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Mapping sustainability of professional development in four Norwegian lower-secondary schools

Siv M. Gamlem^{1*} and Ingrid Helleve²

Abstract: The aim of this study was to investigate how principals ($n = 4$) and teachers ($n = 20$) from four lower-secondary schools perceived and evaluated sustainable professional development processes in their schools. To understand their experiences and perceptions, interviews and focus group conversations were conducted at the end of a one-year research and development project and again two years later. All teachers had in common that they taught 9th graders (14–15-year-old students) in Mathematics. Findings indicate that at the end of the common project period, all the participating teachers state that they had experienced professional development. They had made changes to their teaching practice and were collaborating more with colleagues. After two years the teachers still state that the research and development project had contributed to their learning, but that their schools have not been able to maintain a context of sustainable professional development processes. The core finding from this study suggests that if professional development in schools is to be sustainable, teachers should have ownership, work in teams over time and gain necessary support by their leaders and external experts for facilitating the learning processes and to develop new knowledge. Both the principals and teachers in these four schools claimed that to maintain sustainability of a continuing professional development there is a need to find time and structures to reflect on teaching practices and student learning.

Subjects: Education; Sustainable Development; Educational Research; Education Studies; Secondary Education; Classroom Practice; Continuing Professional Development

Keywords: principals; professional development; professional learning; research- and development project; teachers

1. Introduction

Teachers are expected to continue to learn and develop professionally, to adapt to changes in their everyday context, changing policies, and innovation in the educational field throughout their career. This process of *lifelong learning* or *continuous professional development* (CPD; Louws et al., 2017) is considered crucial for the individual teacher and their school and for student learning (Day et al., 2007). However, research finds that initiatives to support CPD often fail, mainly

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because the programme rationale does not align with teachers' own learning goals or needs (Opfer & Pedder, 2011). Consequently, teachers might experience CPD programmes as useless (Louws et al., 2017).

The aim of the present study was to highlight how lower-secondary school teachers and principals participating in a research and development project (RD project) perceived and evaluated their experiences of professional development processes at the end of the project period and two years later. The RD project was initiated and developed by researchers from four teacher education institutions in Norway. The RD project sought to examine the relationship between teachers' feedback practices and student learning in Mathematics (Gamlem et al., 2019; Haara et al., 2020). The concept of feedback practice was operationalized and further developed by the research group as *responsive pedagogy* (RP), which is understood as "the recursive dialogue between the learner's internal feedback and external feedback provided by significant others, e.g., teachers, peers, parents throughout the three phases of self-regulation; forethoughts, monitoring a reflection" (Smith et al., 2016, p. 11). While responsive pedagogy builds on Assessment for Learning (AfL) (see for example, Black et al., 2003; Black & Wiliam, 1998), one essential component is an explicit intention to enhance feedback interactions to support student learning and to develop the learner's belief in their own competence and ability to successfully complete tasks and meet challenges. This in turn strengthens self-efficacy in relation to a specific domain or task and enhances the student's self-concept (Gamlem et al., 2019; Smith et al., 2016).

DeLuca et al. (2019, p. 267) claim that while procedural implementation of specific AfL strategies is relatively simple, shifting a teacher's fundamental pedagogical orientation towards AfL-based teaching is far more challenging. There is evidence that teachers can learn to use AfL in their daily classroom practice (e.g., Ayala et al., 2008; Black et al., 2003; Gamlem, 2015). However, changing feedback practice from summative to formative seems to be difficult (Gamlem, 2015; Sandal et al., 2022). Further, research on professional development of AfL with sustainability over time is asked for (DeLuca et al., 2019).

1.1. AIM of study—research question

The aim of this study was to explore how principals and teachers from four lower-secondary schools perceived and evaluated sustainable professional development processes in their schools. A further question was how they would evaluate the learning process in retrospect after the project had ended and schools were left to their own devices.

