



## Research paper

# Teachers' sensemaking of physically active learning: A qualitative study of primary and secondary school teachers participating in a continuing professional development program in Norway



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## HIGHLIGHTS

- Teachers make sense of PAL through the lens of professional identity and prevailing teaching practices.
- Teachers use PAL primarily for educational purposes, both academic and social learning.
- Teachers' professional identity is important to consider when developing teaching practice relating to PAL.
- Findings should be seen in consideration to the Norwegian educational context.

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## ABSTRACT

Physically active learning (PAL) has been advocated as a strategy for enhancing young people's movement and learning. To understand how PAL is accepted, adapted, and used by teachers, this study interviewed 16 teachers. The concept of sensemaking and thematic analysis was used in the study. The findings illustrate that teachers made sense of PAL through the lens of professional identity, using PAL to vary their teaching and include students of varying abilities in learning. We conclude that teachers may be more likely to interact with PAL if primacy is given to its educational purposes.

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## 1. Introduction

It is well-documented that physical activity (PA) is beneficial to

*Abbreviations:* PAL, physically active learning; CPD, continuing professional development; PA, physical activity; TA, thematic analysis.

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young people's health (Dale, Vanderloo, Moore, & Faulkner, 2019; Poitras et al., 2016). However, not all young people – including those in Norway – meet established recommendations for daily activity and are sedentary for large parts of the day (Steene-Johannessen et al., 2019). In Norway as elsewhere, schools have been highlighted as a strategic setting for promoting health through daily PA (Ministry of Education and Research, 2020; Ministry of Health and Care Services, 2020; World Health Organization, 2018). Historically, school-based PA opportunities have been provided through the curriculum subject of physical education and recess. More recently, however, integrating movement into the teaching of all curriculum subjects has been advocated as a deliberate strategy for enabling young people to move

more during the school day (Bartholomew & Jowers, 2011). This might include running relays and practicing spelling (Daly-Smith et al., 2018), solving math problems (Bartholomew, Jowers, & Golaszewski, 2019), or recreating subject matter through whole-body movements (Madsen, Aggerholm, & Jensen, 2020). Not only does such a strategy counteract time spent being sedentary, it also increases time in PA during academic lessons (Vazou et al., 2020). Although increased physical education is an alternative option, movement in teaching is presented as a more cost-effective strategy because it is led by classroom teachers during teaching time. It has, therefore, been proposed that the classroom may be the ideal setting within which PA can be combined with academic instruction (Donnelly & Lambourne, 2011).

Integrating movement into teaching has received increased attention among researchers in recent years. International researchers have used a range of terms when referring to the combination of academic learning and PA (e.g. movement integration, classroom-based PA, physically active learning, and physically active lessons) (Daly-Smith et al., 2020; Norris, Shelton, Dunsmuir, Duke-Williams, & Stamatakis, 2015; Quarmby, Daly-Smith & Kime, 2018; Watson et al., 2017; Webster et al., 2017). This paper uses the term 'physically active learning' (PAL), which is understood as integrating movement into teaching during normal classroom time (Daly-Smith et al., 2020). The term has been used widely in the Norwegian school context in recent years and, in particular, was used in the continuing professional development (CPD) program from which teachers were recruited for the empirical study (see below). The inclusion of PAL in recent Norwegian policy documents is also consistent with the well-established focus on the development of the 'whole child' and the importance of providing everyone with the opportunity to develop their abilities (NOU 2014, p. 7, p. 36).

There is a growing body of research that shows that the integration of movement into teaching is beneficial for young people's health and academic performance (Daly-Smith et al., 2018; Donnelly et al., 2016; Martin & Murtagh, 2017; Norris et al., 2015; Singh et al., 2019), as well as their social learning (Lerum et al., 2019). However, any benefits accrued have largely been dependent on having classroom teachers who can effectively embed movement into teaching. Classroom teachers are generally not trained in integrating movement into teaching and tend to lack confidence and competence in doing so (Bartholomew & Jowers, 2011; Quarmby, Daly-Smith & Kime, 2018). This may be the reason why many teachers do not see PA promotion in school as their responsibility (Cothran, Kulinna, & Garn, 2010; Jørgensen et al., 2020). The Norwegian regulations relating to the Framework Plan for Primary and Lower Secondary Teacher Education for Years 1–7 and 5–10 (Ministry of Education and Research, 2016), do not identify this competence among pre-service teachers in Norway. Several studies suggest that CPD programs can go some way towards supporting teachers to adapt their teaching practice and find ways of incorporating movement into their everyday teaching through the development of relevant knowledge and skills (Daly-Smith et al., 2020; Goh et al., 2013; 2017; Lerum et al., 2021; Quarmby, Daly-Smith & Kime, 2018; Routen et al., 2018; Stylianou, Kulinna & Naiman, 2016; Webster et al., 2015).

To date, there is limited research on teachers' perceptions of using PAL in everyday teaching practice (Benes, Finn, Sullivan, & Yan, 2016; McMullen, Martin, Jones, & Murtagh, 2016; Quarmby, Daly-Smith & Kime, 2018). Teachers are, however, the key actors in incorporating PAL into practice and their voices can shed light on understanding how and why PAL might be accepted, adapted, and used by teachers (Benes et al., 2016; Lerum et al., 2021). This study, therefore, seeks to add to the body of literature by exploring how teachers accept, adapt, and used PAL in their everyday teaching

practice. Specifically, we make use of Weick's (1995) concept of sensemaking and apply it to teachers' interaction with PAL. In so doing, we explore teachers' interpretations and beliefs about this new practice as well as account for their views. The aim is to contribute new knowledge about how sensemaking can shed light on how teachers learn and how this can give rise to changes in their everyday teaching practice. The specific research question asked was: *How do teachers make sense of physically active learning?* Given the centrality of 'sensemaking' in this study, we explore and clarify the concept further with regard to the specific purpose of the study.

