

Many roads to Rome? Cultivating physically active learning

Ståle Teslo, Anna Chalkley, Eirik S. Jenssen, Øyvind Glosvik & Hege Eikeland Tjomslund

To cite this article: Ståle Teslo, Anna Chalkley, Eirik S. Jenssen, Øyvind Glosvik & Hege Eikeland Tjomslund (21 Oct 2024): Many roads to Rome? Cultivating physically active learning, Scandinavian Journal of Educational Research, DOI: [10.1080/00313831.2024.2419076](https://doi.org/10.1080/00313831.2024.2419076)

To link to this article: <https://doi.org/10.1080/00313831.2024.2419076>



© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group



Published online: 21 Oct 2024.



Submit your article to this journal [↗](#)



Article views: 374







View related articles [↗](#)



View Crossmark data [↗](#)

Many roads to Rome? Cultivating physically active learning

Ståle Teslo ^{a,b}, Anna Chalkley ^{a,c}, Eirik S. Jensen ^{a,b}, Øyvind Glosvik^b and Hege Eikeland Tjomsland ^{a,d}

^aCentre for Physically Active Learning, Faculty of Education, Arts, and Sports, Western Norway University of Applied Sciences, Sogndal, Norway; ^bDepartment of Pedagogy, Religion and Social Studies, Western Norway University of Applied Sciences, Sogndal, Norway; ^cCentre for Applied Education Research, Wolfson Centre for Applied Health Research, Bradford Royal Infirmary, Bradford, UK; ^dDepartment of Public Health and Sports Science, Inland Norway University of Applied Sciences, Elverum, Norway

ABSTRACT

To cultivate professional learning communities (PLC) has become a widely recognised strategy for school development and student learning. This case study employed multimethod qualitative data collection (focus groups, individual interviews, and document analysis) to provide insight into how PLC within two primary schools cultivated physically active learning (PAL) in Norway. Findings illustrate how PAL can be cultivated in different ways and that the process is contingent on school leadership, irrespective of participation in continuing professional development programmes. Drawing on Robinson's student-centered leadership, we suggest that school leaders, teachers, and other staff members practice this when cultivating PAL to build capacity and ownership among staff. The study concludes that PLC could be a strategy for cultivating PAL when combined with internal and/or external PAL expertise.

ARTICLE HISTORY

Received 2 December 2023
Accepted 7 September 2024



KEYWORDS

Continuing professional development; physically active learning; professional learning communities; school leadership; student-centered leadership

1. Introduction

The cultivation of professional learning communities (PLC) has been promoted as a strategy for school development and students' learning for over a decade (Lomos et al., 2011). PLC are understood as teachers who engage in regular, systematic, and sustained cycles of inquiry-based learning (Stoll et al., 2006), for example, by sharing experiences and reflecting together, deliberately and systematically as professionals, to facilitate collective and sustainable shifts in their practice. In Norway, teachers are expected to participate in PLC to ensure that their individual and collective practice reflects the values and principles of the curriculum (Ministry of Education & Research, 2022). Until recently, such systemic development has been dependent on the preferences of individual principals. In this context, the importance of school leadership is highlighted in building and sustaining teachers' professional learning. The curriculum in Norway states that the schools are mandated to make professional decisions about what they want to learn and develop based on their understanding of their local needs and existing knowledge base, and that principals must lead this process (Ministry of Education & Research, 2022).

A topic with growing interest among teachers in Norway is physically active learning (PAL). PAL can be understood as integrating bodily movements into subject teaching (Watson et al., 2017), for

CONTACT Ståle Teslo  stale.teslo@hvl.no  Centre for Physically Active Learning, Faculty of Education, Arts, and Sports, Western Norway University of Applied Sciences, Campus Sogndal, 6851 Sogndal, Norway

© 2024 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way. The terms on which this article has been published allow the posting of the Accepted Manuscript in a repository by the author(s) or with their consent.

example, by running relays while practising spelling (Daly-Smith et al., 2018) or recreating subject matter using gestures and whole-body movements (Madsen et al., 2020). Teachers believe that PAL can foster relevant and authentic situations that can support students in developing academic and social competencies in a more purposeful way than traditional classroom teaching (Mandelid et al., 2022; Teslo et al., 2023a). Research has also demonstrated that PAL can benefit students' academic and health outcomes (Donnelly et al., 2016). In that context, PAL is perceived as relevant to meet the curriculum requirements (Ministry of Education & Research, 2020). A challenge, however, is that many teachers in Norway are unfamiliar with PAL and lack competence in using it (Schmidt et al., 2022). Therefore, teachers must be supported to integrate PAL into their everyday teaching using various methods (Daly-Smith et al., 2020).

One way to support teachers to integrate PAL into everyday teaching is through individual training and development provided by universities. Traditionally, teachers have participated in university courses and workshops of varying durations. However, they have generally yielded disappointing results and superficial effects, and researchers have raised critical questions about their "impact" on student learning (Desimone, 2009). The programmes are criticised for failing to consider the context within which teachers work, which shapes their professional learning needs (Patton et al., 2012). This is also supported by PAL researchers, who argue that CPD programmes must go beyond acquiring contextual PAL skills and knowledge to recognise teachers' professional learning (Teslo et al., 2023b).

Another way to support teachers is through school-based professional development. This approach places schools as PLCs within the teacher education system based on cooperation between the PLC and outside agents, such as PAL teacher educators. This approach can foster positive change in teachers' practice (Timperley et al., 2008) and potentially overcome shortcomings of individual teacher competence training and development (Cordingley et al., 2015; Zeichner, 2010). However, it requires buy-in from principals and depends on their ability to align PAL with local school policies and goals (Skage & Dyrstad, 2019). Timperley also underpins the need for a community focused on becoming responsive to students' learning (Timperley et al., 2008).

While previous research has explored what is necessary to integrate PAL into teachers' practice (Daly-Smith et al., 2021) and how CPD programmes can support this at an individual teacher level (Teslo et al., 2023b), there is, however, a need for knowledge about how PAL can be integrated at a collective teacher level in schools. Building collective practice is also relevant for schools to meet policy requirements (Ministry of Education & Research, 2022). Therefore, the aim of this study was to explore how staff in two primary schools in Norway are integrating PAL into their collective practice and culture. This involves identifying the characteristics and challenges that arise when all school staff members participate in a school-based PAL CPD programme and how they act upon the challenges along their journey. Such knowledge will help design future school-based CPD programmes in PAL. Also, given the school leader's role in teacher learning, school development, and the school's collective practice, we wanted to explore how they are leading this process. To discuss the actions taken by the school leader, we use Robinson's (2011) student-centered leadership model. In this context, school leadership is understood as a collaborative activity among the principal, assistant principal(s), teachers, and situations (Spillane, 2006). The research questions are:

How do school leaders lead the staff's participation in a school-based PAL CPD programme?