To better understand their experiences and perceptions we wanted to collect data at the end of the one-year common research and development project period and again two years later. The study addressed the following research questions: *How do teachers and principals perceive and evaluate the professional learning process by the end of a RD project—and how do the teachers and principals evaluate the continuing professional learning and development process two years after the RD project ended?*

2. Theoretical framework

2.1. Teacher learning

Teacher learning is a complex process (Desimone, 2009; Guskey, 2002; Timperley, 2008). Desimone (2009) argued that there is empirical evidence of a set of core characteristics for effective professional learning. Based on an extensive review of the literature, Desimone developed a conceptual framework for professional learning, claiming that teachers' ability to enhance learning outcomes depends on *content focus, active learning, coherence, duration* and *collective participation*. Of these, *content* is considered the most influential factor, as there is a clear link between "activities that focus on subject matter content and how students learn that content with increases in teacher knowledge and skills, improvements in practice, and, to a more limited extent, increases in student achievement" (Desimone, 2009, p. 184). The second key characteristic is *active learning* that is,

teachers themselves must play an active role in the learning process rather than merely listening to others. The third characteristic is *coherence*, which means that a teacher's learning should be consistent with their knowledge and beliefs. The fourth characteristic, *duration*, acknowledges that professional development to support intellectual and pedagogical change necessarily takes time. Finally, *collective participation* with teachers from the same team or school is seen to be a powerful factor in teacher learning. Desimone (2009) claim that in combination with these five features, changes in teachers' beliefs about teaching and learning ultimately lead to changes in practice, where teachers' beliefs are defined as implicit assumptions about their students, classroom, learning, and subject matter (Kagan, 1992, p. 66). Teachers' beliefs about good teaching are reflected in their everyday teaching practice and affect their decision-making in the classroom (Gamlem, 2015). For that reason, no new curriculum could ever be implemented if teachers did not support it (Mohammadi & Moradi, 2017).

According to Guskey (2002), another assumption is that changes in attitudes and beliefs follow CPD program. Consequently, a professional learning programme for teachers should first seek to change teachers' behaviour in the classroom because "significant change in teachers' attitudes and beliefs occurs primarily after they gain evidence of improvements in student learning" (Guskey, 2002, p. 383). Guskey (2002) argued that professional development programmes for teachers have three main goals: to change classroom practice, to change teachers' attitudes and beliefs and to change student learning outcomes. Guskey also contended that, for most teachers, becoming a better teacher is closely linked to enhancing student learning outcomes. In short, teachers are focused on the classroom and their students' well-being, and any programme that neglects this orientation is likely to fail.

Opportunities for change are necessary, but not sufficient for sustainable changes in teaching practice. Opfer and Pedder (2011) challenged earlier models of teacher change (e.g., Desimone, 2009; Guskey, 2002). According to Opfer and Pedder (2011), these former models assume that learning is a linear process, but teacher learning outcomes can in fact emerge at any point in the process of changing beliefs, practices, or students, implying that teacher learning is cyclical rather than linear. The crucial issue is that a teacher's learning orientation determines their approach to their own professional learning and practice development. A further important issue is the tension between individual development and institutional improvement (Forde & McMahon, 2019).

2.2. Teachers' professional learning and development

What is the link between teacher learning and sustainable professional development? Professional development can be understood as a sustained and ongoing process incorporating participant-driven inquiry, reflection and experimentation (Darling-Hammond & McLaughlin, 2011). Wilson et al. (2011) defined effective teacher professional development as "sustained and long-term (allowing for teachers to repeatedly try new strategies and to reflect on what worked and did not) and focus[ing] on records of practice, including student work" (p. 385).

Linking learning and development, Wilson and Berne (1999) argued that teachers' professional development should connect with and derive from their own learning experiences. Opfer and Pedder (2011) drew a useful distinction between teachers' professional learning and professional development, noting that professional learning opportunities are embedded in professional development opportunities, as in learning communities where teachers learn from and with their peers. Through ongoing collaborative reflective practice (Schön, 1983; Van Manen, 1991), teachers' professional learning moves from isolation to interaction and personal engagement in communities where they can analyse, improve, and develop their own practice (Shulman, 2004).

There is also a close link between participation, identity and learning in the sense that learning changes who we are. As schools are characterised by entangled dilemmas, challenges and teaching problems, it is fruitful to define them as communities. The concept community of learners emphasises the importance of interactions between peers and the need for an instructor who can

design and guide the learning process (Brown, 1994; Brown & Campione, 1994; Mitchell & Sackney, 2000; Rogoff, 1994; Rogoff et al., 1996; Wubbels, 2007).