### 1.1. Sensemaking as a conceptual framework for the study

The concept of sensemaking offers a way of understanding how teachers construct the PAL concept so that it makes sense to them in their everyday practice. This study draws on Weick's (1995) understanding of 'sensemaking' as applied to the study of organizations. Although the idea of sensemaking is used a lot in the organizational literature, there is considerable variation in how it is used (Maitlis & Christianson, 2014). This variation includes sensemaking being conceptualized as something taking place within individuals' heads, as a cognitive process (e.g. interpreting, evaluating, and synthesizing information), within individuals' bodies, as an affective process (e.g. experiencing through feelings and emotions), and between individuals, as a social process (e.g. interacting with other people and contexts). These processes all contribute to shaping how actors understand and take action (Maitlis & Christianson, 2014; Schwandt, 2005; Weick, 1995). Sensemaking is, therefore, understood in sociological terms, situating teachers in their everyday social contexts (Weick, Sutcliffe, & Obstfeld, 2005).

Educational research has drawn on sensemaking to explore the ways teachers interpret, adapt, and transform new reforms and policies as they put them into practice. Allen and Penuel (2015), for example, examined how teachers interpret responses to professional development linked to new science education reforms. They found that teachers perceived a lack of coherence between professional development and the new reform, and only some teachers were able to manage this ambiguity and uncertainty. They also found that some teachers foreclosed deep and sustained sensemaking. Similarly, Coburn (2001) used sensemaking to examine the interactional processes between teachers as they were making sense of new and often conflicting messages about reading policy. She found that individuals' sensemaking was shaped by their history of involvement with earlier reform efforts.

Weick, Sutcliffe, and Obstfeld (2005) propose that sensemaking is a process that is initiated when individuals form conscious and unconscious assumptions about their social reality, which serve as predictions about ongoing and future events and situations. If individuals subsequently experience situations that are discrepant from their predictions, then further sensemaking processes ensue. Individuals are therefore involved in processes of trying to explain – or make sense of – such situations by retrospectively reflecting on them to uncover what occurred, what needs to be explained, and what should be done in the future (Weick, 1995; Weick, Sutcliffe, & Obstfeld, 2005). This leads to justifications for past and future actions (Kramer, 2017, pp. 1–10). Sources of discrepancy can include the presence of conflicting goals (for example, combining movement and learning), limited resources (such as time), being available to implement actions demanded by external actors (for example, policymakers and parents), lack of clarity around roles and responsibilities, as well as how to measure the success of actions (Allen & Penuel, 2015).

Weick's (1995) sensemaking can be understood as a learning process. Previous research has, for example, drawn comparisons between sensemaking and Kolb's experimental learning theory

(Xiaofang et al., 2021) and the pedagogy of Dewey (Kolko, 2010). There are also some similarities with sensemaking and transformative learning theory (Mezirow, 1997). In both sensemaking and transformative learning, individuals' prior knowledge and experience are central to how new information is interpreted and shaped. Weick (1995) uses the term 'mental models' to describe this, while Mezirow (1997) uses the term 'frame of reference'. Relatedly, the meanings teachers attach to PAL are likely to shape how they define and respond to PAL and thus reflected in the actions expressed in their teaching practices. Actions and senses are therefore viewed as interdependent in these frameworks (Glynn & Watkiss, 2020; Weick, 1995; Weick, Sutcliffe, & Obstfeld., 2005).

1.2. Sensemaking and teacher learning

According to Weick (1995), individuals grasp new experiences and information through their existing knowledge structures. From this perspective, what new practices – such as PAL – come to mean for teachers depends to a large extent on their existing attitudes, beliefs, and perceptions. Research has shown that CPD programs and activities that are coherent with teachers' goals and standards are more likely to be effective in improving teachers' knowledge and skills (Darling-Hammond & Richardson, 2009; Desimone, 2009; Garet, Porter, Desimone, Birman, & Yoon, 2001).

However, researchers have raised critical questions about the design of previous CPD programs relating to PAL. These programs have been criticized for being limited to short courses and "one-shot" workshops, lasting from a few hours to one or two full days (Vazou et al., 2020), with little opportunity for reflection on practice and trailing new methods for teachers. Expecting teachers to change their practice by integrating movement into their teaching after a few hours of training may thus be optimistic, especially in the longer term (Avalos, 2011). Darling-Hammond, Hyley, and Gardner (2017) concluded that short training such as this does not promote 'serious, cumulative study of the given subject matter' (p.9). Short courses may well not allow the deeper thinking required to make these kinds of adaptations, especially to well-established routines and practices.

If deeper levels of reflection are to be encouraged, CPD programs need to create opportunities for professional development and critical thinking (Darling-Hammond et al., 2017; Hayes, 2019, pp. 155–168). The combination of tools for learning and reflective experiences and the use of co-learning through observation and feedback are also preferred ways for teacher development (Avalos, 2011). Thus, placing teachers' learning and development at the heart of CPD programs rather than viewing teachers as passive recipients of researchers' knowledge and instructions, is more likely to lead to the integration of new ideas such as PAL into everyday teaching practices.