How do teachers experience the cultivation of PAL in their PLC?

2. Theoretical framework

2.1. School leader's role in teacher learning

Traditionally, research on school leadership has focused on the principal's role in strengthening student learning. In doing so, Leithwood et al. (2020) suggest that school leaders create conditions for increasing the quality of teachers' teaching practice, such as establishing PLCs (Stoll et al., 2006).

This means that learning refers not only to the students but also to school leaders, teachers, and staff in the whole organisation. Louis (2015) argues that PLCs can be developed by establishing shared norms and values that clarify preferred behaviours among members. Additionally, a collective focus on student learning beyond their test results and a commitment to collaboration based on shared values must be fostered. Furthermore, there must be reflective dialogues about challenges in the work, and “deprivatize” practice where members observe, reflect, and discuss each other’s teaching practices.

According to Vangrieken et al. (2017), the principal should develop a culture where the participants have a sense of agency and responsibility, and feel safe in challenging and constructive discussions and deep-level collaborations. This is also underscored by Schein (1985), who states that principals should pay more attention to the people and not only the school system. The principal should also create appropriate structural conditions for teacher learning (Vangrieken et al., 2017), such as time and financial support for regular meetings where staff can discuss each other’s teaching. Furthermore, the principal has a crucial role in encouraging home-school interactions that further enhance student success at school (Leithwood et al., 2020).

DuFour and Marzano (2011) exemplify various responsibilities and actions the principal can undertake to enhance the PLC. One responsibility is to establish and ensure effective communication throughout the organisation. This can be accomplished by ensuring that each team understands the school’s norms, values, and priorities during PLC meetings and other times. Another area of responsibility is to engage staff in a continuous review of various practices to enhance student learning. This can be reinforced by sharing relevant research with teams, encouraging new ways of teaching, and action research that can impact student learning. A third responsibility involves participating in discussions related to curriculum, teaching, and assessment. A fourth responsibility is to create conditions that optimise the school’s improvement efforts. This can be enhanced by utilising student academic outcomes. A fifth is to create conditions that optimise school improvement efforts by using evidence of student learning and positive peer pressure to inspire teachers to explore new ways of teaching, such as PAL.

The importance of the principal’s role has also been recognised in relation to PAL in fostering trust and empowering teachers to act and use PAL in a way that they believed best suited their students’ learning (Chalkley et al., 2022). In essence, research demonstrates that school leaders directly influence teachers, which, in turn, affects student learning.

2.2. Student-centered leadership

To understand how the school leaders led the PAL cultivation process, we used Robinson’s (2011) student-centered leadership model (see [Figure 1](#)). Robinson has identified five leadership dimensions and three capabilities to strengthen the student’s learning. The first, establishing goals and expectations increases performance, provides a sense of purpose and priority, and increases efficiency and job satisfaction. The second, resourcing strategically, ensures that money, time, and people are used appropriately to achieve the goals. The third is ensuring quality teaching, increasing the accountability of teachers in their schools, and creating alignment in teaching to promote student learning. The fourth, leading teachers’ learning and development, seeks opportunities to promote and participate in the staff’s individual and collective learning processes to gain organisational insight. According to Robinson (2011), school leadership is more than just organising and using CPD programmes as resources for the staff. The fifth, ensuring an orderly and safe environment, relates to increasing the engagement and trust between agents to strengthen students’ learning (Robinson, 2011).

According to Robinson (2011), school leaders need knowledge and skills to make the five dimensions work in a specific school context. These are described in three leadership capabilities. The first is using relevant educational knowledge about effective teaching, teacher learning, and school organisation to make high-quality decisions. To do this, school leaders must have access to up-to-date knowledge about student learning and how teaching can promote this, and the ability to

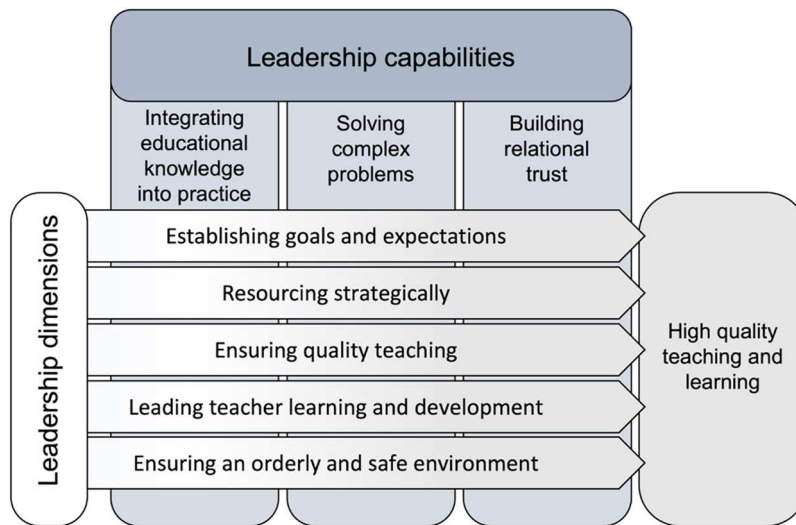


Figure 1. Student-centered leadership model (Robinson, 2011).

apply this knowledge when making decisions. The second is the capability to manage tensions, competing demands, paradoxes, and contradictions to solve complex problems and implement ideas. This requires that the conditions of the ideas are identified and fulfilled. In that context, those responsible for the implementation, such as teachers, are central. Robinson (2011) argues that it is possible to appreciate the tensions, make them known to all involved parties, and look for principled ways to integrate them. The third is building trust between principals, teachers, parents, and students to change the school's practice through interpersonal respect, care, competence, and integrity (Robinson, 2011).

