoon, K. S. (2009). What works in professional development? *Phi Delta Kappan*, 90(7), 495–500. Received from <https://journals.sagepub.com/doi/pdf/10.1177/003172170909000709>.
- Hayes, D. (2019). Continuing professional development/continuous professional learning for English language teachers. In *The Routledge handbook of English language teacher education* (pp. 155–168). Routledge.
- Hubbard, & Bailey. (2018). Mastering Microsoft Teams. End user guide to practical usage, collaboration, and governance. *Apress*. <https://doi.org/10.1007/978-1-4842-3670-3>
- Kennedy, A. (2005). Models of continuing professional development: A framework for analysis. *Journal of In-Service Education*, 31(2), 235–250. <https://doi.org/10.1080/13674580500200277>

- Kennedy, A. (2014). Understanding continuing professional development: The need for theory to impact on policy and practice. *Professional Development in Education*, 40(5), 688–697. <https://doi.org/10.1080/19415257.2014.955122>
- Klafki, W. (2000). The significance of classical theories of Bildung for a contemporary concept of Allgemeinbildung. In I. Westbury, S. Hopmann, & K. Riquarts (Eds.), *Teaching as a reflective practice: The German Didaktik tradition* (pp. 85–108). Mahwah, NJ: Lawrence Erlbaum.
- Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. In *Perspectives on thinking, learning, and cognitive styles* (pp. 227–248). Routledge.
- Lerum, Ø., Tjomsland, H. E., Leirhaug, P. E., McKenna, J., Quaramby, T., Bartholomew, J., ... Resaland, G. K. (2021). The conforming, the innovating and the connecting teacher: A qualitative study of why teachers in lower secondary school adopt physically active learning. *Teaching and Teacher Education*, 105, Article 103434. <https://doi.org/10.1016/j.tate.2021.103434>
- Lincoln, Y. S., & Guba, E. G. (2000). The only generalization is: There is no generalization. In *Case study method* (pp. 27–44). London: Sage. <https://doi.org/10.4135/9780857024367.d6>.
- Madsen, K., Aggerholm, K., & Jensen, J. O. (2020). Enactive movement integration: Results from an action research project. *Teaching and Teacher Education*, 95, Article 103139. <https://doi.org/10.1016/j.tate.2020.103139>
- Mandelid, M. B., Resaland, G. K., Lerum, Ø., Teslo, S., Chalkley, A., Singh, A., et al. (2022). Unpacking physically active learning in education: A movement didaktikk approach in teaching? *Scandinavian Journal of Educational Research*, 1–14. <https://doi.org/10.1080/00313831.2022.2148271>
- Michael, R. D., Webster, C. A., Egan, C. A., Stewart, G., Nilges, L., Brian, A., et al. (2018). Viability of university service learning to support movement integration in elementary classrooms: Perspectives of teachers, university students, and course instructors. *Teaching and Teacher Education*, 72, 122–132. <https://doi.org/10.1016/j.tate.2018.03.003>
- Ministry of education and research. (2015). *Kompetanse for kvalitet [Competence for quality]. Strategy for CPD programmes for teachers and head teachers until 2025*. Norwegian Government. Retrieved from [https://www.regjeringen.no/contentassets/731323c71aa34a51a6febdeb8d41f2e0/kd\\_kompetanse-for-kvalitet\\_web.pdf](https://www.regjeringen.no/contentassets/731323c71aa34a51a6febdeb8d41f2e0/kd_kompetanse-for-kvalitet_web.pdf). (Accessed 1 October 2022).
- Ministry of education and research. (2020). *Core Curriculum – values and principles for primary and secondary education*. Retrieved from [www.udir.no/lk20/overordnet-de-1/?lang=eng](http://www.udir.no/lk20/overordnet-de-1/?lang=eng). (Accessed 1 October 2022).
- Ministry of education and research. (2022a). *Arbeid med kvalitet og kompetanse [Working with quality and competence]. Tips, tools, and resources to support kindergartens and schools in CPD*. Retrieved from <https://www.udir.no/kvalitet-og-kompetanse/>. (Accessed 5 January 2023).
- Ministry of education and research. (2022c). *Statistics over Norwegian teachers applying for CPD programs with credits*. Retrieved from <https://www.udir.no/tall-og-forskning/statistikk/statistikk-grunnskole/videreutdanning-for-larere-soknader/>. (Accessed 5 January 2023).
- Ministry of Education and Research. (2022b). *Profesjonelle læringsfelleskap og skoleutvikling [Professional learning communities and school development]*. Retrieved from: <https://www.udir.no/lk20/overordnet-del/3.-prinsipper-for-skolens-praksis/3.5-profesjonsfelleskap-og-skoleutvikling/>. July. 2023.