Moreover, CPD programs in general have been frequently criticized for presuming that they not only change teachers' attitudes, beliefs, and perceptions (for example, embracing PAL as a favorable teaching strategy that can support learning) but that, furthermore, such changes will lead to specific alterations in their practices, which in turn will improve pupils' learning (Guskey, 2002). Guskey (2002), however, emphasized that any change in teachers' attitudes and beliefs occurred primarily after the teachers had experienced it working in their practice and improved students' learning. In other words, new ideas make sense when teachers have acted on them, rather than studying them abstractly, where teachers' own practice becomes the subject of exploration and knowledge development. Clarke and Hollingsworth (2002) argued that teacher change is not a linear process, but rather a more complex process that occurs on several levels, as presented in Guskey's (2002) model. They emphasized the importance of the environment, 'reflection', and 'enactment' as key processes in teacher development. In this context, sensemaking can be helpful for educators and researchers as it provides a framework for developing an understanding of how knowledge and learning are inseparable from action.

McArdle and Coutts (2010) argued that collective and shared sensemaking, where the teachers are getting together and discussing meanings about their teaching experience and practice, can enhance reflection processes and practice. They problematized how reflection is used as an activity and model for teachers' CPD, arguing that reflection processes could be strengthened by taking joint action for change and sharing between members of the community. This would help to sustain and deepen teachers' capacity to learn from their experiences in and of practice. In this context, sensemaking becomes part of participating and learning in a community of practice (Wenger, 1998) and a professional learning community (Stoll et al., 2006).

Following Weick's lead, we use sensemaking as a conceptual framework to orient ourselves towards the aim of the study and in terms of sensitizing us towards the analysis in order to reveal how teachers make sense of PAL.

2. Methods

2.1. The continuing professional development program

This study was carried out in the context of a larger, ongoing PAL CPD program for teachers in Norway. In total, 233 teachers and 30 schools participated in the CPD program from August 2019 to June 2020. The CPD program consisted of seven learning modules distributed over one school year: an introductory module, five learning modules, and an exam module. A description of all the modules is provided in Table 1. The teachers who completed all the learning modules and the exam module achieved 15 credits at the

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

Module	Content
The introductory module	This was voluntary. For those who opted in, it offered an opportunity to practice important skills for mastering the formal requirements of the CPD program, such as the digital programs.
Module 1	The teachers developed a PAL activity by adding academic content to a familiar and non-academic activity.
Module 2	The teachers explored previous PAL CPD teachers lesson plans in their own teaching.
Module 3	The teachers explored the CPD program's online database of PAL activities. They were challenged to identify areas (and activities) they felt were missing and develop new activities that the teachers believed covered these areas.
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 students could do at their home (due to the COVID-19 pandemic).
The exam module	The exam covered planning and conducting a PAL session for the colleagues and staff who did not participate in the CPD.

master level. The CPD program was delivered online, which enabled the teachers to complete the program while at their school.

The modules were based on student-centered principles, which included encouraging the teachers to construct PAL activities in a way that suited their real-world classroom contexts. The CPD program design was based on the assumption that there was no 'best way' to use PAL but rather had to be adapted to the characteristics of the schools and classrooms (e.g. placing, size, resources, and culture), the teachers and students (e.g. experiences), and daily and unpredictable circumstances in the real-world context. The CPD program, therefore, was based on the view that teachers were best able to decide in which circumstances PAL was suitable and in what way, to ensure that PAL was well aligned with the teachers' practices and needs. The CPD program was an important part of the background context for understanding teachers' sensemaking.

The modules also involved synchronous online meetings and asynchronous video lectures. In the online meetings, the teachers discussed the activities they had completed with colleagues and the educators in the program. The educators acted as facilitators to support the discussions and the teachers' learning processes. The online lectures were primarily short videos about relevant models, literature, and research, developed by the educators. Additionally, the teachers created portfolios of their work throughout the program which, were relevant to the final module.

## 2.2. Participants

This study drew on a sample of the schools and teachers who had enrolled in the CPD program. A purposeful sampling approach (Patton, 2014) was used to identify and select information-rich cases. The recruitment process started by recruiting those schools that had five or more teachers enrolled in the program. On this basis, four schools of different sizes, varying from the smallest with 92 students and 11 teachers to the largest with 432 students and 39 teachers, were selected. Two schools were combined schools which included primary and secondary grades from level 1–10 and students aged from 5 to 16 years. Two were primary schools, with grade level 1–7 and students aged from 5 to 13 years. The schools were located in different municipalities; two in Eastern rural and two in Western rural Norway.

Head teachers at the four selected schools were asked to recruit teachers according to the following criteria: a) minimum of three years of teaching experience, b) teaching students in higher grades (5–10th grade), c) teaching in more than one theoretical subject, d) men and women, e) varying ages. The aim was to try to ensure a diverse sample with varied experiences and perceptions that would yield rich data. The head teachers identified participants who met the inclusion criteria and provided contact information. Each teacher was then contacted via email. In total, 20 teachers were contacted, and 16 agreed to participate (3–5 teachers from each school). Most participants were females (10 out of 16) with a work experience ranging from 1 to 30 years at the time of the study. Although three of the participating teachers had fewer than three years of work experience, we decided to include them to ensure a minimum of three teachers from each school.