3. Research context

3.1. The school-based PAL CPD programme

The study was conducted in the context of a school-based PAL CPD programme in Norway. The CPD programme aimed to enhance the participants' capabilities, opportunities, and motivation to use PAL and go beyond acquiring skills and knowledge to help them rethink and develop their practice. The CPD programme was digital and designed to include opportunities for the participants to use PAL in their teaching practice during their work hours, alongside opportunities to reflect, evaluate, and reconstruct these experiences individually and collectively. The participants who completed the exam achieved 15 credits toward the European Credit Transfer and Accumulation System (ECTS) at the master's level. In the school year 2021-2022, seven primary schools from a southeast municipality participated in the PAL CPD programme. The head educational officer in the municipality contacted the PAL teacher educators because she wanted all primary schools in the municipality to cultivate PAL. Therefore, all seven schools and members of staff (the principal, assistant principals, teachers, and after-school staff) participated in the PAL CPD programme that year and shall be referred to as staff throughout.

The CPD programme consisted of six modules: one introduction module, four substance modules, and an exam module. The programme drew on experience-based learning principles (Kolb et al., 2001) where enactment and reflection were the mediating processes for learning. In each module, the participants planned and used PAL in their teaching to develop relevant experiences, choosing the subject, theme, and activity for use. Afterward, they evaluated their use, alone and with colleagues, and captured this in a portfolio by responding to questions

Table 1. Overview of the content in the PAL CPD programme.

Module	Content
The introductory module (optional)	In the introductory module, the participants analyzed their practice at an individual and collective level to prepare them for change and the PAL CPD programme. This was facilitated by the principal and assistant principals at the schools.
Module 1	The first substance module focused on class leadership in PAL and how PAL affected the students' relationships, motivation, and mastery.
Module 2	The second substance module focused on student learning in PAL.
Module 3	The third substance module focused on the curriculum and themes, such as learning to learn, multidisciplinary, and deep learning related to PAL.
Module 4	The fourth substance module focused on lesson study with PAL.
The exam module (optional)	The exam module was a text summarising of their learning process in the CPD programme. The participants also made a video that presented their text.

that encouraged reflection and the use of research literature. In the fourth module, the participants used lesson study (Elliott, 2019) to evaluate their PAL practice. The purpose and content of each module are described in Table 1.

The principal had a central role in the PAL CPD programme. He or she was expected to lead the staff's participation and be a link between the PAL teacher educators and the staff. The principal received support from the PAL teacher educators and was provided with a handbook describing the CPD programme and suggestions on supporting the staff. The PAL teacher educators also supported participating staff by providing literature, synchronous meetings, and asynchronous videos of PAL. A digital platform (Microsoft Teams) was used to communicate and provide information and assessments. School visits were conducted to inspire and support the participants, for example, by modelling PAL activities and leading collective reflection processes.

4. Methods

4.1. Case study

The purpose of this case study (Yin, 2009) was to gain insight into schools' collective actions and experiences of cultivating PAL into their teaching practice. The sample drew on two (School A and B) of the seven schools participating in the PAL CPD in the school year 2021-2022. Participation in the PAL CPD programme was understood as a part of the school's cultivating process and the case narratives. The schools were recruited following a purposeful sampling approach (Patton, 2014) after completing the PAL CPD programme. The basis for selection was the school leader's commitment to cultivating PAL as they showed great interest and contacted the PAL teacher educators for support several times before and during the programme. Therefore, the two schools were strategically chosen as cases for this study. Also, only two of the seven schools were chosen because of limited resources. Ethical approval was granted by the Norwegian Centre for Research Data (NESH, 2021), and the participants signed consent forms before participation. No names are used in the paper, and pictures are censored to protect the participant's privacy.

4.2. Data generation procedures

The data was obtained through focus-group interviews, individual interviews, CPD programme documents, and school documents. These were collected at multiple time points throughout the cultivation process to better understand the school's collective actions and experiences and enhance the validity of the findings (see Figure 2). The different data sources also triangulated each other, strengthening the data's credibility. The individual interviews were primary data, while the focus-group interviews and documents were secondary data, providing contextual information. The interviews with the principal and assistant principal served as primary data, providing a crucial link between the schools and the CPD programme and offering insights into their collective decision-making processes.

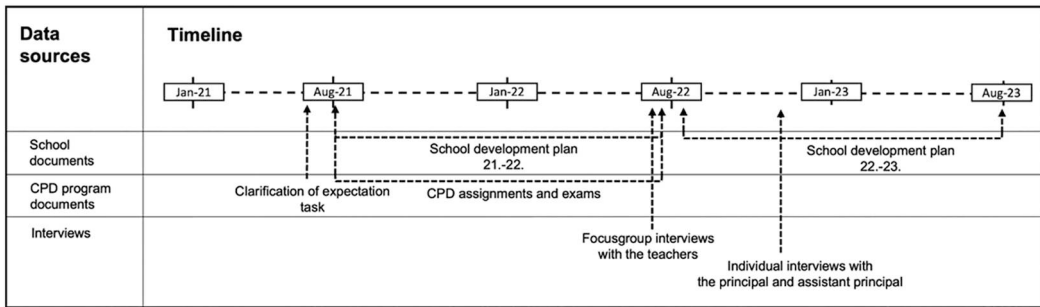


Figure 2. Overview of the data sources and timeline.

Conversely, the teacher interviews, although conducted earlier, were considered secondary data, complemented by documentary analysis. Interviewing teachers in advance allowed the researcher to gather their perspectives before engaging with the principal and assistant principal, which brought coherence and credibility to the subsequent interviews. As the interviews took place towards the end and after the programme, the documents proved valuable in shedding light on the actions executed during their participation and helped to verify and expand upon the interview data.

4.2.1. Focus group and individual interviews

Interviews were conducted with 13 teachers, one principal, and one assistant principal. Two focus group interviews (Stewart & Shamdasani, 2014) were conducted with the teachers in June 2022. The focus group interviews examined the teachers' experiences cultivating PAL. Seven teachers participated from School A and six teachers from School B. One individual interview (Brinkmann & Kvale, 2015) was conducted with the assistant principal at school A and one with the principal at school B in December 2022. The purpose of the individual interviews was to provide more nuanced information about their collective decision-making processes at both schools. The interview schedules were designed and discussed with co-authors, and are provided in the appendices (see Appendix A for the principal and assistant principal interview schedule and Appendix B for the teacher interview schedule). All interviews were conducted by the first author (ST) and audio-recorded (Olympus WS 853 Digital Voice Recorder). The interviews took place at the schools to limit the burden on participants and lasted for an average of 1 hour and 20 minutes.