What, then, are the key criteria for teachers' professional learning and development? Combining several reviews of the field, Cordingley (2015) developed an overview of interactive contributions, including Bell et al. (2012), Cordingley et al. (2003), Cordingley et al. (2005), Cordingley et al. (2007), Robinson et al. (2009), Timperley et al. (2007), and Cordingley's (2015) first point relates to the possibility of employing expertise (including research evidence) to support planning. A second issue is the importance of giving and receiving structured peer support through collaboration, emphasising reciprocal risk taking and professional dialogue as core learning strategies. Third, Cordingley notes the need for sustained inquiry-oriented learning and documentation of coherence and progression over time. A fourth point relates to learning by examining the evidence regarding student outcomes and by observing teaching and learning exchanges, especially those involving new approaches. Fifth, the desire to learn should drive development, focusing on why things work or fail to work in different contexts. Finally, leaders should provide support in the form of modelling, time and encouragement, including specialist and peer support. Leaders should also take responsibility for creating professional learning opportunities during day-to-day school life (Borko, 2004; Timperley et al., 2007).

3. Methodology

3.1. Context and content of the RD project

The study is part of a larger RD project financed by the Norwegian Research Council (see, Gamlem et al., 2019; Haara et al., 2020). In the current study, we investigated teachers' continuing professional learning process by gathering qualitative data from principals ($n = 4$) and teachers ($n = 20$) from four schools at the end of a one-year common RD project and again two years later.

The RD-project ran for one school year and included three seminars hosted by the research team for all participating teachers (see, Gamlem et al., 2019; Haara et al., 2020). Based on AfL and responsive pedagogy (Smith et al., 2016), the three seminar topics were feedback interactions, self-regulated learning and self-efficacy. In the first seminar, the participating teachers were introduced to theories of feedback dialogue (e.g., Gamlem & Smith, 2013; Hattie & Timperley, 2007) and principles such as feedback timing and content. The teachers shared and discussed examples. The goal of the first seminar was to enhance teacher-student learning interactions. The second seminar introduced theories of self-regulation (e.g., Zimmerman, 2001), and the participating teachers and researchers discussed how self-regulation can be implemented in the classroom. Finally, in the third seminar, the teachers explored the concept of self-efficacy, which is a key concept in motivation research and in models of self-regulated learning (e.g., Panadero, 2017; Panadero et al., 2017; Zimmerman et al., 1992). The teachers discussed their understanding of self-efficacy and shared their thoughts on how it can be observed in students' behaviour in the classroom.

The participating teachers operated in teams, and a contact teacher was appointed to lead the team at each school. The contact teacher's role was to facilitate collaboration and to act as a link between the teachers and the school principal, and between the school and the research group. Contact teachers met more frequently than the other teachers with the research group. Two partner schools in each district were paired for collaboration as learning partners, and each pair was assigned a mentor from the research group. During the RD-project, the teams were asked to document their experiences in the form of logs, colleague lesson observations and video recordings of feedback practice. These were used to support presentations to their team or to their partner school when visiting (Haara et al., 2020). While each teacher and team were free to decide what learning and feedback activities they would practise, the research group stipulated that the principals should participate actively in the project alongside their teachers (Borko, 2004; Timperley et al., 2007).

The present study was grounded in the idea of a community of learners that would enhance teachers’ professional learning, in which the members of the research group would act as facilitators and mentors for the schools. Access to a learning community provides opportunities for professional development and a chance to “offer each other moral support, intellectual/academic help, and solid friendship” (Noddings, 1992, p. 179). In short, this idea of a community of learners includes guidance by external facilitators who can ask questions and introduce relevant theory to promote reflection on the ongoing process of learning (Borko, 2004; Opfer & Pedder, 2011; Timperley, 2008).

3.2. Research design

To explore how teachers and principals perceive and evaluate the CPD process, a qualitative research design was considered appropriate. Using focus group conversations and individual interviews (Kvale & Brinkman, 2015), data were collected at the end of the common RD-project (spring 2017), followed by a second round of data collection two years after the project ended (fall 2019). The two-year study period was chosen to minimise problems associated with staff turnover.

3.3. Sample

The present study draws on interview data from principals (n = 4) and teachers (n = 20) at four schools (see, Table 1). Schools participated with the consent of their principals, who introduced the project to the teachers. In addition, all participants gave consent to take part in this study. Ethical considerations were followed by informing the participants about their right to confidentiality as well as their right to withdraw from the study at any time without any consequence other than the destruction of their data.

To protect participants’ privacy, we assigned fictional names to the lower-secondary schools: Ashwood, Breewood, Cornwood and Deerwood.