## 2.3. Data collection procedures

Qualitative research is a particularly appropriate paradigm for exploring sensemaking among teachers as the purpose was to obtain rich data from which compelling insights into teachers' experiences and perspectives on PAL could be developed. The approach was used to encourage the participants to look back at events – in this case the PAL CPD program and their subsequent efforts to use PAL in teaching - and bring their own voices into the

foreground, which according to Weick (1995) is a vital part of the sensemaking process. The interviews were therefore a relevant setting for the teachers to individually make sense of PAL, reflecting on both their CPD experiences as well as their integration of PAL at school. According to this view, the interview is not only a setting for researchers to generate relevant research data, but also a setting and an opportunity for individuals to become more aware of their own understandings, expectations, beliefs, and experiences, a part of their sensemaking. The process whereby the teachers try to make their experiences understandable to themselves and others, is referred to as 'sensegiving'. According to Maitlis and Lawrence (2007), 'sensegiving' is an interpretive process that reflects the individual and social dimensions of sensemaking. During the interviews, teachers were asked to elaborate their understandings of and actions with PAL, revealing how situations unfolded, or came to be, as Weick would say.

Individual semi-structured interviews were conducted because of the flexibility they offer in exploring and pursuing topics that could not be anticipated in the predesigned interview schedule (Brinkmann & Kvale, 2015). The first author conducted all interviews during October and November 2019. At this point, the teachers had completed the first module in the CPD and had started to use and reflect on PAL in their teaching practice. The teachers had thus gained experience with PAL. To limit the time burden of participation, the interviews took place during the school day, in private meeting rooms and classrooms.

The interview schedule included open-ended questions relating to the CPD program, PAL as a concept and activity, and professional development. The schedule is provided in the appendix. All interviews were audio-recorded (Olympus WS 853 Digital Voice Recorder) and lasted for between 26 and 57 min (with an average of 40 min). Beforehand, two pilot interviews were conducted to test the research instrument, such as the quality of the interview schedule and audio recorder (Chenail, 2011). Asking the teachers to critically reflect on their own practice from an 'outside' position, seemed to be challenging. Therefore, the questions about 'experiences of professional development' and questions 6 to 8 (see Appendix), in the last seven interviews were removed.

## 2.4. Data analysis and credibility

Interviews were transcribed verbatim in Norwegian. They were analysed by the first author using the six phases of thematic analysis (TA) presented by Braun and Clarke (2006, 2014). The analysis process was fluid and recursive, going back and forward between the six phases of TA. According to Braun and Clarke (2019), TA is often presented as a rigid and linear process, but they underscored that TA should be presented as a dynamic process and not as a recipe (Braun & Clarke, 2019). The sensemaking framework outlined above was used to guide the analysis in terms of sensitizing the researchers towards possible relevant lines of enquiry. NVivo (QSR Version 12.6) was used as a data management tool to support the data analysis process.

The first phase involved becoming familiar with the data (Braun & Clarke, 2006), with the first author listening to the audio recordings, transcribing them, and reading and rereading the transcripts. The participating teachers were anonymised and given pseudonyms to protect their privacy. The second phase involved generating initial codes in NVivo in an inductive and data-driven process, making them as detailed as possible to highlight the nuances in the empirical data. An example of a detailed code in the second phase was: 'PAL is about learning while we are physically active'. The third phase involved sorting the codes into meaningful groups and generating potential themes. This phase allowed the researchers to decide on the most common themes as they related



to the aim of the study. According to Braun and Clarke (2014), the individual themes should be coherent and address the research question in a meaningful way to capture the most relevant features of the data. Codes were grouped according to how the teachers made sense of PAL (what the concept was, how it was incorporated into practice, and why it was relevant). In the fourth and fifth phase, themes were reviewed, refined, and named, after discussing with the co-authors. It was during stages three, four, and five that the sensemaking framework of Weick (1995) was used to elaborate the themes in order to provide a stronger and more theoretically informed narrative. The sixth, and last phase, is what Braun and Clarke (2014) describe as writing up the themes.

Several strategies were used to ensure the credibility of the interview data and findings (Cope, 2014). The participants were recruited from schools that had participated in the PAL CPD program and were thus able to reflect on the phenomenon of interest – that is to say, PAL. To enrich the data, the participants were recruited from different schools and municipalities. After data collection, the participants were provided with the opportunity to read the transcripts to check the factual accuracy of the data. During the analysis phase, the emerging themes were discussed with the co-authors until a coherent analytic framework was developed. An in-depth description of the research process was also provided to provide a transparent account of the research process.

### 3. Findings

Three themes were developed that related to how teachers made sense of PAL in relation to their everyday life. Table 2 below gives an overview of the main themes and underlying dimensions.

#### 3.1. Combining learning and moving

The first theme reflects how the teachers made sense of PAL as a concept. A central dimension of their sensemaking was the need to continue to **prioritize student learning**. As they reflected on their experiences during the CPD program, they saw PAL as a way of teaching their academic subject that could combine learning objectives with bodily movements. In other words, when PAL was used, the students were supposed to learn while moving.

The teachers emphasized that student learning was their main motivation for using PAL. For example, Drew was clear that the students needed to ‘get something out of it’ and that PAL was not just ‘an activity’ or a break. This meant that the teachers used PAL to work with competencies identified in the curriculum, which could be both academic and social learning objectives. By academic learning, they were referring to learning subject matter such as fractions in mathematics or verbs in English. By social learning, they were referring to social skills such as cooperation and attitudes such as respect for one another. Being able to work with PAL in relation to both types of competence was seen as an advantage because, as Anna explained, it provided a variety of options:

I am thinking about the social community, developing self-confidence and being in groups. This is also a part of the

curriculum. It is not necessarily a competence goal, but it is an overriding part. So, you have a lot of things you can link PAL up to.