4.2.2. Documents

Following the interviews, we requested the schools' development plans from the year the schools participated in the CPD programme (2021–2022) and the year after (2022–2023). These served as supplementary information (Bowen, 2009) into how the schools established PAL as a collective priority from 2021 to 2023. To elaborate on key points, the principal at school B brought pictures to the interviews. We also gathered CPD programme documents, such as the teachers, principals, and assistant principals' assignments (Modules 1–4) and exams (Module 5), to understand their initial expectations of the programme, how they engaged with the modules, and how many completed them.

4.3. Data analysis

The data were analyzed using the six phases of reflexive thematic analysis (Braun & Clarke, 2019). The aim was to develop overarching, consistent, and prominent themes from both cases. This consisted of a fluid and recursive process, going back and forward in the data material and the six phases of RTA (Braun & Clarke, 2019).

In the first phase, the audio recordings of the interviews were transcribed using Microsoft Word. The first author (ST) started to analyze the interviews with the teachers before analyzing the

interviews with the principal and assistant principal, and finally, the documents. The transcriptions resulted in a total of 108 pages of text, which were read and reread to gain an overall understanding of the data. The documents were then included to provide contextual information.

The second phase involved initial coding, where the details from the data material was coded as sentences to reduce the volume and capture the essence of the data. For example, a code was created from the data: “He also sometimes tore his hair. I think it is positive that he was not passive, but actually a part of it”, which was coded as “Teachers are positive that the principal and assistant principals participate”.

In the third phase, the codes were organised into five groups: “background”, “plan and leadership”, “challenges”, “solutions”, and “impact and further work”, to reflect the narratives of the school’s cultivation process at an overarching level. In the fourth phase, the groups were rewritten into themes to highlight the uniqueness of each school’s process. For example, rather than naming the themes “background”, “challenges”, and “solutions”, they were named “building on previous PAL experience”, “lacking agency within the PAL CPD programme”, and “choosing a different road”.

In the fifth phase, the narratives and themes were shared and discussed with co-authors to ensure consensus and provide a more holistic understanding of the cases. A summary of the cases was then written to synthesise their essence and constituted the findings in the paper. Finally, in the sixth phase, the data analysis was written as narratives that addressed the research questions.

5. Findings

This section presents the findings of the reflexive thematic analysis (Braun & Clarke, 2019) and the two school’s PAL cultivation process. Given that developmental work in schools is understood as a process in this study, a narrative presentation of the findings was chosen to illustrate how school leadership and decision-making must be viewed in relation to the teachers’ experiences. It also allowed the reader to connect with the information on a more personal level. The findings are subsequently presented alongside identified themes, which aim to capture the unique details of each case.

5.1. School A

School A was a medium-sized primary school in the suburbs, surrounded by forest and outdoor recreation areas. The school had 180 students and 27 staff members. In the school year 2021–2022, the entire school participated in the PAL CPD programme. The newly appointed assistant principal was leading the PAL cultivation process. He started working at the school a year before they participated in the PAL CPD programme and was leading this because of his PAL knowledge and experience. He had, for example, knowledge about integrating physical activity in schools from his master’s thesis. Although the assistant principal was the main driver, decisions related to the cultivation process were anchored among the school leaders. The assistant principal perceived that the team communicated well and trusted each other.

The school leaders were aware of the importance of their role in cultivating PAL. They believed their most important task was to support the staff in developing their practice and exploring PAL. They scheduled five PLC sessions in the autumn and 11 sessions in the spring (see Figure 3), during which staff shared and reflected upon PAL experiences with each other. The school leaders joined these sessions for support.

5.1.1. Building on previous PAL experience

School A had experience with PAL before participating in the PAL CPD programme. The assistant principal contacted the PAL teacher educators the preceding year of the PAL CPD programme to ask for support to integrate PAL into the school’s routine. With the PAL teacher educators’ support, the assistant principal started collaborating with two 4th-grade teachers about using PAL in teaching. The teachers planned, conducted, and evaluated teaching sessions with PAL two hours a week

Week	Different PLC	Agenda	Responsible
37	Everyone	14:00 - 15:30: LK20 - digital meeting with the PAL teacher educators	PAL teacher educators / principal
38	Everyone	LK20 and PAL	Assistant principal
39	Everyone	LK20 and reading/writing	Teacher
40	Everyone	13:15 - 15:30: LK20 13:15 - 14:15: 3. and 6. grade is sharing experiences with LK20 14:15 - 15:30: Plan week 42 - 47.	

Figure 3. Plan for the PLC sessions in fall 2022.

throughout that year. This created enthusiasm for PAL among the rest of the staff and motivated them to participate in the PAL CPD programme.

5.1.2. Lacking agency within the PAL CPD programme

The head educational officer in the municipality introduced the opportunity to participate in the PAL CPD programme for the school leaders in spring 2021. The school leaders believed this was an excellent opportunity for the staff to develop PAL competence and keep the momentum from the previous year. They also believed this could strengthen the PLC. The PAL CPD programme was presented to all staff in the school. In retrospect, the teachers were not positive about this decision-making process and explained that they felt they had no choice but to participate regardless of their preferences. They would have liked clarity about the format of the CPD programme and how much time it would require participating. In other words, they lacked agency in the decision to participate in the PAL CPD programme. One teacher said: “I never felt it was a proper process. It was decided in advance that we were going to participate. “Do you want to be part of it? Yes, of course, you want to”.

Another challenge was the lack of clear communication between the PAL teacher educators and the teachers. The teachers described the PAL CPD programme as “distanced” and insufficiently adapted to their needs. The assistant principal felt the same and described it as a “package” that was “served” to them, giving little room for manoeuvring and adapting to their context. The teachers and the school leaders expected the programme to be more “practical” with more opportunities to use PAL in their teaching practice and share these experiences with colleagues. According to the teachers, this was how the programme was “sold in” by the PAL teacher educators. This developed resistance among the staff members to complete the CPD programme.

5.1.3. Fearing failure

Another challenge at school A was how the resistance towards the PAL CPD programme was expressed. According to the assistant principal, some staff members expressed their resistance verbally, while others were silent. The silent resistance was perceived to be the most challenging because it was difficult to identify. This frustrated the school leaders because they wanted to “get into the position” to support the staff. Also, when the school leaders asked the staff how they were progressing, they were not honest. The assistant principal said: “(...) several teachers said “yes, I will look into it” “I will get this done” without showing it. That was why we had to assess how realistic it was for them to fight through this (CPD programme)”. However, being open about the difficulties

seemed to be a cultural challenge at school A. According to the assistant principal, the school leaders also struggled to be honest about their challenges with the CPD programme to the PAL teacher educators and their need for more support: “it was difficult for me to admit to them (PAL teacher educators) that we were struggling”.