These four schools were also arranged as partner schools for collaboration in the RD-project; Ashwood and Breewood were organized in one team, while Cornwood and Deerwood were another team. All teachers had in common that they taught 9th graders (14–15-year-old students) in Mathematics. In Ashwood five teachers participated, in Breewood and Cornwood four, and in Deerwood seven teachers. Between the first and second rounds of data collection, there were staff changes in all four schools (see, Table 1). In the post-interview three of the participating teachers still worked at Ashwood and Breewood, one teacher in Cornwood and seven at Deerwood. Cornwood and Deerwood had new principals, and at Ashwood, Breewood and Cornwood, six teachers had moved away, were on leave or had retired. The only unchanged group of Mathematics teachers was at Deerwood.

Table 1. Participants and type of data				
	School 1: “Ashwood”	School 2: “Breewood”	School 3: “Cornwood”	School 4: “Deerwood”
Spring 2017: Interview at the end of the RD-project	Individual int.: 1 Principal Focus group conversations: 5 teachers	Individual int.: 1 Principal Focus group conversations: 4 teachers	Individual int.: 1 Principal Focus group conversations: 4 teachers	Individual int.: 1 Principal Focus group conversations: 7 teachers
Fall 2019: Post-interview of the RD-project	Focus group conversations: 1 Principal (same as 2017) 3 teachers (2 were on leave)	Focus group conversations: 1 Principal (new) 3 teachers (1 had moved)	Focus group conversations: 1 Principal (same as 2017) 1 teacher (2 had retired, 1 had moved)	Focus group conversations: 1 Principal (new) 7 teachers (the same team as 2017)

3.4. Data collection procedure

The first round of data collection included individual interviews with each of the principals ($n = 4$) and focus group conversations with the school teams of participating teachers ($n = 20$) from each of the four schools. The interviews with principals were semi-structured (Kvale, 1996) and followed an interview guide, allowing for follow-up questions (see Appendix). All interviews were conducted face-to-face and lasted for approximately 40 minutes. The interviews were sound-recorded and transcribed verbatim for analysis.

Focus group conversations with the teachers were conducted in each school at the end of the RD project. Focus group conversations were used because they are likely to raise issues beyond the sum of individual views. According to Brinkmann (2007), focus group conversations are more useful than interviews by virtue of their dialectical dimension, which facilitates exploration of experiences, attitudes, and beliefs (Kitzinger & Barbour, 2001). To ensure a consistent focus, these conversations followed an interview guide (see Appendix). Each group conversation took place in a staff room at the teachers' school and lasted about one hour.

The conversations started with the moderator/researcher prompting the teachers to talk about the questions raised in the interview-guide. As moderators we as researchers followed up the responses with sub-questions in order to clarify, further pursue and understand the utterances. All the participants were actively engaged in the conversations, asking each other questions and following up on each other's utterances. Thus, the conversations resembled what Brinkmann (2007) calls epistemic interviewing, which means that the participants are dialectically engaged in examining a topic. The aim is to gain knowledge in a normative–epistemic sense. As mentors, we knew the context and were genuinely interested in learning from the teachers' experiences; a fact that made it easier for us to ask follow-up questions. The focus group conversations were sound-recorded and transcribed verbatim for analysis.

Two years after the common RD project ended, the participants were interviewed again. To ensure the study's trustworthiness (Thagaard, 2013), only those teachers who participated throughout the common RD-project were invited to the interviews for the two rounds of data collection. Two of the principals were new due to change in staff, but they were to some extent given information about the RD-project from the former school leaders. The new principals were included in the second round of data collection to get knowledge from all the school leaders (see, Table 1). It was important to get knowledge on how the school leaders and teachers perceived and evaluated the continuing professional learning and development process at their school. Therefore we decided that teachers and principals at each school should participate in common focus group conversations. These post-conversations followed an interview guide (see Appendix), lasted about one hour, and they took place in a staff room at the school. The focus group conversations were sound-recorded and transcribed verbatim for analysis.

3.5. Coding and analysis

All interviews and focus group conversations were analysed. Rather than using predetermined codes and categories, we performed inductive data-driven reflexive thematic analysis (Braun & Clarke, 2006). First, based on a thematic analysis of the interviews and focus group conversations, we developed an overview of the data in the form of codes in a descriptive matrix (See, Table 2).

Using an interpretative approach (Hatch, 2002), each author analysed themes that referred to individual professional learning or continuing professional learning and development. We read and reread the data, developing the coding process and wrote memos to gain a sense of individuals' views and the data. Further, key criteria from Cordingley (2015) were used to build a framework to organise the data into themes. In each step of the analysis, we worked separately and then together to strengthen the reliability of the coding process (Kvale & Brinkman, 2015). Finally, we selected quotes that illustrated our shared analysis. The process was inspired by the hermeneutic approach, which seeks to understand the whole while at the same time reconsidering that whole (Gadamer, 1975/2004).