Teachers' sensemaking of PAL was also influenced by national policy and, relatedly, the school context. The teachers explained that their focus on academic learning in PAL was related to the academic pressure and demands in school. They explained that there was a wide range of competence goals in the curriculum that they had to reach, which they felt constrained their teaching to focus largely on the theoretical subject matter. This pressure was evident among both the primary and secondary school teachers. Jakob, for instance, blamed the curriculum for this pressure, but also other actors outside the school such as parents and politicians. Working as a primary school teacher, in this context, he believed that teachers had less power over student learning and had to do what they were ‘told’ to do by others outside the school:

I often think that we should not care (...) There are too many who interfere in the school structure. It is no longer the teachers who govern. Now it is parents and politicians. Everyone wants to run the schools, and we are just supposed to do what we are told.

Academic demands and the pressures they generated meant that the teachers perceived that the teaching time was short and valuable. In this context, teachers felt that PAL was appealing to them because it focused on student learning. Drew, for instance, stressed that his teaching time was important. Hence, he was conscious about spending his ‘precious time on learning’, which PAL enabled rather than detracted from.

Although the teachers understood that PAL focused on learning, they also expressed the challenge associated with combining learning with movement in a way that allowed them to reach some kind of balance. Katarina exemplified this difficulty. Although she had some experience of integrating movement into teaching before starting the CPD program, she had not used it for learning purposes earlier. She found it, therefore, challenging to achieve both a high degree of PA alongside learning in PAL, and described these aspects as belonging to two different ‘worlds’:

I have done a lot of break-out activities, but I have not been focusing on learning. That is one thing that confuses me. I have been very focused on the activity, but when the learning comes in, it is not that good.

The question of whether PAL could be used in a way that balanced movement and learning was also evident among the other teachers. Some were unsure of what an appropriate balance should be. Veronica, for instance, was struggling to make sense of PAL:

I am sceptical about how much one should emphasize the physical part in PAL. Is it a goal itself that the students are physical, that they get as much jumping as possible?! Or how

**Table 2**  
Overview of main themes and dimensions.

Main Themes	Combining learning and moving	Supporting existing teaching practice	Facilitating inclusion in class
<b>Dimensions</b>	Prioritizing student learning Difficult to balance	Pausing traditional teaching Replacing traditional teaching Complementing traditional teaching Moving outside the classroom	Creating positive experiences Including ‘weaker’ students

much should one emphasize the academic? (...) I have not quite landed there yet. I feel I am a bit of a beginner in this context.

An aspect of the teachers' ongoing sensemaking related to a shift in their understanding from seeing PAL as primarily about PA towards a balance between learning and movement. Understanding PAL in terms of integrating high-intensity activities was common in the early days of the CPD program. Karoline, for instance, explained that she believed PAL was about being 'very active' when she first heard about it, but her understanding changed during the CPD:

When I was introduced to physically active learning, I thought that it was just about running or being very active. That all one had to do was relays. That was very physically demanding. This was what my first thought about physically active learning was all about (...) But I have the impression that it has changed a bit.

Although the teachers emphasized the importance of PA for children's physical health, they argued that PAL was about getting the students up from their chairs and moving their bodies rather than being sedentary the whole lesson.

### 3.2. Supporting existing teaching practice

The second theme provides insight into how the teachers made sense of PAL in the context of their established teaching practices. The teachers tended to use PAL to either 'pause', 'replace', and/or 'complement' their existing teaching. In the process of making sense of PAL, the teachers used these ways as a reference point. Drawing on earlier teaching experiences seemed to make it easier for them to explain their understandings and actions.

One way the teachers used PAL, was to '**pause**' their usual way of teaching in order to use some movement activity and thereby increase students' concentration for when normal teaching would resume. This was a spontaneous and intuitive way of using PAL in that pausing teaching could be done whenever the teachers sensed that the students were losing their concentration and willingness to stay focused on their work. Instead of giving the students a break, the teachers used PAL. This was exemplified by an activity called 'Simon Says'. In this activity, the students were responding to the teacher's commands, e.g., 'Simon Says, get under the table', moving their bodies, and learning about prepositions in English. The teachers perceived PAL to be a more efficient use of time than simple breaks because they sustained their focus on students acquiring some learning benefit from the change in activity. Jakob used PAL in such a way, explaining that PAL boosted students' motivation and concentration. This was especially the case at the end of the school day because the students were normally less attentive at that point:

With PAL, we get knowledge through play. It is important to use it as a part of the teaching, not just play, but as a break when the students are getting tired, especially at the end of the day. It is great to have such things on long days (...) then we get to play a little, so they get replenishment, motivated, and the concentration back up.

The teachers also used PAL to '**replace**' normal classroom teaching. This was seen as necessary when they wanted to make teaching and learning more enjoyable for the students. The kinds of situations when this was used were when learning was judged to be somewhat difficult or tedious and the integration of PAL was a way of lightning the learning process. For example, the teachers judged PAL to be appropriate when they wanted the students to

repeat subject matter, such as 'the multiplication table in math' (Gary), 'strong verbs in English' (Katarina), or 'capitals' in geography (Drew). Instead of sitting individually and reading, writing, or solving tasks in a book, the students were moving while they were solving tasks in groups. Thus, using PAL for tasks involving repetition and memorizing seemed to be a common way of using PAL among teachers. The teachers saw this as an appropriate way of using PAL because repeating subject matter could be boring and integrating movement into the task could make it more fun.