5.1.4. Choosing a different road

The school leaders faced the dilemma of mandating the staff to complete the CPD programme or letting them opt out. They feared they would damage the PLC if they pushed staff to complete it. Instead, they developed a local CPD initiative based on their previous success and gave the staff the choice of joining this or continuing the PAL CPD programme. Not pursuing PAL was not an option. The assistant principal believed participating in the University-led PAL CPD programme was not the only way to cultivate PAL. In his master’s thesis, he found that principals could integrate physical activity into their practice without external support. This influenced his decision to develop an internal CPD initiative. The process of the local CPD initiative was similar to the CPD programme (e.g., plan, execute, and reflect individually and collectively). However, the staff did not need to do assignments and document their actions and reflections. Consequently, the two teachers who had already experienced the local CPD initiative before the University led CPD programme chose to persist with the PAL CPD programme. In contrast, the remainder of the staff chose to reconvene with the local CPD initiative. The school leaders also continued participating in the CPD programme to support the two teachers while leading the local CPD initiative for the rest of the staff.

5.1.5. Sustaining PAL

The school leaders perceived the local CPD initiative as a success. According to the assistant principal, several more teachers used PAL following the local CPD initiative than did during the PAL CPD programme. They were proud of what they had achieved with PAL and demonstrated this to the school leaders by inviting them to observe their teaching. The teachers had also become more aware of PAL’s potential and were more confident in using it. Although not all of their reflections were research-based, they believed they managed to use PAL in a beneficial way for the students. However, more progress was needed in the cultivation process. PAL had yet to become an integrated part of their practice, and there was variability in the staff’s competence to use PAL. Still, the staff was motivated to continue cultivating PAL in the subsequent year, so the school leaders scheduled several PLC sessions focusing on PAL the year after (see [Figure 4](#)).

5.2. School B

School B was a large primary school located in an urban area, surrounded by outdoor activity opportunities and a sports hall. The school had 450 students and 65 staff members. In the school year 2021-2022, 52 staff members participated in the PAL CPD programme.

5.2.1. Building on similar experiences

School B had no prior experience with PAL before participating in the PAL CPD programme. Instead, they had experience with topics such as student-active learning and outdoor pedagogy, which focuses on student engagement and the use of different areas for teaching. The teachers were interested in the PAL CPD programme because they wanted to become better at doing this. The opportunity to achieve credits and access new teaching equipment were also incentives to participate. The school also promoted health-enhancing physical activity among the staff (e.g., cycling to work), therefore, focusing on PAL aligned with the school’s ethos, which valued bodily movement.

5.2.2. Growing together

The principal was responsible for the cultivating process but did not have previous experience with PAL. The principal had worked four and a half years as principal at school B and five years as

Week	Different PLC	Agenda	Responsible
48	Everyone	5 min: PAL activity 13:15- 13:45: LK20: 6. and 7. grade is sharing PAL experiences 13:45 - 15:15: Learning environment 15.15: Club meeting	Assistant principal
49	Everyone	Lifesaving course	
50	Everyone	Lifesaving course	
51	Everyone	13:15-14:30: Plan week 1-4. 14:30 - 15:30: Speed-date conversations between the teachers about PAL	

Figure 4. Plan for the PLC sessions in fall 2023.

assistant principal in another school. It was clear that the principal was the champion for the PLC at the school: “I would never let anyone come in and take over the development work at the school”. The school leaders participated in the PAL CPD programme to support the staff and develop competence in PAL. They supported the staff by “translating” and making the content of the CPD programme contextually relevant to the staff, observing the staff’s use of PAL and providing feedback, and leading by example. In this context, the school leaders modelled PAL and promoted a supportive culture for the PLC to cultivate PAL. The principal said:

“There is something about being a peer and putting my head on the block, and saying things like: “I find it difficult”, or “Wow, have you come this far?! I have not been able to do that”, and being open about your challenges to the teachers’

The school leaders scheduled 7 PLC sessions in the autumn and 15 sessions in the spring for the staff to collaborate with PAL (see Figure 5). In these sessions, the teachers shared experiences with PAL and reflected upon them.

School B also established a collective understanding of the importance of professional learning and ensured that all staff members were accountable for this. The principal described this “an inner justice”, which staff used to self-govern their professional development. He said: “as a leader, you do not have to say much because the teachers are doing it themselves’. He referred to the Norwegian curriculum, saying everyone was obligated to engage in the PLC. This was one of the reasons why the school leaders participated in the PAL CPD programme with the staff.

5.2.3. Modelling PAL

The teachers and school leaders had a collective understanding of how to organise the PLC sessions. Instead of presenting their PAL experiences, the teachers demonstrated the PAL activities with their colleagues to foster engagement (see Figure 6). The principal believed this was effective because the staff “felt it on their bodies’ and developed valuable learning experiences. He said: “we believe that adults learn in the same way as students’. Using PAL in the PLC strengthened the staff didactically and socially. For example, the principal experienced that PAL strengthened his relationship with a couple of teachers, saying: “I thought “wow! You can do way more than I expected”. I want to apologise to them for being prejudiced. I think it is really, really fun to watch”.

5.2.4. Including the staff in decision-making

The principal provided information about the PAL CPD programme in January 2021 (more than half a year before the CPD programme started) to build ownership among the staff. He also

Week	What	Responsible
1	15 min: COVID-information Teamwork	Assistant principal Everyone
2	20 min: PAL module 3 and further progression ... Teamwork	Principal Everyone
3	13:20: Teamwork 1. 10 min: planing next year 2. 30 min: Input on the school's plan for mathematics. One teacher is leading and the teams are providing inputs. 14:00 - 15:30: Work with PAL module 3	Principal Teacher Everyone
4	14:00 - 15:30: Digital meeting with the PAL teacher educators about "observation in lesson study" (If you have the opportunity, participate from home)	PAL teacher educators
5	13:45 - 14:00: Teams - About confidentiality 14:00 - 15:15: PAL modul 3 - work individually or in the team (let us know in advane if someone needs help with something - we'll help each other) 15:15 - 15:30: Teachers corner	Principal Everyone Teacher
6	13:20 - 14:00: Structured Democratic Dialogic Process (SDDP) 2., 3. 5. and 6. grade does this (if you are enough people) Teams at 1., 4. og 7. grade will be there tomorrow It is important to follow the guidelines for the SDDP 14:00 - 15:30: Work individually or in the team with PAL	Everyone Teacher

Figure 5. Plan for the PLC sessions in fall 2022.

arranged a meeting where the PAL teacher educators presented the PAL CPD programme, clarified expectations, and answered questions. Then, an anonymous vote was conducted on whether or not the staff wanted to participate. The vote showed that 75% of the staff wanted to participate in the CPD programme. However, despite the initial interest, and the principal's good intentions, a significant amount of time had elapsed since their initial engagement. Subsequently, on reflection, the teachers felt they would have benefitted from more information about the CPD programme to make an informed choice before voting, saying: "We were positive about PAL, and we still are, but we were unsure about the CPD programme".