Table 2. Codes—data analysis of interview and focus group conversations

Participants	Principal (Individual interviews—end of common RD-project)	Teachers (Focus group conversations—end of common RD-project)	Principal + Teachers (Focus group conversations—two years after common RD-project)
Codes	Active learning in RD-project	Active learning in RD-project	Active learning in RD-project
	Collaboration within/between schools	Collaboration within/between schools	Collaboration within/between schools
	Collective participation	Collective participation	Collective participation
	Content focus (use of feedback interactions to strengthen student learning)	Content focus (use of feedback interactions to strengthen student learning)	Content focus (use of feedback interactions to strengthen student learning)
	Duration of process(es)	Duration of process(es)	Duration of process(es)
	Evaluation of RD-project	Evaluation of RD-project	
	Motivation for participation	Motivation for participation	Motivation for participation
	Ownership	Ownership	Ownership
	Professional learning opportunities during day-to-day school life	Professional learning opportunities during day-to-day school life	Professional learning opportunities during day-to-day school life
	Structured peer support through collaboration	Structured peer support through collaboration	Structured peer support through collaboration
			Sustained inquiry-oriented learning

When conducting and analysing interviews, the issue of trustworthiness must also be considered (Kvale & Brinkman, 2015; Thagaard, 2013). As researchers, we try to look behind verbal expressions to gain a deeper understanding of the target phenomenon from the informant’s perspective. Still, there is a risk of bias if this interpretation is not carefully considered. It is important that we as researchers can grasp the complexity of the phenomenon and the nuances of the interview situation. Grounded in multiple skills that include theory reading, interview preparation, interviewing and analysis, the trustworthiness of interpretation ultimately depends on the researcher’s use of self as instrument to get closer to the informant (Kvale & Brinkman, 2015).

4. Findings

The findings are presented according to the research questions. The information derived from the principals and teachers for each school are presented in separate sections for each research question.

4.1. Principals’ and teachers’ perceptions and evaluation at the end of the RD project

4.1.1. Ashwood lower-secondary school

The principal of Ashwood said that teachers were generally negative about top-down initiatives but became interested once they understood that “something was going to happen in their own classrooms”. The principal stated that all her teachers had learned and developed during the project period, even though one teacher was negative at the beginning. At the end of the project this teacher became eager for how much he had learned by watching videos from this own teaching. He showed a video to his colleagues of himself teaching and used this as a tool for reflection of his own mistakes and improvement of working with teacher-student interactions. The principal’s interpretation was that the teacher had become more confident because the project contributed to professional learning

by focusing on the teacher's own classroom and teaching practice. The value of the process was confirmed by the video recording and the visible changes in students' learning.

At Ashwood, the teachers claimed that they had become more conscious during the RD project of how and why they give feedback to students. They had learned to attend more to their students' perceptions and to involve them more as active participants. Teachers confirmed that they had changed their teaching practice during the project period, noting that the project had contributed to professional learning because it takes time to change one's practice. They considered it important to learn collaboratively as a team, and they now felt able to be honest and to ask embarrassing questions. Most importantly, they welcomed the focus on the classroom and seeing the benefits for their students. While they felt that teachers must have ownership of their own ideas, they welcomed the inputs of facilitators from the research group.

4.1.2. Breewood lower-secondary school

At Breewood, the principal said that the teachers were interested from the beginning because of their previous positive experiences of collaboration with the teacher education institution. The teachers were deeply engaged and told the principal that they had learned a great deal during the project period. The principal attributed the teachers' enthusiasm to the fact that the theoretical input could be transferred directly to the classroom. She expressed the view that teachers must be able to see changes in their students' learning if they are to develop professionally.

At Breewood, the teachers agreed that they had become more conscious of how they provide feedback, and they had learned to ask open questions. They had learned from lectures and from one another. According to one teacher, "Now I dare to try what I did not dare before, and we discuss more with each other than we have done before".

4.1.3. Cornwood lower-secondary school

The principal of Cornwood explained that her team had already established a deeply collaborative approach. Her concern was that some teachers would retire soon, and she wanted to prepare a solid foundation for further professional learning and development. The school's team was motivated from the outset, and this motivation increased during the study period. According to the principal, the main reason for this engagement was that the learning process was rooted in classroom practice, along with the fact that facilitators from outside the school were guiding the process. This team of teachers has become a resource for the rest of the school's staff, and the principal believes that the education they received during the RD project will endure for the rest of their teaching life.