The teachers also used PAL to '**complement**' their usual way of teaching, although this seemed to be a less common way of using it. They underscored that concretizing theoretical and abstract knowledge was sometimes necessary for student learning. They saw this as a way of putting theoretical knowledge into practical contexts to make subject content more understandable to the students. In this way, PAL was not presented as a more appropriate way of teaching than a traditional way, but rather as an extension. Various ways of teaching were seen as necessary to make the content more understandable and therefore facilitate learning. Anna exemplified this way of using PAL, by teaching about the coordinate system. She judged the students to have learned the coordinate system more easily when she taught them first in the classroom and then took them outdoors. By concretizing objects in the landscape and on the map, she perceived that the coordinate system became more understandable for the students because they were able to connect theory and practice:

I think it gives them some pictures. That they see a connection between theory and practice (...) You understand the context in which the coordinate system is set to be used, which is in maps. I think if we were just sitting in the classroom, they would not have understood the connection.

Despite using PAL in these three different ways, the teachers explained that PAL could be used **out- and inside the classroom**. Some teachers preferred to use PAL outside when the activity required more space for practical reasons. This could, for example, be in the hallway, schoolyard, and/or gymnasium. Teachers perceived that the students were positive and enthusiastic about being taught outside the classroom. Gary, for example, commented that the students would reply: 'YES! We are going out of the classroom and doing something else'. Teachers understood these positive responses as tending to confirm for them that going out of the classroom was a good decision and encouraged them to do so. However, teaching outside of the classroom was also challenging. The teachers explained that it required clearer leadership and classroom management from them. Using PAL inside the classroom seemed therefore easier and more convenient, especially in terms of the time involved, and when the activity did not require that much space. According to Eric, time pressure from the curriculum means that the classroom was often the preferred space:

We must be able to do it [PAL] in the classroom. If not, as a secondary school teacher, I have been under that curriculum pressure for years, and there are quite a few things that we need to know before the exam. So, you are a little afraid of losing too much time (...) standing in the schoolyard being nervous as well. It does not work. It must be possible to do it in a classroom.

### 3.3. Facilitating inclusion in class

The third theme provides insight into how the teachers made sense of the relevance of PAL. The teachers wanted all their students to have positive learning experiences and were aware that

their established ways of teaching did not appeal to all students. Their main reason for incorporating PAL was, therefore, to include all the students in the learning process and thus diversify the patterns of everyday teaching. For Veronica, for example, varying teaching was a way of engaging more students with diverse needs in the learning process:

I have always believed that the students are so different, so I must try to bring in as many ways [of teaching] so they learn things. It is important to vary. You cannot meet everyone with one teaching method. I have heard loads of right ways of teaching, but I do not believe in that. I have never done that. Because you must vary.

Although the teachers recognized a need to vary their teaching, they tended to fall back on their established ways of teaching for time-saving reasons. The teachers understood such ways as being time-efficient because the teacher had the scope to teach a lot of academic content in a small amount of time. Moreover, the general view was that – at least in the eyes of the teachers – delivering a lot of content was a good lesson. Caroline provided an example of this view:

When I do a traditional teaching lesson, I feel that I have used the lesson well. I do not ask the students about it, because they would probably have a different opinion about that.

Not only was PAL viewed as one way of varying their teaching, teachers' reflections also revealed that they perceived students to generally show greater commitment to engaging in the learning process. The teachers used a variety of terms to describe these responses to PAL. Karen and Veronica, for example, described their responses in terms of the students being 'lightened up' and 'fired up'. These positive reactions were interpreted by the teachers as the students being happier and better motivated for the task they were given, which in turn added to their own motivation thus convincing them that they should continue using PAL. Helen underscored this:

It was fun both for me and the students. I saw that it [PAL] motivated several of my students. They needed to break the pattern. It was a bit fun to get out and do something completely different than being in the classroom. It was also fun to see that joy, where they were active. I think it was motivating, and I want to continue with it.

The teachers also interpreted PAL as giving at least some students a better self-image. They linked this to students having more opportunities during the school day to use their bodies and show their capabilities. In normal classroom teaching, the teachers observed that the students often sat still at their desks during the school day. Notwithstanding their concerns about the greater challenges of managing PAL situations, especially if outside, teachers tended to favour students being allowed to use their bodies more during classroom time. They also linked movement to creating and enhancing motivation and mastery among the students. Veronica described that she, as a teacher in art, saw similarities between PAL and practical-aesthetic subjects, such as design, arts, and crafts, music, or physical education, in that the students could show different skills. This could in turn link to their sense of mastery and self-image:

In PAL you are not necessarily creating something, but you get to use the body and more senses than you normally do. Plus, you get to show yourself in a different way and context. The students may be a little more confident in themselves, I hope (...) at least

it will be an effect of it, that they get some positive experiences, some mastery experiences. It may be easier for some to get it in PAL, than in traditional teaching.

The teachers saw PAL as being especially important for the inclusion of the academically 'weaker' students in class. According to the teachers, the 'weaker' students were not motivated for school or learning in general, they dropped easily out of teaching, and performed less well in theoretical subjects. Yet to some degree, PAL was able to disturb these patterns among these students. Katarina, for example, observed that weaker students became more actively involved when she used PAL:

That you get to draw the attention of students you lose other places. That they go from being lazy and laying down on the desk, to be physically active, perhaps asking a question, or participating in another way.