5.2.5. Lacking agency for the PAL CPD programme

The lack of information became challenging when the CPD programme started because it did not match staff expectations. One teacher said: "We believed we were supposed to develop many PAL activities, but it did not turn out that way". Also, the CPD programme changed during the year, which frustrated the staff who perceived themselves as "guinea pigs" and believed the programme should have been fully developed. However, this surprised the principal, who had greater ownership of the PAL CPD programme than the staff. He said: "I must admit, I did not see this as a potential challenge". He perceived the communication between the PAL teacher educators and the staff as straightforward and that all necessary information had been provided. However, he acknowledged the resistance, saying: "A lot of resistance is meaning-making. It makes sense". Another challenge was the lack of support by the PAL teacher educators and the staff struggling to complete the CPD



Figure 6. Teachers doing PAL in PLC time.

programme. The teachers felt that they had too much responsibility in the CPD programme and missed “being taught” by the PAL teacher educators. One teacher said: “They wanted to get many tips from us, and that we served them instead of them serving us’.

5.2.6. Redistributing responsibility

To overcome the resistance and support the staff to complete the CPD programme, the school leaders appointed what they called “resource persons”. This harnessed the capacity of some of the teachers and they received a financial allowance for doing it. One “resource person” was the team leader, responsible for having an overview of the PAL CPD programme. They scheduled and conducted meetings for the team and acted as a point of contact for any queries while the other “resource person” documented and handled the assignments for the teams. The principal believed such delegation of responsibility was successful for cultivating PAL, saying: “I would have done the same thing again if I had the chance”.

5.2.7. Reaping the rewards

A total of 31 teachers at school B completed four modules, while 16 completed all (inclusive of the exam). The principal was pleased with this outcome and said the school had become more “alive” after cultivating PAL. A teacher also emphasised this: “I have become much more aware of having PAL in my teaching”. The staff also developed a common language about their practice the principal reinforced: “I think we have become good at “staying” in those reflections. One thing is sharing; another is reflecting and challenging each other to build good communities of practice. We have become better at doing this’. Participating in the PAL CPD programme also benefited the school leaders, the principal said: “It challenged me as a leader by showing direction and making strategic moves along the way”. Although the teachers were critical of the PAL CPD programme, they were

clear that it was valuable because it “forced” them to develop their practice. They felt they would not have come this far without participating in the programme.

5.2.8. Sustaining PAL

School B continued to focus on PAL the year after the CPD programme because of the staff’s positivity with PAL and belief that cultivating PAL was a long-term process. PAL was, therefore, one of three focus areas, and the aim was to make PAL visible in teaching. They scheduled several PAL CPL sessions that year (see Figure 7). In addition to using PAL in their teaching, they also used it at parent meetings to introduce them to their children’s daily school life (see Figure 8).

6. Discussion

This study aimed to explore how the school leaders lead and teachers experience the cultivation of PAL as part of the PLC. PAL has become a relevant topic in Norway to develop students’ competencies for the twenty-first century, and the cultivation of PLC has been advocated as a strategy for PAL to become an integrated part of teachers’ practice. We use Robinson’s (2011) student-centered leadership model to discuss how PAL can be cultivated in schools.

Findings from this study show that school leadership is vital for PAL to become an integrated part of teachers’ practice and culture. The school leaders in both schools were clear drivers of the cultivation process, championing PAL as a priority for the PLC (e.g., prioritised time and resources for PAL) and empowering staff through internal and external accountability measures. The staff in school B, for example, were included in the decision to invest in PAL via their participation in a survey. At the same time, they were made accountable by the principal, reminding them about the obligation in the curriculum and being a member of the PLC (Ministry of Education & Research, 2022). Creating commitment and ownership among staff members was thus important for the school leaders to cultivate PAL – anchoring the decisions from outside the PLC (policy) and within (the members themselves). In other words, the school leaders did not use a traditional top-down or a bottom-up leadership approach to cultivate PAL but rather a hybrid of the two.

Week	What	Responsible
<u>34</u>	Teams; Planning the school year #studentlearning	Teams
<u>35</u>	Practical PAL with 4. grade (sharing) PAL and LK20 – what is possible The teams are planning the school year	4. grade Everyone
<u>36</u>	Structured Democratic Dialogic Process (SDDP) across teams The teams are planning the school year	Everyone
<u>37</u>	The teams are planning the school year	Everyone
<u>38</u>	1.grade and 7. grade are sharing PAL + reflections Topic: Student involvement with speeddate as a method	1. grade 7. grade School leader
<u>39</u>	Momentum in the planning How are things going with the new curriculum (LK20) Status on the team planning	School leader Teams
<u>40</u>	2 and 2 teams are discussing overlapping themes in the plans 3. grade and 6. grade are sharing PAL + reflections	Teams 3. grade 6. grade

Figure 7. Plan for the PLC sessions in fall 2023.



Figure 8. PAL at a parent meeting.

However, the cultivation of PAL was more complex than the school leaders and the staff anticipated. For example, they felt that the assignments in the CPD programme were too demanding. To solve this challenge, the school leaders involved the staff in decision-making to build ownership and positive relationships and find the most suitable solution. This led to the schools taking different paths in cultivating PAL. School A, for example, developed a local PAL CPD initiative alongside the PAL CPD programme where there were no assignments, while School B continued with the PAL CPD programme and used the staff member with more capacity to lead the assignment work. Making this a team-effort rather than an individual one. However, the assignment also helped staff prioritising PAL in their busy everyday practice. In that way, the assignments and the PAL CPD programme functioned as both a facilitator and a barrier in the cultivation of PAL. It can, therefore, be discussed whether it was an appropriate choice for school A to not include this in their local CPD initiative. Although the consequence of including the staff in the decision-making affected the staff's participation in the CPD programme, it was crucial in solving challenges and keeping the momentum in the cultivation process. The school leaders thus demonstrated the ability to solve complex problems, which is central for change processes to be successful (Robinson, 2011). This illustrates that there are different ways of cultivating PAL and perhaps many roads to Rome. This is important for CPD providers and PAL teacher educators to be aware of if they aim to develop competence in PAL, both at an individual (Teslo et al., 2023b) and collective level.