- Ministry of Health and Care Services. (2020). *Sammen om active liv [Together for active life]. Regulations for Physical Activity 2020-2029*. Government. Retrieved from [www.regjeringen.no/contentassets/43934b653c924ed7816fa16cd1e8e523/handlingsplan-for-fysisk-aktivitet-2020.pdf](http://www.regjeringen.no/contentassets/43934b653c924ed7816fa16cd1e8e523/handlingsplan-for-fysisk-aktivitet-2020.pdf). (Accessed 1 October 2022).
- NESH. (2021). *Guidelines for research ethics in the social sciences and the humanities*. Retrieved from [umanities-law-and-theology/guidelines-for-research-ethics-in-the-social-sciences-humanities-law-and-theology/](https://www.forskningsetikk.no/en/guidelines/social-sciences-humanities-law-and-theology/guidelines-for-research-ethics-in-the-social-sciences-humanities-law-and-theology/). May 2023.
- Norris, E., van Steen, T., Direito, A., & Stamatakis, E. (2020). Physically active lessons in schools and their impact on physical activity, educational, health and cognition outcomes: A systematic review and meta-analysis. *British Journal of Sports Medicine*, 54(14), 826–838. <https://doi.org/10.1136/bjsports-2018-100502>
- O'Brien, J., & Jones, K. (2014). Professional learning or professional development? Or continuing professional learning and development? Changing terminology, policy and practice. *Professional Development in Education*, 40(5), 683–687. <https://doi.org/10.1080/19415257.2014.960688>
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing teacher professional learning. *Review of Educational Research*, 81(3), 376–407. <https://doi.org/10.3102/0034654311413609>
- Patton, M. (2014). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Los Angeles, Calif: Sage.
- Patton, K., Parker, M., & Neutzing, M. M. (2012). Tennis shoes required: The role of the facilitator in professional development. *Research Quarterly for Exercise & Sport*, 83(4), 522–532. <https://doi.org/10.1080/02701367.2012.10599141>
- Romar, J. E., Björkgren, M., Snellman, J. E., Ruostekoski, A., Harjunpää, P., & Juslenius, V. (2020). Preservice secondary subject teachers incorporating movement integration into classroom practice. *Teaching and Teacher Education*, 94, Article 103119. <https://doi.org/10.1016/j.tate.2020.103119>
- Routen, A. C., Johnston, J. P., Glazebrook, C., & Sherar, L. B. (2018). Teacher perceptions on the delivery and implementation of movement integration strategies: The CLASS PAL (Physically Active Learning) Programme. *International Journal of Educational Research*, 88, 48–59. <https://doi.org/10.1016/j.ijer.2018.01.003>
- Schmidt, S. K., Bratland-Sanda, S., & Bongaardt, R. (2022). Secondary school teachers' experiences with classroom-based physically active learning: "I'm excited, but it's really hard". *Teaching and Teacher Education*, 116, Article 103753.
- Sims, S., & Fletcher-Wood, H. (2021). Identifying the characteristics of effective teacher professional development: A critical review. *School Effectiveness and School Improvement*, 32(1), 47–63. <https://doi.org/10.1080/09243453.2020.1772841>
- Teslo, S., Thurston, M., Lerum, Ø., Mandelid, M. B., Jensen, E. S., Resaland, G. K., et al. (2023). Teachers' sensemaking of physically active learning: A qualitative study of primary and secondary school teachers participating in a continuing professional development program in Norway. *Teaching and Teacher Education*, 127. <https://doi.org/10.1016/j.tate.2023.104113>
- Timperley, H., Wilson, A., Barrar, H., & Fung, I. (2008). *Teacher professional learning and development* (Vol. 18). International Academy of Education.
- Tjora, A. (2018). *Qualitative research as stepwise-deductive induction* (1st ed.). Routledge. <https://doi.org/10.4324/9780203730072>
- Vazou, S., Webster, C. A., Stewart, G., Candal, P., Egan, C. A., Pennell, A., et al. (2020). A systematic review and qualitative synthesis resulting in a typology of elementary classroom movement integration interventions. *Sports Medicine*, 6(1), 1–16. <https://doi.org/10.1186/s40798-019-0218-8>
- Watson, A., Timperio, A., Brown, H., Best, K., & Hesketh, K. D. (2017). Effect of classroom-based physical activity interventions on academic and physical activity outcomes: A systematic review and meta-analysis. *International Journal of Behavioral Nutrition and Physical Activity*, 14(1), 1–24. <https://doi.org/10.1186/s12966-017-0569-9>
- Weick, K. E. (1995). *Sensemaking in organizations (Foundations for organizational science)*. Thousand Oaks, Calif: Sage.
- Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, 16(4), 409–421. <https://doi.org/10.1287/orsc.1050.0133>