Many teachers preferred low-intensity movements in PAL to include all students in class. In this regard, the teachers saw PAL as being for all students, not just those who already enjoyed being active. Integrating PAL using low-intensity activities was discussed among both primary and secondary school teachers although in slightly different ways. Drew explained that the secondary school students were often 'lazier' and more concerned with being sweaty than the primary school students. Thus, PAL needed to be 'less sweaty' otherwise the students would not participate.

A further dimension of teachers' sensemaking related to their perceptions that the academically 'weaker' students benefitted from PAL because it often involved collaboration with other students. The weaker students could thus learn from the others in the group or do tasks that they mastered better than the others, such as running. However, some teachers were uncertain about what benefit the academically 'stronger' students had from PAL, and questioned whether they were able to challenge them in PAL. For example, Marte commented:

I think they get a fun session, but it is a question of academic outcomes. Whether we manage to stretch the degree of difficulty of the lessons we make well enough, so they get a good outcome. I am a little unsure about that.

On the other hand, if PAL was viewed as being part of a teacher's daily practice, then there were other opportunities within the established teaching elements that could challenge the strongest students. According to this view, it was important not to compartmentalize PAL but see it as part of a whole repertoire of teaching strategies and approaches. Katarina illustrated this view by emphasizing the teachers' role in organizing the PAL and non-PAL aspects of teaching and learning so that the strongest and weakest students were provided with opportunities to achieve good academic outcomes:

I think that this does not accommodate the strongest, but the weakest. But then I may have other elements in the teaching that accommodate the strong ones. So, I try to adapt the teaching to capture different students.

#### 4. Discussion

This qualitative study used semi-structured interviews to explore teachers' sensemaking of PAL. Such a methodological approach revealed and foregrounded the processual nature of the teachers' sensemaking. The interview process contributed to their

sensemaking by providing the 'space' – the time and opportunity, for example – within which to reflect on their PAL experiences and actions. The interviews specifically encouraged the teachers to attach words to their reflections and experiences, thereby capturing their sensemaking narratives (Weick, Sutcliffe, & Obstfeld, 2005). Overall, the findings reveal that teachers' sensemaking of PAL is driven by their professional identity and practice. The teachers gave primacy to their role in facilitating students' learning when they were giving meaning to PAL. In other words, they reframed PAL in terms of their own experience, knowledge, beliefs, and actions, to make sense of PAL in their everyday context. Consequently, goals relating to the potential health benefits were of secondary importance to them. Their sensemaking thus revealed their justifications for their past actions as Kramer (2017, pp. 1–10) has argued, which also reflected the pre-eminence of their identity as first and foremost teachers. The interpretive process of adaptation thus involved teachers giving meaning to PAL through the lens of themselves as teachers. As Glynn and Watkiss (2020) argue, studying sensemaking is of value because it reveals how meaning and action are intertwined in an everyday context.

Studies of sensemaking among teachers have in recent years pointed to the significance of identity in understanding the implementation of new policy initiatives (for example, Allen & Penuel, 2015; Coburn, 2005). The findings from our study of PAL contribute to this field by confirming the importance of identity in explaining how teachers use a new practice – such as PAL – that lies beyond their established subject competence in their everyday teaching practice. To the best of our knowledge, this is a new contribution to the PAL educational research field, which to date has primarily focused on teachers' perceptions of specific PAL programs (Cothran, Kulinna & Garn, 2010; Goh, Hannon, Webster, & Podlog, 2017; McMullen et al., 2016; Quarmby, Daly-Smith & Kime, 2018; Routen et al., 2018; Stylianou, Kulinna & Naiman, 2016). Furthermore, it adds to the limited research on teachers' perceptions of the concept itself (Benes et al., 2016) by providing a more detailed understanding of teachers' actions (Weick, 1995), and how and why teachers choose to use PAL in their practice. Thus, the findings in the current study shed light on how new practices, such as PAL, come to be used in teachers' everyday practice.

In making sense of PAL, as a new practice, teachers drew a number of comparisons with existing practice, as has been noted by other researchers (Jørgensen et al., 2020; Webster et al., 2017; Weick, 1995). In so doing, 'traditional classroom teaching' was viewed as sometimes monotonous and not for all students. Using the idea that students learn in various ways, they justified their use of PAL in terms of helping them vary their teaching strategies and accommodate everyone in the class. This meant that they did not see PAL as additional to their current work, as previous research has suggested (Cothran, Kulinna & Garn, 2010). This may reflect the approach adopted in the CPD program in which teachers were given 'space for manoeuvre', rather than receiving a prescription for how to use it as in previous programs (Cothran, Kulinna & Garn, 2010; Vazou et al., 2020). Our findings suggest that the teachers were able to find a way of understanding and using PAL that suited their practice. This way of approaching practice can support teachers' sensemaking and develop greater coherence between new and established practices (Desimone, 2009; Garet et al., 2001). In the current study, the open-ended nature of the CPD program gave scope for interpretation and adaptation in a variety of directions making sustainability more likely.