The teachers at Cornwood also claimed to have become more conscious of language, how they speak to students, and how they behave in the classroom. They also said that they speak differently to their colleagues and use expressions like "self-regulation" and "self-efficacy". As a team, they claimed that they were ready for the project, as they were already used to collaborating. Now, they could transfer what they had learned from the facilitators directly to the classroom. They identified the project's focus on the students as the main reason for its success, and teachers agreed that their experiences during this project will lead to lasting changes.

4.1.4. Deerwood lower-secondary school

At Deerwood, the principal noted that the decision to participate came from the chief municipal education officer rather than the principal herself, who was concerned about adding to the teachers' workload. Some teachers were overtly negative, while others had higher expectations. The principal's conclusion was that everything had moved in the right direction, as the entire team now seemed more positive. She reported that the teacher who had been most negative engaged in self-examination at the last meeting with the partner school. The principal felt that the most important proof of the learning process was the way teachers at Deerwood now talk to each other: "They are more reflective and ask critical questions regarding their own and other's practice".

The team of teachers from Deerwood reported that they had previously worked as individuals and subjected their students to a lot of tests. Now, as one teacher put it, “We have learned to think outside the box”. When the project began, some teachers thought that the researchers would come into their classroom and tell them what to do. Realising that they would themselves decide what to do and how to do it helped them to take ownership. They noted that opportunities for teachers to learn contributes to student learning. Another important element was the opportunity to meet staff at their partner school. The teacher who was most sceptical from the beginning made the following comment.

It is difficult to change routines that you adopted many years ago. It is not enough that somebody presents you with some good ideas; you may well pick up some ideas and consider them important, but changing attitudes takes time. This project has made me change my routines and my attitudes (Deerwood teacher, 2017).

The team at Deerwood agreed that what they learned during the project will contribute to lasting change.

4.1.5. Short summary from the four schools

All the school principals confirmed that teachers were required to participate in the RD project, raising the question of whether teachers were motivated at the outset. Looking at how these principals and teachers perceived and evaluated their continuing professional learning at the end of the RD project, it is worth noting that they varied in terms of their motivation to participate. At Breewood and Cornwood, the teachers were engaged from the beginning while those in the other two schools were more sceptical. However, by the end of the RD project, there was agreement across all of the participating schools that teachers had changed their classroom practice in line with responsive pedagogy. According to principals and teachers alike, the sense of continuing professional learning was enhanced by the focus on their role in the classroom and their students’ learning process. They also welcomed the collaboration with colleagues and other schools in planning activities, changing practices and evaluating processes during the RD project. The sense of continuing professional learning was also strengthened by the research group’s facilitation efforts. While external facilitators framed the project and offered theoretical ideas, the teachers took ownership of ideas from the responsive pedagogy approach, which could be transferred directly to their own practice.

4.2. Principals’ and teachers’ evaluation of learning processes after two years

4.2.1. Ashwood lower-secondary school

Ashwood’s principal reported that the school had contributed to a new national project initiated by the local municipality when the RD project ended. She indicated that the intention was to continue the teacher team’s professional development and to pass information from the RD project to the rest of the school’s staff to link the new project to responsive pedagogy. However, she noted that “we have not fully succeeded in passing these ideas to the rest of our organization”.

According to teachers at Ashwood, they no longer operate as a team, which complicates their CPD. They still meet and exchange ideas, but the system of collaboration during the RD project is no longer in place. They explained that they were required to participate in a new project immediately after the RD project, and they found it difficult to transfer ideas from the previous project because they felt there was no similarity between the two. According to the teachers, their leader’s attitude was “Now that we have finished one project, we can continue to the next”. The teachers also noted the unmet need for a facilitator to help them to build bridges between the projects.

4.2.2. Breewood lower-secondary school

At Breewood, the new principal had only recently heard about the RD project involving responsive pedagogy. The teachers claimed that they were once very enthusiastic about the RD project and still talk about it, but things changed when the new principal arrived, and some teachers left the school. They claimed to have learned most from the video observations, and individual teachers continued to use some of the ideas they had learned. However, as one said, “During the project, we did so much together that contributed to students’ learning. I miss that’. At the end of the interview, Breewood’s new principal said that she now understands more and would like to pursue the idea again.