Another characteristic of student-centered leadership is a clear focus on student learning (Robinson, 2011). The school leader's purpose in cultivating PAL was driven by an ambition to strengthen the student's learning, rather than their health (Teslo et al., 2023a). They provided the staff with time, opportunities, and funding to explore PAL and develop their teaching practice with colleagues. The school leaders also demonstrated a holistic understanding of the cultivation of PAL by integrating PAL into PLC time. Rather than just presenting their experiences with PAL verbally, the staff integrated PAL into PLC time to provide insight into the specific PAL activities, build social relationships, and

gain relevant experiences to reflect, visualise and verbalise their practice, individually and collectively. In other words, there was no difference in how staff and students were supposed to learn in school, establishing a culture of learning at the school (Leithwood et al., 2020). Thus, PAL became part of the school's ethos and strengthened the PLC both didactically, emotionally, and socially. This way of using PAL has not been reported in previous PAL literature (e.g., Watson et al., 2017) and emphasises that interest and knowledge about the core business of teaching and learning among school leaders are essential in developing teachers' practice (Robinson, 2011; Skage & Dyrstad, 2019).

The findings also demonstrated the importance of a safe and trustful relationship between the PLC members for PAL to become an integrated part of the school culture. In school A, there was a lack of trust between staff members as they were hesitant to invite colleagues into their classrooms and receive feedback. On the other hand, opening the classroom, observing each other, and giving feedback are central to professional and collective learning and being a PLC (Stoll et al., 2006). Creating a safe and trustful environment is, therefore, necessary for the members of the PLC to help each other explore PAL in their practice and create valuable learning experiences so that PAL becomes an integrated part of the school's teaching practice. According to Robinson (2011), school leadership is vital in developing this. For example, the principal in school B showed this ability by being visible to the staff in the cultivation process. He participated in the PAL CPD programme and expressed interest in the teachers' learning process. He was also open about his struggles to create an open and trustful environment for the staff to become an effective PLC. This may suggest that school B was further ahead in establishing a PLC compared to school A. This can be explained by the fact that the assistant principal at school A had not worked at the school for as long as the principal at school B. At the same time, it can be questioned whether this would have been different at school A if the principal had led the process instead of the assistant.

Some limitations of this study should be acknowledged. This study did not address the perspectives of the head educational officer in the municipality, after-school staff, or PAL teacher educators. Including their views would have provided a more holistic perspective on the cultivation process since they were central in cultivating PAL in schools, especially since all staff participated in the external CPD programme. It would have been relevant to interview all to gain more insight into how the PAL cultivation process was led at the two schools. Although the perspectives of all the school leaders were expressed in the assignments and exams, Future studies should include these perspectives to get a more nuanced picture of how to cultivate PAL in school.

7. Conclusions

This study explores how the school leaders lead, and teachers experience, the cultivation of PAL as part of the PLC to develop teachers' practice and strengthen student learning. The complementarity of interviews and documents at different time points provided insight into the cultivation process in two schools, illustrating the complexity of changing and sustaining PAL in teachers' practices. Findings show that PAL can be cultivated through regular, systematic, and sustained cycles of inquiry-based learning and that PLC can be an essential strategy for cultivating PAL when combined with internal and/or external PAL expertise. Whatever path is chosen, it must address the staff's collective needs and be at their level of professional growth. Based on Robinson's (2011) student-centered leadership model, we discuss the importance of school leadership capabilities for cultivating PAL. Leadership in this process involves empowering staff to explore PAL and develop their practice through internal and external accountability sources, prioritising PAL as a collective effort over several years, and facilitating time and resources that open up opportunities to explore PAL and create valuable learning experiences with colleagues. Leadership also involves participating in the learning processes with the staff and modelling behaviour to build a culture that supports and challenges existing practices. These actions strengthen the staff's capacity and sense of professional purpose so that PAL becomes an integrated part of their teaching practice. We suggest that school leaders, teachers, and other staff members practice student-centered leadership to cultivate PAL.

Acknowledgments

The authors would like to gratefully acknowledge the support of the school leaders and the teachers who participated in the study.

Disclosure statement

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

Funding

The study was partly funded by the Gjensidigestiftelsen [grant number 995568217]. The funder had no role in the study design, data generation, data analysis, and data interpretation, nor in preparing the paper.

Declaration of generative AI and AI-assisted technologies

The authors have not used any sort of AI or AI-assisted technologies in the writing process.

ORCID

Ståle Teslo  <http://orcid.org/0009-0006-5755-3820>

Anna Chalkley  <http://orcid.org/0000-0002-1163-6210>

Eirik S. Jenssen  <http://orcid.org/0000-0002-0372-2549>

Hege Eikeland Tjomsland  <http://orcid.org/0000-0001-9872-4207>

References

- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27–40. <https://doi.org/10.3316/QRJ0902027>
- 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). SAGE.
- Chalkley, A. E., Mandelid, M., Thurston, M., Daly-Smith, A., Singh, A., Huiberts, I., Archbold, V., Resaland, G. K., & 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, 103825. <https://doi.org/10.1016/j.tate.2022.103825>
- Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D., Crisp, B., Saunders, L., & Coe, R. (2015). *Developing great teaching: Lessons from the international reviews into effective professional development, project report*. Teacher Development Trust.
- Daly-Smith, A., Morris, J. L., Norris, E., Williams, T. L., Archbold, V., Kallio, J., Tammelin, T. H., Singh, A., Mota, J., von Seelen, J., Pesce, C., Salmon, J., McKay, H., Bartholomew, 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., Routen, A. C., Morris, J. L., Gammon, C., Bartholomew, J., Resaland, G. K., Llewellyn, B., Allman, R., & 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., 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), e000341. <https://doi.org/10.1136/bmjsem-2018-000341>
- 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>
- Donnelly, J. E., Hillman, C. H., Castelli, D., Etnier, J. L., Lee, S., Tomporowski, P., Lambourne, K., & Szabo-Reed, A. N. (2016). Physical activity, fitness, cognitive function, and academic achievement in children: a systematic review. *Medicine and Science in Sports and Exercise*, 48(6), 1197–1222. <https://doi.org/10.1249/MSS.0000000000000901>