That teachers' primarily focus on learning when integrating PAL into teaching also supports previous research (Benes et al., 2016; Jørgensen et al., 2020; McMullen et al., 2016). The findings from our study add nuance to this picture by explaining teachers' actions for

how they use PAL when their main point of reference is their identity as teachers, reflecting their role and profession (Weick, 1995). An aspect of this relates to the Norwegian education policy context within which they worked, illustrated by the pressure and constraints they felt from a variety of sources – parents and politicians, for example – to ensure their students met the learning goals and the curriculum was covered. As long as PAL supported these goals then it was more likely to be used in some way, shape, or form. In fact, teachers also saw PAL as offering up some better ways of meeting educational goals than more traditional, sedentary ways of teaching some parts of the curriculum. This was also, the case with regard to the inclusion of those students who were often on the periphery of classroom-based (traditional) lessons (teaching). Teachers also made sense of PAL in terms of how it allowed them to meet social learning goals, which were also a part of their mandate as teachers. For the teachers in this study, the integration of PAL was justified because it created a teaching dynamic that was different from sedentary forms of teaching because it facilitated a focus on interactions and group work.

A further contextual dimension of teachers' sensemaking is related to their awareness of the current emphasis on getting students to be more physically active during the school day. The use of PAL for health reasons was, however, somewhat absent in teachers' accounts and tended to be subordinated to learning goals. In part, teachers justified this in terms of the time it often took them to organize and carry out PAL, which might reflect where the teachers were in the process of developing a repertoire of PAL knowledge and skills. Although Jørgensen et al. (2020) found that teachers did not think PA promotion to be their main responsibility, our findings suggest a slightly more complex understanding of this issue. For the teachers in our study, if PAL is interpreted as offering approaches consistent with a focus on their identity as teachers, then they saw it as part of their professional role. In this regard, given the centrality of teachers' identity as facilitators of students' learning to their interpretation of PAL, a shift away from the concept of PA and its health connotations – especially at moderate to vigorous levels – towards the concept of movement in support of learning, may increase the likelihood of teachers using PAL. Furthermore, it is likely that this approach is more consistent with other Norwegian cultural values relating to 'bildung' and 'danning', which focus on the development of the whole child (Ministry of Education and Research, 2020).

This raises questions about how best to present PAL to teachers. Traditionally, researchers and policymakers have used health arguments for legitimizing the integration of movement in schools (Ministry of Education and Research, 2020; Ministry of Health and Care Services, 2020), and evidence suggests that PAL is constructed on the same basis (Bartholomew & Jowers, 2011; Donnelly & Lambourne, 2011; Vazou et al., 2020). As our study has shown, the difficulty is that these arguments are not consistent with teachers' intentions of integrating PAL into teaching as their sensemaking has revealed. The teachers in the current study justified their use of PAL as an alternative way of supporting learning and thus achieving desired outcomes. Weick et al. (2005) and Glynn and Watkiss (2020) point out that sensemaking reveals how people – in this case, teachers – tend to reduce the complexity of their professional roles when new developments are introduced. In our study, the introduction of PAL tends to increase teachers' perception of the complexity of their role as teachers. The process of adaptation that was revealed in this study, shows that they seek to reduce that complexity and make things more manageable in their everyday work by aligning PAL with their core identity as teachers and thus maintain the educational value of their role, profession, and practice.



## 5. Conclusion

The purpose of this study was to explore how teachers accept, adapt, and used PAL in their everyday teaching practice by exploring their sensemaking of PAL. Our findings illustrate that teachers make sense of PAL through the lens of their professional identity as teachers and their prevailing teaching practices. We conclude that teachers may be more likely to interact with PAL if primacy is given to its educational purposes rather than a focus on health. This study adds, therefore, nuance to the existing picture of how and why teachers use PAL in their teaching. From a policy and practice perspective, the study contributes new knowledge that can inform how teachers might be better supported and prepared to use PAL in their everyday teaching practice. We suggest that teacher education programs are likely to be more effective if they take teachers' professional autonomy into account by providing space and opportunities for sensemaking and meaning construction. Such an approach is more likely to create greater ownership among teachers, and hence make sustainability more likely. Further research is needed to explore how specific CPD programs influence teachers' integration of PAL in the longer term.

In this regard, the findings and conclusions from this study have implications for how PAL is presented to teachers during a CPD program. In particular, sensemaking might be adopted as a more explicit approach to CPD since it gives the opportunity to reconceptualize practice itself as sensemaking rather than decision making (Weick et al., 2005). This approach is also more consistent with the literature on teachers' learning (Avalos, 2011; Clarke & Hollingsworth, 2002; Darling-Hammond & Richardson, 2009; Desimone, 2009; Garet et al., 2001; Guskey, 2002). However, we acknowledge that it would be beneficial for future research examining teacher sensemaking to consider collecting data on teacher perceptions at multiple time points over a longer duration to explore how they may change over time.

The social desirability biases might be a limitation in this study, given the interviewer's professional position as a contributor to the CPD program. Although the interviewer was not directly involved in the CPD program as a teacher educator, the position of the interviewer may have influenced the interviewees' responses.

## 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

- Background and expectations for participating in the CPD program

1. What was the reason for participating in the CPD program, and why?
2. What are your expectations for the CPD program, and why?
- Perceptions and expectations of physically active learning
3. How do you associate with the physically active learning concept, and how would you define it? Examples?
4. What about the physically active learning concept do you think is meaningful, and why?
5. What do you expect to achieve by using physically active learning in your teaching, and why?
- Experiences of professional development
6. What do you do to develop your teaching practice? Examples?
7. How do you work with you colleagues to develop your teaching practice?
8. How does the school leader develop your teaching practice?
- Expectation of development in the CPD program
9. What do you think you need to do to get the most out of the CPD program, and why?
10. How do you expect the CPD program will be able to develop you, and your teaching practice?
11. How do you think the CPD program will be able to develop your colleges and school?

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