4.2.3. Cornwood lower-secondary school

At Cornwood, only the principal and one participating teacher were still there two years after the project ended. The principal reported that a third of her staff had changed in the previous two years. She felt that the project should have continued for another year to enable the entire organization to gain from it. As a leader, she was pleased that a facilitator from the research group had introduced new theoretical perspectives.

The remaining teacher reported that she is now part of a new team that consists mainly of newly qualified teachers. During the RD project, she said, there was ongoing collaborative development, sharing ideas and evaluating experiences, and teachers had to deliver presentations to the partner school explaining what they had done and why. While she now felt more confident in the classroom because of her experiences during the RD project, she said that she misses her team and their challenging discussions. Although she discusses practicalities and shares plans with her new colleagues, she noted that “Sharing is different from collaboration. I need somebody who can challenge me and ask questions, somebody to speak *with*, not *to*”.

4.2.4. Deerwood lower-secondary school

At Deerwood, the seven teachers from the project period were still there, but they were no longer organized as a team. The current principal, who arrived when the project period ended, said that municipal management then directed the school to participate in a new national development project. In his opinion, the effects of RD projects tend to fade over time. The process stopped, but he could not say why.

The teachers at Deerwood all confirmed that they still use feedback ideas from the project in the classroom. Regarding collaboration and professional development, one teacher made the following observations.

In terms of ownership, the project worked very well. I have been a teacher since 1998, and this is the best development project I ever joined. It continued over time; many people were involved, and we had time for collaboration. I learned most from the collaboration with our partner-school (Deerwood teacher, 2019).

Another Deerwood teacher commented that the leadership may well send him on further external courses in the community, along with hundreds of other teachers, to listen to a lecturer.

I often sit there listening, and I think the speaker has given me many new ideas. Then, I go back to school and forget everything, and my practice stays the same as before. They may as well have saved the money spent on the lecture (Deerwood teacher, 2019).

According to this teacher, it takes more than being told what to do to change one’s practice.

4.2.5. Short summary from the four schools

Two years after the project had ended, all of the participating teachers who are still working at the same school claimed to practise responsive pedagogy in the classroom as they did during the RD project. However, they no longer shared continuing professional learning with their colleagues

because there is no longer a common development process. In all the schools, one or more teachers were replaced for one reason or another, and teams were no longer the same. In two of the schools, the principal was also replaced, and new development projects were initiated. According to teachers, the new RD projects no longer focus on the classroom or their role as teachers, and there are no external facilitators. They said this leaves them with no sense of owning the ideas, and they become disengaged.

5. Discussion

All the participants in this study mentioned the need for external facilitation by the research group that ran the project. The common workshops provided theoretical inputs related to responsive pedagogy, which the teachers discussed and transferred to their own context. Access to external expertise is also mentioned by Timperley et al. (2007) and Borko (2004) as a prerequisite for professional learning and development. A need for external facilitation is also a criteria Cordingley (2015) pinpoint as necessary for learning and development in schools. We found this also as a fruitful lens to compare how principals and teachers perceived and evaluated the learning process at the end of the RD project and two years later.

Further, all the participating groups noted that opportunities for collaborative exploration with colleagues led to changes in classroom practice. Some teachers stated how they took risks in presenting lack of own understanding and teaching skills—and how these were built throughout the project. This finding aligns with Desimone (2009), who identified collective participation as a potent factor in teacher learning. The participants also highlighted the importance of systematic collaboration, in addition to support within their own team and with their partner school. Cordingley (2015) has this as a second criterion for professional development, and claim that sustainable school development relates to collaboration, risk taking and professional dialogue. The need for collegial support can be linked to Cordingley's (2015) third criterion for professional development: systematic planning of activities, testing in the classroom and retrospective team evaluation. In this regard, the teachers claimed that they not only shared ideas but sometimes challenged each other and developed new knowledge. Engeström's (1998) "zone of possibilities", which corresponds to Vygotsky's "zone of proximal development", suggests that working together not only acquires but renews existing knowledge. In this domain of socially shared understanding, members create a common zone of development. Another related concept is the "interpretive zone" (Hoel, 2002), which refers to the shared interpretive processes activated by collaboration with others. The individual's personal zone and the group's common zone develop through interaction, and collaborative knowledge advances as ideas, practices and conceptual artefacts are expansively transformed (Paavola et al., 2002).