- DuFour, R., & Marzano, R. J. (2011). *Leaders of learning: How district, school, and classroom leaders improve student achievement*. Solution Tree Press.
- Elliott, J. (2019). What is lesson study? *European Journal of Education*, 54(2), 175–188. <https://doi.org/10.1111/ejed.12339>
- Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential learning theory: Previous research and new directions. In L. Zhang (Ed.), *Perspectives on thinking, learning, and cognitive styles* (pp. 227–248). Routledge.
- Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management*, 40(1), 5–22. <https://doi.org/10.1080/13632434.2019.1596077>
- Lomos, C., Hofman, R. H., & Bosker, R. J. (2011). Professional communities and student achievement – a meta-analysis. *School effectiveness and school improvement*, 22(2), 121–148. <https://doi.org/10.1080/09243453.2010.550467>
- Louis, K. S. (2015). Linking leadership to learning: State, district and local effects. *Nordic Journal of Studies in Educational Policy*, 2015(3), 30321. <https://doi.org/10.3402/nstep.v1.30321>
- Madsen, K. L., Aggerholm, K., & Jensen, J. O. (2020). Enactive movement integration: Results from an action research project. *Teaching and Teacher Education*, 95, 103139. <https://doi.org/10.1016/j.tate.2020.103139>
- Mandelid, M. B., Resaland, G. K., Lerum, Ø, Teslo, S., Chalkley, A., Singh, A., Bartholomew, J., Daly-Smith, A., Thurston, M., & Tjomsland, H. E. (2022). Unpacking physically active learning in education: A movement didaktikk approach in teaching? *Scandinavian Journal of Educational Research*, 68, 341–354. <https://doi.org/10.1080/00313831.2022.2148271>
- Ministry of Education & Research. (2020). Core Curriculum – Values and principles for primary and secondary education. Retrieved May, 2023, from www.udir.no/lk20/overordnet-del/?lang=eng
- Ministry of Education & Research. (2022). Profesjonelle læringsfellesskap og skoleutvikling [Professional learning communities and school development]. Retrieved May 2023, from <https://www.udir.no/lk20/overordnet-del/3.-prinsipper-for-skolens-praksis/3.5-profesjonsfellesskap-og-skoleutvikling/>
- NESH. (2021). Guidelines for research ethics in the social sciences and the humanities. Retrieved from May 2023, from <https://www.forskningsetikk.no/en/guidelines/social-sciences-humanities-law-and-theology/guidelines-for-research-ethics-in-the-social-sciences-humanities-law-and-theology/>
- Patton, M. (2014). *Qualitative research and evaluation methods: Integrating theory and practice*. Los Angeles, California: Sage.
- Patton, K., Parker, M., & Neutzing, N. M. (2012). Tennis shoes required: The role of the facilitator in professional development. *Research quarterly for exercise and sport*, 83(4), 522–532. <https://doi.org/10.1080/02701367.2012.10599141>
- Robinson, V. (2011). *Student-centered leadership*. Wiley.
- Schein, E. H. (1985). *Organizational culture and leadership*. San Francisco: Jossey-Bass.
- 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, 103753. <https://doi.org/10.1016/j.tate.2022.103753>
- Skage, I., & Dyrstad, S. M. (2019). 'It's not because we don't believe in it ...': Headteachers' perceptions of implementing physically active lessons in school. *BMC Public Health*, 19(1), 1674. <https://doi.org/10.1186/s12889-019-8021-5>
- Spillane, J. P. (2006). *Distributed leadership*. Jossey-Bass.
- Stewart, D. W. & Shamdasani, P. N. (2014). *Focus groups: Theory and practice* (Vol. 20). SAGE.
- Stoll, L., Bolam, R., McMahon, A., Wallace, M., & Thomas, S. (2006). Professional learning communities: A review of the literature. *Journal of Educational Change*, 7(4), 221–258. <https://doi.org/10.1007/s10833-006-0001-8>
- Teslo, S., Jenssen, E. S., Thurston, M., Mandelid, M. B., Resaland, G. K., Chalkley, A. E., & Tjomsland, H. E. (2023b). 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. *Teaching and Teacher Education*, 136, 104377. <https://doi.org/10.1016/j.tate.2023.104377>
- Teslo, S., Thurston, M., Lerum, Ø, Mandelid, M. B., Jenssen, E. S., Resaland, G. K., & Tjomsland, H. E. (2023a). 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, 104113. <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. Retrieved June 1, 2024, from http://eklavya.org/edu-practices_18_eng.pdf
- Vangrieken, K., Meredith, C., Packer, T., & Kyndt, E. (2017). Teacher communities as a context for professional development: A systematic review. *Teaching and teacher education*, 61, 47–59. <https://doi.org/10.1016/j.tate.2016.10.001>
- 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>
- Yin, R. K. (2009). *Case study research: Design and methods*, (Vol. 5). SAGE.
- Zeichner, K. (2010). Rethinking the connections between campus courses and field experiences in college-and university-based teacher education. *Journal of teacher education*, 61(1-2), 89–99. <https://doi.org/10.1177/0022487109347671>

Appendices

Appendix A. The principal and assistant principal interview schedule

Before participating in the PAL CPD programme:

- Why did you participate in the CPD programme?
- How did the school prepare for the CPD programme?
- What did you do?
- How do you experience ownership among the teachers?
- What experiences does the staff have with similar development work?

During the PAL CPD programme:

- How did you experience the CPD programme?
- What was your role in the CPD programme?
- What expectations did you have?
- How did you cultivate PAL during the CPD programme?
- How did you create ownership among the teachers?

After the PAL CPD programme:

- What have you done to sustain PAL after the CPD programme?
- What is the most important thing you can do as a school leader?

Appendix B. The teacher interview schedule

Cultivating PAL:

- How has it been to cultivate PAL?

Co-creation:

- How have you experienced working with the PAL teacher educators?
- Do you have any examples?
- What happened in these examples?

Agency:

- How have you contributed to the PAL CPD programme?
- Have your voices mattered in this process?

Roles:

- How have you experienced your role, the PAL teacher educators, and the school leader's role in this process?

Support:

- How have you experienced the support from the PAL teacher educators and the school leader?

Sensemaking:

- What did you, the PAL teacher educators, and the school leader, do to make sense of PAL and the CPD programme?