The teachers also claimed that they learned by observing others and discussing videos from the classroom. This relates to Cordingley's (2015) fourth criterion, which addresses the need to look for evidence of student learning by exploring and observing teaching practice. There is widespread agreement in the literature that teachers' professional learning depends crucially on activities that focus on the classroom, in which teachers become active learners in a longitudinal process, with opportunities for feedback and peer learning, supported by facilitators and school leaders (Borko, 2004; Cordingley, 2015; Desimone, 2009; Gamlem, 2015; Guskey, 2002; Opfer & Pedder, 2011; Timperley et al., 2007). The RD project introducing responsive pedagogy to the schools seems to meet all these criteria.

One prerequisite for participation in the RD project was that school leaders should participate in some activities alongside teachers. This aligns with Cordingley's (2015) final point, which stresses the importance of leadership support in terms of time, encouragement and modelling. While some teachers were less motivated, and some teams were more positive than others about

collaboration, principals and teachers confirmed that all of the participating teachers changed some of their beliefs, attitudes and classroom practices. These findings align with Opfer and Pedder's (2011) claim that teacher learning is cyclical rather than linear and that their learning outcomes (in terms of beliefs, practices or student change) can begin at any point in that process. In general, a teacher's learning orientation informs their approach to professional learning and practice development.

Two years after the RD project ended, the teachers' professional development process had changed in all four schools, and none of Cordingley's (2015) criteria were still being met. There is no external facilitation; teams have been dissolved; and there is no systematic collaboration around classroom activities, feedback and peer learning opportunities or support from facilitators or school leaders. Teachers who participated in the RD project said they miss those opportunities for interaction and learning from and with their peers. However, they all confirmed that they continue to practice what they learned about responsive pedagogy in their own classes, and that the learning process has changed their attitudes, beliefs and classroom practice (Guskey, 2000; Desimone, 2009; Opfer & Pedder, 2011).

According to Opfer and Pedder (2011), those lost opportunities for interaction and peer exchange mark the difference between teacher learning and teacher professional development. Participants identified several reasons for this problem, including lack of support and facilitation, echoing Cordingley's (2015) final criterion for professional learning and development: leadership support or lack thereof. Although all the participants agreed that the RD project contributed to teacher learning, none of the schools has been able to create a sustainable professional development process.

6. Conclusion, implications and limitations

In summary, the RD project responded to several criteria for professional development, and the participating teachers gained from the process. However, our findings indicate that a sustainable professional development in schools is to be enriched and followed up when teachers' gain ownership. The participating teachers state that they miss possibilities to work in teams over time. Further that they need opportunities for building and transferring knowledge in addition to receiving the necessary support from their school leaders through facilitating structures and meeting point for collaboration.

We contend that the study supports the view that sustainable professional learning depends on teachers taking ownership of received ideas, principally because teaching practice is closely linked to personal values, attitudes and beliefs.

Implications from this study is that in general, professional learning activities should focus on the role of the teacher, classroom activities and learning enhancement. One important prerequisite for professional learning is the allocation of time for collaboration with colleagues inside and/or outside school to make plans, implement new activities and evaluate experiences with trusted colleagues. This aspect of professional development is crucial, for example, in developing assessment literacy. Professional development ultimately depends on engagement in a systematic and continuous learning process to ensure that knowledge can be transferred from one project to another over time. When teachers and leaders leave, careful attention must be paid to the transfer of knowledge around professional learning activities. Finally, external facilitators provide important support for continuing professional learning and development in schools.

Limitations of this study should be addressed. Although the findings provide important results on teachers and principals perceptions of sustainable PD, they must be interpreted with respect to the study's limitations, especially those limitations related to the small sample.

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Appendix

Interview guide: Principals—by the end of the RD project (Individual interviews)

- How do you characterize this project compared to other development projects you have participated in?
 - What are the characteristics?
- How will you describe the teachers' learning process in this project?
- Reactions from the rest of the staff on this RD project.
 - Distribution?
- If you look forward one year- several years—what do you think will happen?
 - What do you think will happen with the group of teachers who participated?
 - What do you think will happen with the pupils?
 - What do you think will happen with the school development?

Interview guide: Teachers—by the end of the RD project (Focus groups)

- What characterizes a development project of high quality in your school?
- What have you learnt from participating in the project?
- What have been challenges and possibilities?

Interview guide: Principals and teachers—two years after the common RD project (Focus groups)

- What has happened after the common project was finished?
- What has the individual teacher brought along?
- What has the team brought along?
- How has this RD project been transferred to the rest of the staff?
 - Possibilities and obstacles?



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